U.S. Department of Transportation
Federal Aviation Administration
Southwest Region

FINDING OF NO SIGNIFICANT IMPACT
and
RECORD OF DECISION

Airport Traffic Control Tower
Replacement
New Braunfels National Airport (BAZ)
New Braunfels, Texas

January 2026

I. INTRODUCTION

The City of New Braunfels, owner and operator of the New Braunfels National Airport (BAZ), also referred to as the Airport Sponsor, is proposing to replace the existing Airport Traffic Control Tower (ATCT) at BAZ (Airport). The current ATCT is under the Federal Contract Tower (FCT) Program and is designated as a non-Radar, Level 1 ATCT. The Infrastructure Investment and Jobs Act (IIJA); Public Law [P.L] 117-58) was enacted on November 15, 2021, and appropriated $25 billion over a five-year period, (Fiscal Year 2022 (FY22) to 2026 (FY26)) for the National Airspace System (NAS) improvements, with $20 million of that amount dedicated to competitive grants to airports like BAZ supporting the FCT Program.[1] The National Environmental Policy Act (NEPA) of 1969, as amended under 42 United States Code (U.S.C.) § 4321 et seq., requires that an agency to prepare an environmental assessment with respect to a proposed action that does not have a reasonably foreseeable significant effect on the quality of the human environment. 42 U.S.C. § 4336(b)(2).

In September 2023, the FAA issued a Final Programmatic Environmental Assessment (PEA) for the Bipartisan Infrastructure Law (BIL) ATCT Replacement Program in accordance with NEPA; FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures* (July 2015); FAA Order 5050.4B, *National Environmental Policy Act Implementing Instructions for Airport Actions* (April 2006); and other applicable federal laws and regulations. The BIL ATCT Final PEA (referred to from here on as the IIJA ATCT Final PEA) provided sufficient evidence and analysis for a Finding of No Significant Impact/Record of Decision (FONSI/ROD) determination.

The Sponsor prepared a Tiered Environmental Assessment (EA) that addresses the potential effects, beneficial and adverse, resulting from the proposed construction of a replacement ATCT at BAZ. This EA for BAZ tiers from the IIJA ATCT Final PEA, evaluating the existing environment and analyzing the anticipated environmental consequences of the proposed alternatives at a site-specific level through the framework established by the IIJA ATCT final PEA and FONSI/ROD.

The Proposed Action is to replace the existing ATCT with a more efficient and modern facility at BAZ and is anticipated to include the following federal actions:

---

[1] https://www.faa.gov/iija/faq/IIJA_FAQs.pdf.

- FAA issuance of funding associated with the Proposed Action.
- Modification and/or relocation of National Airspace System facilities or equipment necessary to enable project implementation.

The state actions necessary in connection with the Proposed Project include:

- TxDOT's unconditional approval of the portion of the Airport Layout Plan (ALP) depicting the Proposed Action

The FAA and TxDOT are responsible for the approval of the actions above and analyzed in the EA. The FAA and TxDOT have determined that the Proposed Action will have no significant impact on the environment.

The FAA and TxDOT are complying with its policies and procedures implementing NEPA in FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures* (July 2015), and FAA Order 5050.4B, *NEPA Implementing Instructions for Airport Actions* (April 2006), to meet the agency's obligations under NEPA.[2,3]

Attached to this FONSI/ROD is the Tiered EA on which the finding is made.

II. BACKGROUND

The Airport previously updated its Airport Master Plan (AMP) in 2018 to address major changes and development for the Airport. The purpose of the AMP is primarily to guide the orderly, timely, and logical development of BAZ, ensuring it can continue to serve and support the aviation needs and economic growth of the New Braunfels region over the next 20 years.

The AMP charted the future growth of the Airport and identified critical infrastructure needs. It proposed the relocation and construction of a new ATCT Facility. The proposed ATCT Facility will remain under the FCT Program and will maintain its designation as a non-Radar Level 1 facility.

The existing ATCT was commissioned in 2007 by a private entity, Silver State Helicopters, and has been a part of the FAA FCT program since 2018. The City of New Braunfels assisted with financing the tower and eventually took ownership from Silver State. It is currently located southwest of the terminal building on the southeast side of the airport and is accessible via FM 758 (See Exhibit 1.1 of the EA). Under the

---

[2] On June 30, 2025, FAA rescinded FAA Order 1050.1F and issued FAA Order 1050.1G, FAA National Environmental Policy Act Implementing Procedures, to update FAA's NEPA implementing procedures. See Notice of Rescission of FAA Order 1050.1F, Availability of FAA Order 1050.1G, Request for Comments, 90 FR 29,615 (July 3, 2025). Because the preparation of this EA was already underway when this revision to FAA Order 1050.1 took place, and because this revision does not change the analysis of environmental effects for this proposed action, this EA continues to rely on FAA Order 1050.1F.

[3] FAA Order 1050.1F requires agency NEPA documents to contain an analysis of the Proposed Action's impacts as they relate to Environmental Justice, as well as the Proposed Action's overall "Cumulative Impacts." With respect to Environmental Justice, it is no longer the policy of the federal government to conduct environmental justice analysis and it is no longer a legal requirement to do so, pursuant to Executive Order 14,173, Ending Illegal Discrimination and Restoring Merit-Based Opportunity. With respect to "Cumulative Impacts," the underlying basis for its inclusion in FAA Order 1050.1F was its inclusion in the Council for Environmental Quality's now-rescinded NEPA-implementing regulations. The NEPA statute, as amended, does not employ the term "cumulative effects" or "cumulative impacts." Agencies are to only consider the proposed action at hand and that action's reasonably foreseeable effects, consistent with NEPA. *See* 42 U.S.C. § 4332(2)(C)(i). *See also Seven Cnty. Infrastructure Coal. v. Eagle Cnty., Colo.*, 605 U.S. __, 145 S. Ct. 1497, 1513 (2025). In accordance with this direction, the FAA will no longer characterize effects as "cumulative" in its NEPA documents. Further, the FAA previously found in the corresponding FONSI/ROD for the IIJA ATCT Final PEA that replacing existing ATCTs under this program "is not anticipated to result in significant cumulative impacts." Therefore, this concept is not discussed further in this FONSI/ROD.

FCT program, it is currently designated as a non-Radar, Level 1 ATCT. The tower does not utilize radar to separate traffic. The ATCT is approximately 57 feet above ground level (AGL) to the cab, and 75 feet AGL to the top of the structure (not including antennas). The current cab size is approximately 440 square feet.

III. PURPOSE AND NEED

The purpose of the Proposed Action is to replace the BAZ ATCT with a modern ATCT providing uninterrupted air traffic control service. The Proposed Action at BAZ would provide for a modern, operationally efficient ATCT that would meet all applicable FAA requirements while maintaining air traffic control services. This ATCT relocation would allow for the installation of modern and required ATC equipment, as well as provide improved visibility for the air traffic controllers to enhance the safety of aircraft in the movement area.

The FAA recognizes the need to provide continual air traffic control services at airports across the nation that are served by aging ATCTs. The BAZ ATCT is almost 20 years old and is beyond its useful design life. The ATCT was built as a training tower and was not constructed with modern technology or infrastructure. The ATCT also cannot accommodate upgrades to the latest air traffic control technologies, fails to meet personnel space requirements and modern amenities, and exhibits physical problems such as maintenance-intensive deficient mechanical appurtenances (e.g. heating and ventilation, plumbing). Improvements made to rectify this situation will ensure uninterrupted air traffic control services to maintain the safety of the NAS.

Additionally, the Proposed Action is necessary to improve the line of sight (LOS) geometry resulting from the extension of Runway 13/31 at BAZ. The runway was extended 1,500 feet, causing changes in the LOS geometry, which has since created blind spots for air traffic controllers for aircraft on the ground and aircraft departing and arriving for Runway 13. The updated Airport Layout Plan (ALP) shows another extension of Runway 13/31, resulting in an additional 1,000 feet at the end of Runway 13. Consequently, the LOS disruption would increase with this extension.

Relocating the control tower will improve the efficiency and safety of the airport's facilities by:

- Eliminating multiple blind spots created by LOS issues on the west side of BAZ;
- Opportunity to expand existing terminal area or other areas of future growth; and
- Improving utilization of existing terminal area space.

IV. PROPOSED ACTION

The Proposed Action is to replace the existing ATCT with a more efficient and modern facility at New Braunfels. The Proposed Action includes the following components:

- Construction and operation of a new ATCT
- Extension of access roads and utilities to the relocated ATCT
- Commissioning of the new ATCT, cutover (meaning transition and relocation) of air traffic services to the new ATCT, and decommissioning of the existing ATCT
- Contractor staging area during construction of the new ATCT
- Relocation of the ASOS, the Airport will coordinate the relocation of the ASOS with NOAA
- Disposal of the cab equipment of the existing ATCT facility and associated infrastructure
- Demolition of the existing ATCT following the completion of construction for the new ATCT

V. ALTERNATIVES

The FAA explored and objectively evaluated reasonable alternatives that were considered practical and feasible in meeting the purpose and need, including Proposed Action and No Action alternatives (See Section 3 of the EA).

VI. ENVIRONMENTAL CONSEQUENCES

A. Potential Impact Resource Categories

The IIJA ATCT Final PEA identified resource categories that were unlikely to be significantly impacted but would require site-specific analysis:

- Biological Resources – The Proposed Action would result in minimal effects on biological resources from construction traffic and removal of vegetation. Although much of the vegetation is common or non-native, wildlife that depend on this common, non-native vegetation but would likely relocate to similar habitat in the vicinity. These impacts would not be significant as these habitats are not unique or rare. The U.S. Fish and Wildlife Service (USFWS) and the Texas Parks and Wildlife Department (TPWD) were contacted to determine if biological resources in the Airport environs are present in the project area. Biological resources were obtained and reviewed utilizing the USFWS Information for Planning and Consultation (IPaC) reporting system. The USFWS IPaC identified threatened and endangered species list for the specific project area. The USFWS sent a consistency letter of determination to the Sponsor that recommended a Biological Assessment of the study area to determine whether the project may affect listed or proposed species or designated critical habitats. The assessment determined that there would be no impact to threatened or endangered species as a result of the Proposed Action. Additionally, no critical habitats were identified in the study area. The Threatened and Endangered Species Assessment is attached to the EA as Appendix A: Siting Report, and is located in Appendix G: Environmental Documentation within the Siting Report.

- Coastal Resources – The Proposed Action area is located approximately 110 miles from the nearest coastal resource. Therefore, this resource category does not require further analysis.

- Section 4(f) resources – The Proposed Action and study areas were not found to contain Section 4(f) properties and therefore do not require additional analysis.

- Historical, Architectural, Archeological, and Cultural Resources – Implementation of the Proposed Action is not expected to impact currently undiscovered resources since the Proposed Action is not considered a high probability area associated with prehistoric occupation. However, should construction unearth any of these resources, the provisions of emergency discovery as defined by the Texas Historical Commission (THC) would apply, and construction would cease while cognizant agencies would be contacted. No adverse impacts upon these resources are anticipated due to the implementation of the Proposed Action.

- Visual Effects – The Proposed Action would not affect or obstruct airport resources. Construction would occur during the daytime, and no additional nighttime lights would be required. Replacement of the existing ATCT with a proposed new ATCT will result in minimal, if any, effects on visual resources.

- Water Resources – The Proposed Action area was investigated through desktop and field assessments, and no wetlands, surface waters, or groundwater are present in areas of proposed disturbance. Also, the Proposed Action area is approximately 250 miles away from the nearest Wild

and Scenic River resource. The Proposed Action area is within the area determined to be outside of the 0.2% annual change floodplain. Therefore, the Proposed Action will not impede any designated floodplains.

Potential environmental impacts on cultural resources, biological resources, water resources, coastal resources, Section 4(f) resources, and visual resources are documented in Section 4 of this EA.

B. Resource Impact Categories Not Significantly Affected by the Proposed Action or Alternatives

The IIJA ATCT Final PEA and FONSI/ROD identified several resource categories as not significantly affected. The following resource categories were reviewed for project-specific impacts but were not carried forward for detailed analysis in the Tiered EA because they were determined to be consistent with the PEA as no significant impacts are anticipated: air quality, climate, farmlands, hazardous materials, solid waste and pollution prevention, land use, natural resources and energy supply, and noise.

VII. AGENCY COORDINATION AND PUBLIC INVOLVEMENT

The Consultant, on behalf of the Sponsor and at the direction of the FAA, initiated agency scoping activities in August 2024 to identify issues related to the Proposed Action. Since then, formal and informal coordination has been conducted with the following, and is included in Appendix B of the EA.

State Agency
- THC
- TPWD

Federal Agencies
- USFWS

Public engagement was completed through informing the residents of the City of New Braunfels of the availability to review the Draft EA through a public notice in the New Braunfels Herald-Zeitung newspaper (July 16 & 30, 2025). The Draft EA was made available for review and comment electronically on the BAZ website (https://newbraunfels.gov/3488/Airport), with hard copies at the BAZ Terminal Building and the City of New Braunfels City Hall from July 16, 2025 until August 15, 2025. One (1) comment was received, and there was not a request for a public meeting. Public involvement documentation is provided in Section 5 and Appendix C of the EA.

VIII. CONDITIONS AND MITIGATION

No mitigation measures are necessary to reduce potentially significant impacts of the Proposed Action below significance thresholds.

IX. AGENCY FINDINGS

The FAA makes the following determinations for this project based upon a careful review of the attached EA, the supporting administrative records, and appropriate supporting information. The FAA weighed both the potential positive and negative consequences that this Proposed Action may have on the quality of the human environment. The FAA has determined that the Proposed Action meets the purpose and needs of the proposed project and best implements necessary airfield modifications to meet FAA design standards.

The following determinations are prescribed by the statutory provision set forth in the Airport and Airway Improvement Act of 1982, as codified in 49 U.S.C. §47106 and 47107.

- The FAA had determined the Proposed Action would result in safe and efficient use of U.S. airspace as prescribed in 49 U.S.C. §40103(a).
- The Proposed Action is reasonably necessary for use in air commerce (49 U.S.C. §44502(b)).
- The Proposed Action is reasonably consistent with existing plans of public agencies responsible for development of the area surrounding the airport (49 U.S.C. §47106(a)(1)).
- The interests of the community in or near where the Proposed Action is located have been given a fair consideration and the Proposed Action is consistent with community planning (49 U.S.C. §47106(b)(2)).

After careful and thorough consideration of the facts contained herein, the undersigned finds the proposed federal action is consistent with existing national environmental policies and objectives as set forth in Section 101(a) of NEPA and other applicable environmental requirements and will not significantly affect the quality of the human environment or otherwise include any condition requiring consultation pursuant to Section 102(2)(C).. As a result, the FAA will not prepare an Environmental Impact Statement for this action.

DECISION AND ORDER

Based on the administrative review of this project, I certify, as prescribed by 49 U.S.C. 44502(b), that implementation of the Proposed Action is reasonably necessary for use in air commerce.

Having met all relevant requirements for environmental considerations and consultation, and under the authority delegated to me by the Administrator of the FAA, I approve the Proposed Action described in the Final EA and in this FONSI/ROD and authorize the Proposed Action to be undertaken at such time as other requirements have been met.

Rodney Clark

Rodney Clark,
Director Texas Airports District Office,
Airports Division, Southwest Region

Right of Appeal

This document constitutes a final order of the FAA Administrator and is in most cases subject to exclusive judicial review under 49 U.S.C. § 46110 by the U.S. Circuit Court of Appeals for the District of Columbia or the U.S. Circuit Couty of Appeals for the circuit in which the person contesting the decision resides or has its principal place of business. Any person having substantial interest in this order may apply for review of the decision by filing a petition for review in the appropriate U.S. Court of Appeals no later than 60 days after the order is issued in accordance with the provisions of 49 U.S.C. § 46110.

Infrastructure Investment and Jobs Act (IIJA) Airport Traffic Control Tower (ATCT) Replacement Program

New Braunfels National Airport (BAZ) Airport Traffic Control Tower Replacement Tiered Environmental Assessment

New Braunfels, Texas

January 2026

THIS ENVIRONMENTAL ASSESSMENT BECOMES A FEDERAL DOCUMENT WHEN EVALUATED, SIGNED, AND DATED BY THE RESPONSIBLE FAA OFFICIAL.

KRISTI M PONOZZO

Digitally signed by KRISTI M PONOZZO
Date: 2026.01.12 09:12:42 -09'00'

_____ _____

Signature of Responsible FAA Official | Date

KSA
a Pape-Dawson company

This page intentionally left blank

Table of Contents

ACRONYMS AND ABBREVIATIONS

AC ..... Advisory Circular
AGL ..... Above Ground Level
ALP ..... Airport Layout Plan
AMP ..... Airport Master Plan
APE ..... Area of Potential Effect
ASOS ..... Automated Surface Observing System
ATCT ..... Air Traffic Control Tower
BAZ ..... New Braunfels National Airport
CFR ..... Code of Federal Regulation
CIP ..... Capital Improvement Plan
CZMA ..... Coastal Zone Management Act
CZMB ..... Coastal Zone Management Boundary
DOT ..... Department of Transportation
EA ..... Environmental Assessment
ESA ..... Endangered Species Act
FAA ..... Federal Aviation Administration
FCT ..... Federal Contract Tower
FEMA ..... Federal Emergency Management Agency
FONSI ..... Finding of No Significant Impact
FWCA ..... Fish and Wildlife Coordination Act
FY ..... Fiscal Year
GLO ..... General Land Office
IIJA ..... Infrastructure Investment and Jobs Act
LOS ..... Line of Sight
NAS ..... National Airspace System
NEPA ..... National Environmental Policy Act
NFHL ..... National Flood Hazard Layer
NHPA ..... National Historic Preservation Act
NMFWS ..... National Marine Fisheries Service
NOAA ..... National Oceanic and Atmospheric Administration
NOI ..... Notice of Intent
NRHP ..... National Register of Historic Places
NWR ..... National Wildlife Refuge
PEA ..... Programmatic Environmental Assessment
ROD ..... Record of Decision
SHPO ..... State Historic Preservation Office
TCP ..... Texas Cultural Property
TERPS ..... Terminal Instrument Procedures
THC ..... Texas Historic Commission
TPWD ..... Texas Parks and Wildlife Department
TxDOT ..... Texas Department of Transportation
U.S.C. ..... United States Code
USFWS ..... United States Fish and Wildlife Service
USGS ..... United States Geological Survey
VISTA ..... Virtual Immersive Siting Tower Assessment

SECTION 1 | INTRODUCTION

1.1 OVERVIEW

The City of New Braunfels, owner and operator of the New Braunfels National Airport (BAZ), also referred to as the Airport Sponsor, is proposing to replace the existing Airport Traffic Control Tower (ATCT) at BAZ. The current ATCT is under the Federal Contract Tower (FCT) Program and is designated as a non-Radar, Level 1 ATCT. The Infrastructure Investment and Jobs Act (IIJA; Public Law [P.L] 117-58) was enacted on November 15, 2021, and appropriated $25 billion (B) over a five-year period, Fiscal Year 2022 (FY22) to 2026 (FY26) for the National Airspace System (NAS) improvements, with $20 million of that amount dedicated to competitive grants to airports like BAZ supporting the FCT Program.[1]

The National Environmental Policy Act (NEPA) of 1969, as amended under 42 United States Code (U.S.C.) § 4321 et seq., requires an agency to prepare an environmental assessment with respect to a proposed action that does not have a reasonably foreseeable significant effect on the quality of the human environment. 42 U.S.C. § 4336(b)(2).

In September 2023, the FAA issued a Final Programmatic Environmental Assessment (PEA) for the BIL ATCT Replacement Program (referred to in this EA, from this point on, as IIJA ATCT Final PEA) (FAA, 2023) in accordance with NEPA; FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures* (July 2015); FAA Order 5050.4B, *National Environmental Policy Act Implementing Instructions for Airport Actions* (April 2006); and other applicable federal laws and regulations.[2] The IIJA ATCT Final PEA provided sufficient evidence and analysis for a Finding of No Significant Impact (FONSI) / Record of Decision (ROD) determination (FAA, 2023).

The BAZ ATCT Tiered Environmental Assessment (EA) will evaluate the existing environment and analyze any anticipated environmental consequences of the proposed alternatives at a site-specific level. This EA will tier off the IIJA ATCT Final PEA.

1.2 PROPOSED ACTION

BAZ is proposing to replace the existing ATCT with a more efficient and modern facility at New Braunfels. The following actions will be included in the Proposed Action:

- Construction and operation of a new ATCT.
- Extension of access roads and utilities to the relocated ATCT.

[1] https://www.faa.gov/iija/faq/IIJA_FAQs.pdf

[2] On June 30, 2025, FAA rescinded FAA Order 1050.1F and issued FAA Order 1050.1G, FAA National Environmental Policy Act Implementing Procedures, to update FAA's NEPA implementing procedures. See Notice of Rescission of FAA Order 1050.1F, Availability of FAA Order 1050.1G, Request for Comments, 90 FR 29,615 (July 3, 2025). Because the preparation of this EA was already underway when this revision to FAA Order 1050.1 took place, and because this revision does not change the analysis of environmental effects for this proposed action, this EA continues to rely on FAA Order 1050.1F.

- Commissioning of the new ATCT, cutover (i.e., transition and relocation) of air traffic services to the new ATCT, and decommissioning of the existing ATCT.
- Contractor staging area during construction of the new ATCT.
- Relocation of the Automated Surface Observing System (AS0S), which is a suite of automated sensors that measure, collect, and disseminate minute-by-minute weather data to help aircrews or flight dispatchers monitor weather conditions and plan routes for avigation to or from the Airport. The Airport will coordinate the relocation of the ASOS with the National Oceanic and Atmospheric Administration (NOAA). The local NOAA office is located adjacent to Airport property. The Airport Sponsor will facilitate coordination with NOAA for the relocation of the ASOS during the final design and construction of the ATCT.
- Disposal of the cab equipment of the existing ATCT facility and associated infrastructure.
- Demolition of the existing ATCT following the completion of construction for the new ATCT.

The federal actions necessary in connection with the Proposed Project include:

- FAA issuance of funding associated with the Proposed Action.
- Modification and/or relocation of National Airspace System facilities or equipment necessary to enable project implementation.

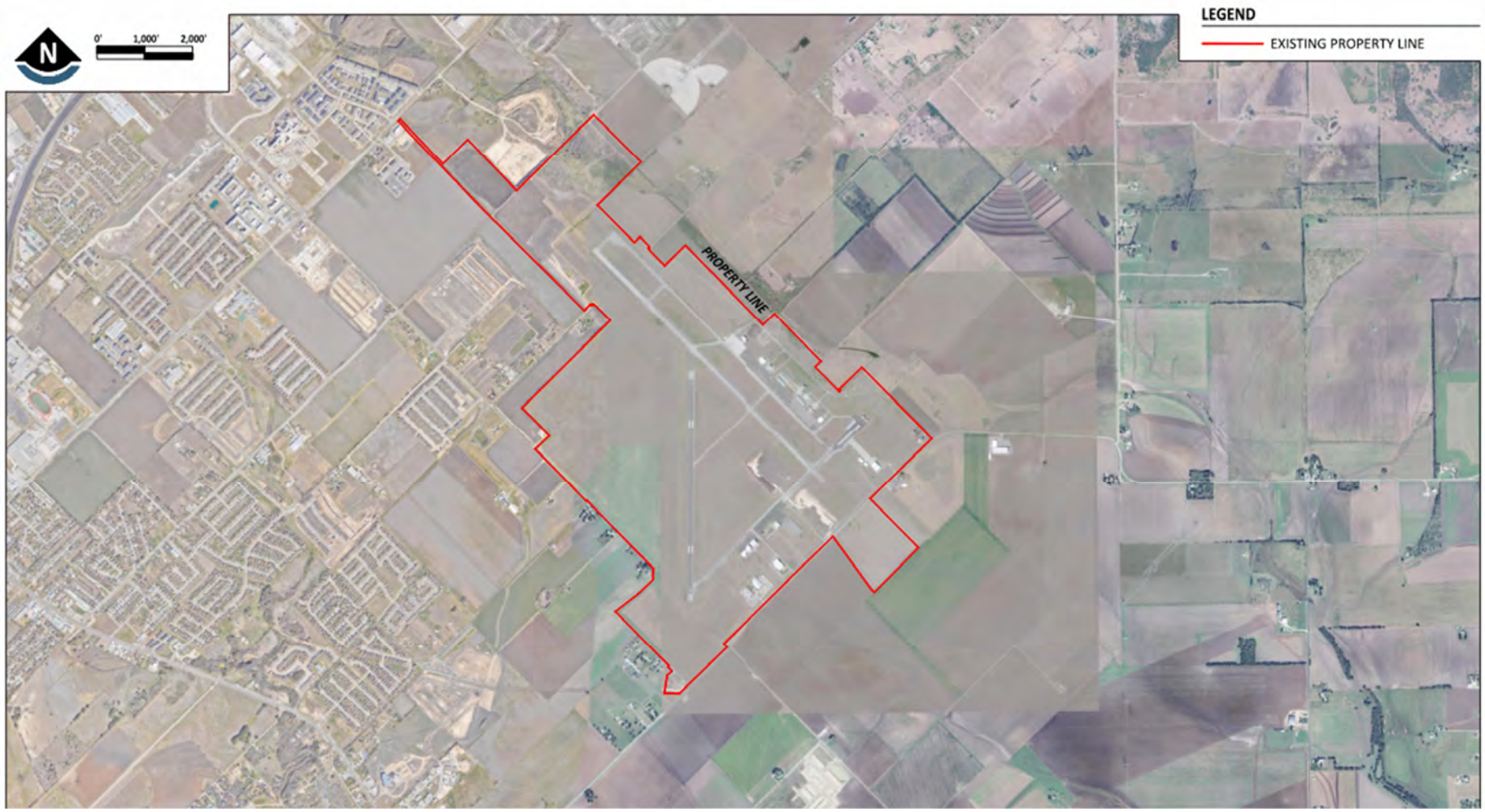
The state actions necessary in connection with the Proposed Project include:

- TxDOT's unconditional approval of the portion of the Airport Layout Plan (ALP) depicting the Proposed Action.

The Airport Master Plan (AMP) was previously updated in 2018 to address major changes and development for the Airport. The purpose of the AMP is primarily to guide the orderly, timely, and logical development of BAZ so that it could continue to serve and support the aviation needs and economic growth of the New Braunfels region over the next 20 years.

During the planning exercise the AMP charted the future growth of the Airport and identified critical infrastructure needs. As part of the exercise, the Airport proposed relocation and construction of a proposed new ATCT Facility. The proposed ATCT Facility will remain under the FCT Program and will maintain its designation as a non-Radar Level 1 facility.

The proposed timeframe to replace the ATCT is 12 months, with an expected start date in early 2027.



Source: (Google Earth, 2024) & (KSA, 2024)

Exhibit 1.1 AIRPORT LOCATION

Exhibit 1.2: AERIAL IMAGE OF STUDY AREA AND AREA OF POTENTIAL EFFECTS (APE)

1.3 BACKGROUND

1.3.1 Airport Information

New Braunfels National Airport (BAZ) is owned and operated by the City of New Braunfels in the state of Texas. The Airport is located approximately four miles east of Downtown New Braunfels (see Exhibit 1.1, Airport Location). The main Airport facilities, including the terminal building, are easily accessed from FM 758. Airport Road provides access to facilities on the north side of the BAZ via FM 758 and Westmeyer Road. BAZ is comprised of approximately 1,200 acres. The Airport has two active runways, an extensive taxiway system with seven (7) taxiways, and an airfield system comprised of associated aprons, runup pads, and electronic and visual navigational aids (see **Exhibit 1.1: Airport Location**).

1.3.2 Existing Airport Traffic Control Tower Information

The existing ATCT was commissioned in 2007 by a private entity, Silver State Helicopters, and has been a part of the FAA FCT program since 2018. The City of New Braunfels assisted with financing the tower and eventually took ownership from Silver State. It is currently located southwest of the terminal building on the southeast side of the airport and is accessible via FM 758. Under the FCT program, it is currently designated as a non-Radar, Level 1 ATCT. The tower does not utilize radar to separate traffic. The ATCT is approximately 57 feet above ground level (AGL) to the cab, and 75 feet AGL to the top of the structure (not including antennas), the current cab size is approximately 440 square feet.

This section left blank intentionally

SECTION 2 | PURPOSE AND NEED

2.1 INTRODUCTION

The objective of this section is to define the need and purpose of the Proposed Action, where 'need' is defined as the problem facing the Airport and 'purpose' is defined as the solution to that problem. The purpose and need for the Proposed Action at BAZ is consistent with the purpose and need described in the IIJA ATCT Replacement Program PEA.

2.2 PURPOSE

The purpose of the Proposed Action is to replace the BAZ ATCT with a modern- ATCT providing uninterrupted air traffic control service. The Proposed Action at BAZ would provide for a modern, operationally efficient ATCT that would meet all applicable FAA requirements while maintaining air traffic control services. This ATCT relocation would allow for the installation of modern and required ATC equipment, as well as provide improved visibility for the air traffic controllers to enhance safety of aircraft in the movement area.

2.3 NEED

The FAA recognizes the need to provide continual air traffic control services at airports across the nation that are served by aging ATCTs. The BAZ ATCT is almost 20 years old and is beyond its useful design life. The ATCT was built as a training tower and was not constructed with modern technology or infrastructure. The ATCT also does not have the ability to accommodate upgrades to the latest air traffic control technologies, lacks personnel space requirements and modern amenities, and exhibits physical problems such as maintenance-intensive deficient mechanical appurtenances (e.g. heating and ventilation, plumbing). Improvements made to rectify this situation will ensure uninterrupted air traffic control services to maintain the safety of the NAS.

In addition, the Proposed Action is needed to improve the line of sight (LOS) geometry due to the extension of Runway 13/31 at BAZ. The runway was extended 1,500 feet causing changes in the LOS geometry, which has since created blind spots for air traffic controllers for aircraft on the ground and aircraft departing and arriving for Runway 13. The updated ALP shows another extension of Runway 13/31, resulting in an additional 1,000 feet at the end of Runway 13. Consequentially, the LOS disruption would increase with this extension.

Relocating the control tower will improve the efficiency and safety of the airport's facilities by:

- Eliminating multiple blind spots created by LOS issues on the west side of BAZ;
- Opportunity to expand existing terminal area or other areas of future growth; and
- Improving utilization of existing terminal area space.

SECTION 3 | ALTERNATIVES

3.1 INTRODUCTION

In compliance with FAA Order 6480.4B, *Airport Traffic Control Tower Siting Process,* the FAA adheres to a siting process to determine the single most technically feasible site for the establishment or replacement of an ATCT facility (FAA, 2018). This siting process takes into consideration multiple technical criteria, as prescribed in Order 6480.4B.

An FAA Virtual Immersive Siting Tower Assessment (VISTA) was conducted for the siting of this project with representatives from FAA and BAZ. This EA evaluates the selected site alternative (as determined by the VISTA ATCT siting process) and no build alternative for the replacement of the BAZ ATCT. A comprehensive analysis of three (3) locations for the proposed ATCT was completed, which are described in detail in the FAA Air Traffic Control Tower Siting Report. The report concluded that the preferred alternative is Site 2. During the Master Planning process for BAZ, a Recommended Development Plan was created as a roadmap for development at the Airport. The location of the proposed ATCT in the Recommended Development Plan was identified as Site 1 in the Siting Report; however LOS issues were discovered with this proposed location. Therefore, Site 2 was identified as the preferred site and is carried forward in this EA for analysis. **Exhibit 3.1** provides an aerial image of the proposed project site and study area considered within this EA. Other alternatives were considered in the siting report to satisfy the purpose and need; however, they were not carried forward as they did not meet the technical siting criteria as outlined in FAA Order 6480.4B. **Appendix A: Air Traffic Control Tower Siting Report** provides additional information on the proposed project site determined and the alternatives that were considered.

This EA evaluates the selected site alternative (as determined by the ATCT siting process) and the no build alternative for the proposed replacement of the BAZ ATCT.

This section left blank intentionally

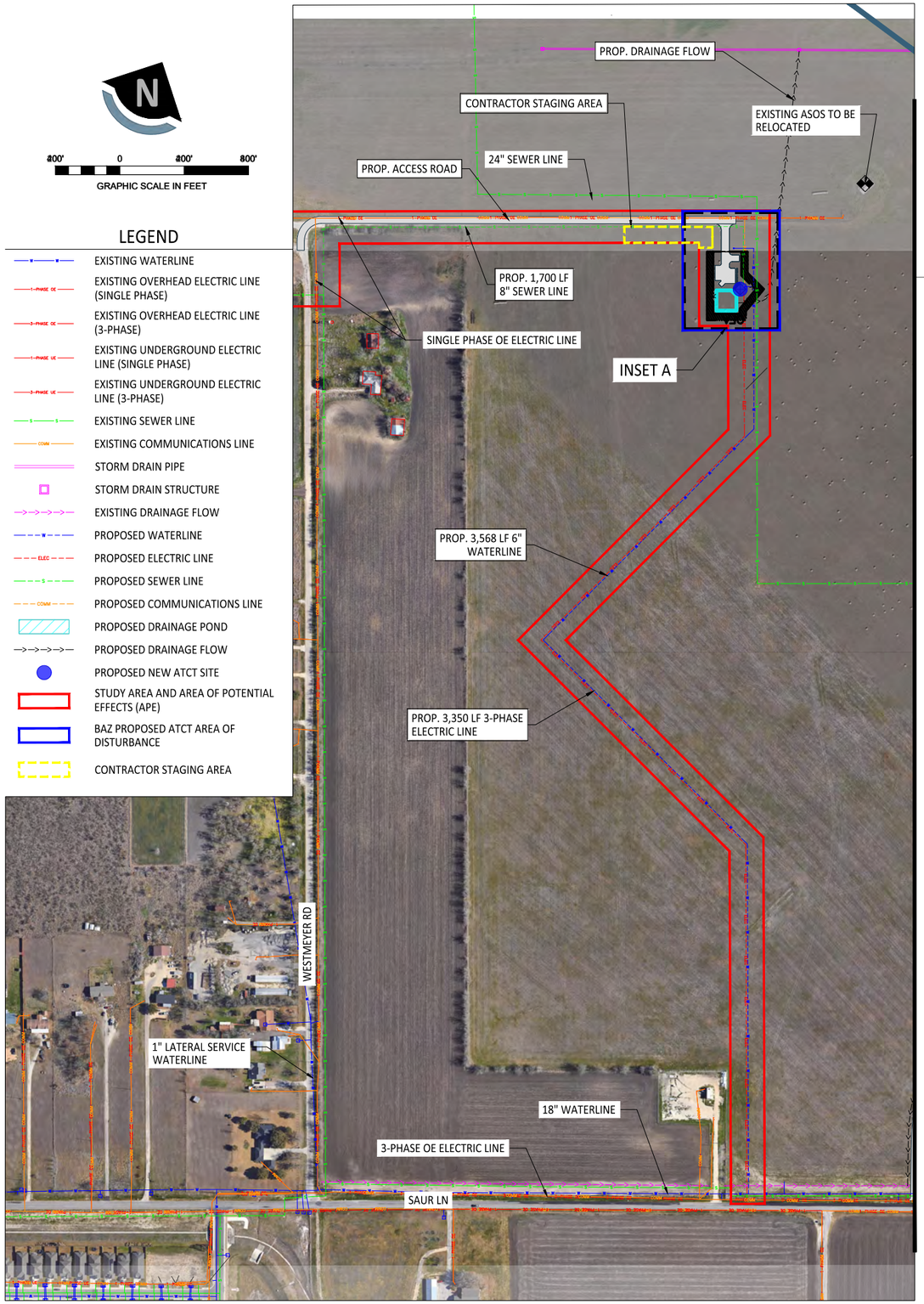
N

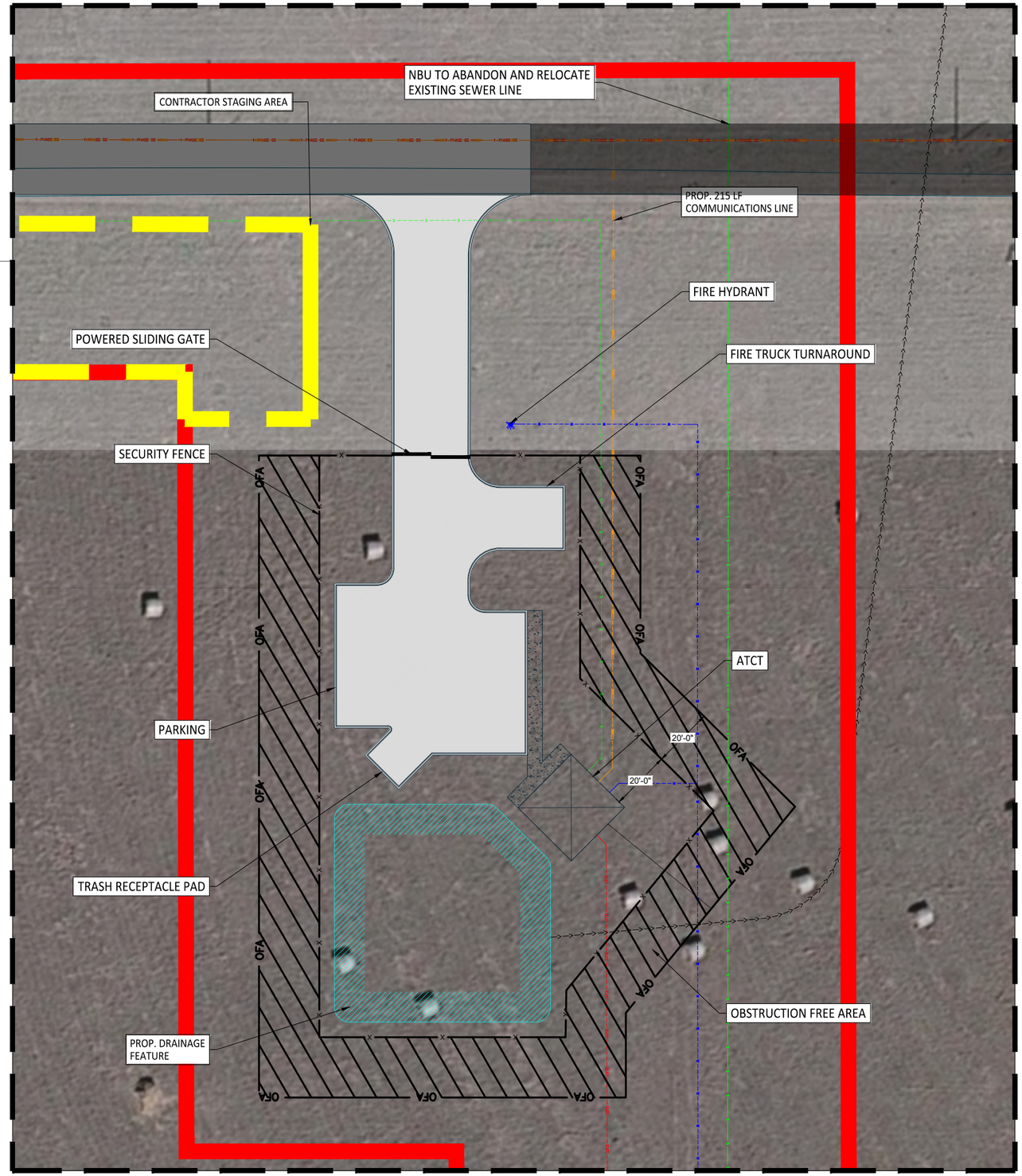
400' 0 400' 800'

GRAPHIC SCALE IN FEET

LEGEND

- EXISTING WATERLINE
- EXISTING OVERHEAD ELECTRIC LINE (SINGLE PHASE)
- EXISTING OVERHEAD ELECTRIC LINE (3-PHASE)
- EXISTING UNDERGROUND ELECTRIC LINE (SINGLE PHASE)
- EXISTING UNDERGROUND ELECTRIC LINE (3-PHASE)
- EXISTING SEWER LINE
- EXISTING COMMUNICATIONS LINE
- STORM DRAIN PIPE
- STORM DRAIN STRUCTURE
- EXISTING DRAINAGE FLOW
- PROPOSED WATERLINE
- PROPOSED ELECTRIC LINE
- PROPOSED SEWER LINE
- PROPOSED COMMUNICATIONS LINE
- PROPOSED DRAINAGE POND
- PROPOSED DRAINAGE FLOW
- PROPOSED NEW ATCT SITE
- STUDY AREA AND AREA OF POTENTIAL EFFECTS (APE)
- BAZ PROPOSED ATCT AREA OF DISTURBANCE
- CONTRACTOR STAGING AREA





INSET A
SCALE: 1" = 20'

Exhibit 3.1: PROPOSED LAYOUT OF REPLACEMENT TOWER FACILITY SITE

3.2 ALTERNATIVE 1: PROPOSED ACTION (PREFERRED ALTERNATIVE)

The Proposed Action will be developed on the site that was deemed the most technically feasible of all sites evaluated during the ATCT siting process as described by Order 6480.4B: *Airport Traffic Control Siting Process*. The following actions will be included in the Proposed Action:

- Construction and operation of a new ATCT,
- Extension of access roads and utilities to the relocated ATCT.
- Commissioning of the new ATCT, cutover (meaning transition and relocation) of air traffic services to the new ATCT, and decommissioning of the existing ATCT.
- Contractor staging area during construction of the new ATCT.
- Relocation of the ASOS, the Airport will coordinate the relocation of the ASOS with NOAA.
- Disposal of the cab equipment of the existing ATCT facility and associated infrastructure.
- Demolition of the existing ATCT following the completion of construction for the new ATCT.

The site is approximately 4,500 feet northwest of the existing ATCT. The site provides an unobstructed view of all the current and future runways, taxiways, and planned passenger terminal. This site is the closest location to the intersections of Runway 17/35 and 13/31. This location allows a lower height than the other suggested alternatives. The site is set back approximately 1,030 feet from Runway 13/31 centerline. Due to the location of the new ATCT the ASOS will have to be relocated, and those impacts will also be addressed in this EA. Contractor staging areas will remain in the APE located just west of the new ATCT (as demonstrated in **Exhibit 3.1**). This site meets all the Terminal Instrument Procedures (TERPS) requirements and is deemed viable and selected as one of the preferred sites. A graphical depiction of the site layout, road extensions, utilities, etc. is available in **Exhibit 3.1**.

Site Location and Description

Latitude: 29° -42’ -32.53” N

Longitude: 98° -02’ -50.77” W

Site Elevation: 651’ MSL

Cab Eye Level: 110’ AGL (766’ MSL)

Overall Structure Height: 145’ AGL (796’ MSL)

Proposed size of parcel: 2 acres

3.3 ALTERNATIVE 2: NO ACTION

A No Action Alternative is required to be included in this EA in accordance with FAA Order 1050.1F *Environmental Impacts: Policies and Procedures*. The No Action Alternative is defined as maintaining the status quo (baseline conditions) without federal agency involvement. The No Action Alternative is used to evaluate the effects of not replacing the ATCT and provides a benchmark against which

other alternatives may be evaluated. Therefore, for purposes of comparative analysis in this EA, the No Action Alternative represents the conditions that would be anticipated if Alternative 1 (Proposed Action) were not implemented.

This section left blank intentionally

SECTION 4 | AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This Section provides the documentation of existing environmental resource conditions or affected environment at BAZ and the surrounding areas. This section also analyzes the anticipated environmental consequences from each alternative for each resource category.[3]

In its IIJA ATCT Final PEA and FONSI/ROD, the FAA identified and analyzed potential environmental impacts for ATCT replacement activities nationwide. This programmatic approach allows the FAA to "tier off" the programmatic review and assess project-specific details and potential impacts during the planning and site selection process for those ATCT projects within the scope of the PEA analysis. See Section 3-2 of FAA Order 1050.1F for more information on Programmatic NEPA documents and tiering.

4.2 RESOURCE CATEGORIES PREVIOUSLY CLEARED BY IIJA ATCT FINAL PEA

The FONSI/ROD in the IIJA ATCT Final PEA identified several resource categories as having "no significant impact" (FAA, 2023). The following resource categories were reviewed for project-specific impacts and were determined to be consistent with the PEA in that no significant impacts are anticipated.

☒ Air Quality
☒ Climate[4]
☒ Farmlands
☒ Hazardous Materials, Solid Waste, and Pollution Prevention

[3] FAA Order 1050.1F requires agency NEPA documents to contain an analysis of the Proposed Action's impacts as they relate to Environmental Justice, as well as the Proposed Action's overall "Cumulative Impacts." With respect to Environmental Justice, it is no longer the policy of the federal government to conduct environmental justice analyses and it is no longer a legal requirement to do so, pursuant to Executive Order 14,173, Ending Illegal Discrimination and Restoring Merit-Based Opportunity. With respect to "Cumulative Impacts," the underlying basis for its inclusion in FAA Order 1050.1F was its inclusion in the Council for Environmental Quality's now-rescinded NEPA-implementing regulations. The NEPA statute, as amended, does not employ the term "cumulative effects" or "cumulative impacts." Agencies are to only consider the proposed action at hand and that action's reasonably foreseeable effects, consistent with NEPA. See 42 U.S.C. § 4332(2)(C)(i). See also Seven Cnty. Infrastructure Coal. v. Eagle Cnty., Colo., 605 U.S. __, 145 S. Ct. 1497, 1513 (2025). In accordance with this direction, the FAA will no longer characterize effects as "cumulative" in its NEPA documents. Further, the FAA previously found in the corresponding FONSI/ROD for the IIJA ATCT Final PEA that replacing existing ATCTs under this program "is not anticipated to result in significant cumulative impacts." Therefore, this concept is not discussed further in this EA.

[4] Consistent with FAA Order 1050.1F, the IIJA ATCT Final PEA includes an assessment of climate impacts. To the extent the IIJA ATCT Final PEA considers information inconsistent with Executive Order 14154, Unleashing American Energy, and Office of Management and Budget guidance (OMB memorandum M-25-27, dated May 5, 2025), the FAA does not consider that information in this EA.

☒ Land Use
☒ Natural Resources and Energy Supply
☒ Noise
☒ Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks[5]

4.3 RESOURCE CATEGORIES REQUIRING SITE-SPECIFIC ANALYSIS PER THE IIJA ATCT FINAL PEA

The IIJA ATCT Final PEA was able to identify multiple resource categories that were unlikely to have significant impacts; however, there are some that require a site-specific analysis (FAA, 2023). In accordance with this guidance, there are several resource categories this EA will review:

- Biological Resources: This EA includes a description of the existing environment and potential environmental consequences for biological resources. **Section 4.3.1** demonstrates the site-specific environment for biological resources.
- Coastal Resources: This EA includes a description of the existing environment and potential environmental consequences for coastal resources regulated by the National Oceanic and Atmospheric Administration (NOAA) under the Coastal Zone Management Act (CZMA) (16 U.S.C. §§ 1451 et. Seq.). **Section 4.3.2** demonstrates the site-specific environment for Coastal Resources.
- DOT Act, Section 4(f): This EA includes a description of the existing environment and potential environmental impacts to park and recreational lands, wildlife and waterfowl refuges, and historic properties on or near the New Braunfels National Airport. **Section 4.3.3** provides an analysis of the site-specific environment in accordance with DOT Act, Section 4(f).
- Historical Architectural, Archeological, and Cultural Resources: This EA includes a description of the existing environment and potential environmental consequences for historic and cultural resources in or near the vicinity of the project area. **Section 4.3.4** provides an analysis of site-specific environments for historical, archeological, and cultural resources.
- Visual Effects: This EA includes a description of the existing environment and potential environmental consequences for visual effects. **Section 4.3.5** demonstrates the site-specific environment of visual effects.

[5] Consistent with FAA Order 1050.1F, the IIJA ATCT Final PEA includes an assessment of environmental justice. To the extent the IIJA ATCT Final PEA considers information inconsistent with Executive Order 14154, Unleashing American Energy, and Office of Management and Budget guidance (OMB memorandum M-25-27, dated May 5, 2025), the FAA does not consider that information in this EA.

- Water Resources: This EA includes a description of the existing environment and potential environmental consequences for water resources. **Section 4.3.6** demonstrates the site-specific environment of water resources.

Regulatory requirements for this EA can be reviewed in more detail in the IIJA ATCT Final PEA.

4.3.1 Biological Resources (Including Fish, Wildlife, and Plants)

Biological resources include native plants, animals, and their habitats. Protected and sensitive biological resources include federally listed (endangered[6] or threatened[7]), and candidate[8] species designated by the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), or a State. Sensitive habitats described in this section include those areas designated by the USFWS as critical habitat[9] protected by the Endangered Species Act of 1973 (ESA; 16 U.S.C. § 1531 et seq.).

Biotic Communities

To control loss of wildlife, and to coordinate planning, development, maintenance and coordination of wildlife conservation and rehabilitation, Congress created the Fish and Wildlife Coordination Act (FWCA) (16 U.S.C. 661). Coordination with appropriate agencies is required if a proposed action has the potential to affect or eliminate potential wildlife habitat.

The United States Fish and Wildlife Service (USFWS), Texas Parks and Wildlife Department (TPWD), and the Austin Ecological Services Field Office were contacted to determine if biotic communities in the Airport environs are present in the project area. Species occurrence data from TPWD and USFWS were reviewed prior to field investigation.

The biotic communities present are a maintained herbaceous area west of the airport runway and north of the project-specific site. No unique or rare habitats were identified during field studies.

---

6 Endangered species are "any species which is in danger of extinction throughout all or a significant portion of its range" (ESA, Section 3(6))

7 Threatened species are "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range" (ESA, Section 3(20))

8 Candidate species are any species whose status is under review "to determine whether it warrants listing under the ESA" (ESA, Section 4)

9 Critical habitat refers to "(i) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 4 of this Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 4 of this Act, upon a determination by the Secretary that such areas are essential for the conservation of the species." (ESA, Section 3(5)(A))

Threatened and Endangered Species

The term "endangered species" refers to any species that is in danger of extinction throughout all or a portion of its range. The term "threatened species" refers to those species that are likely to become endangered within the foreseeable future.

The Endangered Species Act of 1973, specifically in Section 7, requires that all federal agencies consult with the U.S. Fish and Wildlife Service regarding any federal action that may affect a federally listed species. This requirement applies to all federal land management decisions and actions. Such consultations sometimes require the preparation of a biological evaluation or assessment by the agency taking the federal action. (ESA, 1973).

4.3.1.1 Affected Environment

Vegetation

The study area is comprised of an herbaceous layer that is composed of Bermuda grass (*Cynodon dactylon*), geranium, (*Geranium sp.),* white clover (*Trifolium repens*), and vetch (*Vicia sp*.). The proposed action is located on Branyon clay, with a 0 to 1 percent slope. Vegetation ranges from approximately 2 inches to 5 inches in height, and coverage within the community ranges from approximately 90 to 95 percent. A two-track road, consisting of gravel is in the vicinity of the area, allowing for maintenance vehicles to access that portion of the airfield as well as the ASOS.

Wildlife and Fish

Due to the routine mowing, and limited height of vegetation within the construction area, many wildlife species do not use the area as a permanent habitat. It should be noted that on-going human activity exists at that location due to the ASOS being located in the vicinity. It is not likely that the proposed ATCT site would be used as a permanent or long-term habitat.

Special Status Species

Table 4-1. Federally Listed Species

Common Name	Scientific Name	County Listed Status	Study Area Status
Tricolored Bat	*Perimyotis subflavus*	Proposed Endangered	No effect
Piping Plover	*Charadrius melodus*	Threatened	No effect
Rufa Red Knot	*Calidris canutus rufa*	Threatened	No effect
Whooping Crane	*Grus americana*	Endangered	No effect
False Spike	*Fusconaia mitchelli*	Proposed Endangered	No effect
Guadalupe Orb	*Cyclonais necki*	Proposed Endangered	No effect
Monarch Butterfly	*Danaus Plexippus*	Candidate	No effect

Source: (USFWS, March 2024)

Tricolored Bat

No critical habitat has been designated for this species.

Trees and artificial roots are the preferred habitat for this species, and there are currently none present within the project area. Suitable habitat for this species is not present within the project area, therefore, it is likely there will be no effects to the tricolored bat as a result of the proposed action.

Piping Plover / Rufa Red Knot

The USFWS IPaC report states that potential impacts to the piping plover and rufa red knot should only be considered for wind related projects that occur within the migratory routes of the species. The proposed project is not wind-related; therefore, these types of species were not addressed in this report.

Whooping Crane

According to the USFWS IPaC report, a critical habitat has been identified for this species. However, the current project area does not overlap the critical habitat.

False Spike

No critical habitat has been proposed for this species, and the current project area does not overlap the proposed critical habitat.

Guadalupe Orb

No critical habitat has been proposed for this species, and the current project area does not overlap the proposed critical habitat.

Monarch Butterfly

The monarch butterfly is currently a candidate for listing; therefore, no critical habitat has been designated for this species within the project area.

Monarch butterflies require a diversity of blooming nectar resources, along with embedded milkweeds for oviposition and larval feeding. No habitat was identified within the project area.

Migratory Bird Treaty Act

The project has the potential to affect birds protected by the Migratory Bird Treaty Act (MBTA) due to the presence of mixed-grass vegetation communities that may be used by migratory birds for nesting.

4.3.1.2 Environmental Consequences

Guidance on significance thresholds and effects determinations for biological resource impacts can be reviewed in the IIJA ATCT Final PEA and the FAA Order 1050.1F Desk Reference, Section 2.3.1 (FAA, 2020a).

Alternative 1: Proposed Action

The Preferred Alternative is expected to have no effect on federally listed threatened and endangered species.

Construction of the proposed new ATCT at site 2, as illustrated in **Exhibit 3.1** in **Section 3.2**, could result in minimal effects to biological resources from construction traffic and removal of vegetation. Although much of the vegetation in Site 2 is common or non-native, insects, birds, and small wildlife that could have to find new habitat to hunt and feed once it is cleared and constructed. However, the area is surrounded by a similar habitat that could accommodate the species should they need to be relocated due to the proposed new ATCT.

The USFWS and TPWD were contacted to determine if biological resources in the Airport environs are present in the project area. Biological resources were obtained and reviewed utilizing the USFWS Information for Planning and Consultation (IPaC) reporting system. The USFWS IPaC identified threatened and endangered species list for the specific project area. The USFWS sent a consistency letter of determination to the Sponsor that recommended a Biological Assessment of the study area to determine whether the project may affect listed or proposed species or designated critical habitats. The assessment determined that there would be no impact to threatened or endangered species as a result of the Proposed Action. In addition, no critical habitats were identified in the study area. The Threatened and Endangered Species Assessment is attached as **Appendix A: Siting Report**, and is located in **Appendix G: Environmental Documentation** within the Siting Report.

With respect to potential impacts to migratory birds, although the project site is regularly maintained and mowed, if site disturbance is initiated during the nesting season, between February 1 and August 31, a nest survey will be completed. Inactive nests should be removed and discarded in accordance with the USFWS and TPWD requirements. Should any active nests be identified, they will be avoided and protected by installing construction fence with a 30-meter buffer around the nest(s). Marked nests will not be disturbed until the nestlings have fledged.

In sum, the Proposed Action would not result in significant impacts to biological resources.

Alternative 2: No Action Alternative

Under the No Action Alternative, the current ATCT would not be removed and replaced, and activities associated with the ATCT would remain the same. No impacts to existing biological resources would occur.

4.3.1.3 Best Management Practices (BMPs)

BMPs that prevent or reduce habitat loss, disturbance of wildlife species, and erosion and runoff to habitat and water bodies would help preclude impacts to biological resources. Adherence to state guidelines to reduce threats to local fauna could offset potential impacts from introducing or spreading noxious weeds.

4.3.2 Coastal Resources

The subject property is located approximately 110 miles from the nearest coastal resource. The Airport is not located within or near the Coastal Zone Management Boundary (CZMB) in the state of Texas. Therefore, this resource category does not require detailed analysis within this EA.

4.3.2.1 Environmental Consequences

More information on significance thresholds and effects determinations for coastal resource impacts can be reviewed in the IIJA ATCT Final PEA and the FAA Order 1050.1F Desk Reference, Section 3.3.4 (FAA, 2020a).

4.3.3 Department of Transportation Act, Section 4(f)

Section 4(f) of the U.S. Department of Transportation (DOT) Act of 1966 (codified in 49 U.S.C. § 303 and 23 U.S.C. §138) applies to projects that receive from or require approval by agencies within the DOT. This act considers properties of local, state, and/or national significance during transportation project development, such as public-owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites.

Before approving a transportation project requiring the use of these properties, the DOT agency must determine that there is no feasible and prudent alternative to using that land and the project includes all possible planning to minimize harm resulting from the use (FAA, 2020a).

The property currently proposed for construction under the proposed alternative is owned and maintained by BAZ and has not been designated as or qualifies as a Section 4(f) property. In addition, the closest Section 4(f) property is located approximately 2 miles from the project area. Therefore, this resource category does not require detailed analysis within this EA.

4.3.3.1 Environmental Consequences

More information on significance thresholds and effects determinations for Section 4(f) impacts can be reviewed in the IIJA ATCT Final PEA and the FAA Order 1050.1F Desk Reference, Section 5.3.7 (FAA, 2020a).

4.3.4 Historical, Architectural, Archeological, and Cultural Resources

Authorized by the National Historic Preservation Act of 1966 (54 U.S.C. § 300101 et seq.), the National Parks Service's National Register of Historic Places (NRHP) is a national program that coordinates and supports the effort to identify, evaluate, and protect America's historic and archeological resources. This Act also established the Advisory Council on Historic Preservation to advise the President and Congress on historic preservation materials, to recommend coordination on historic preservation, and to comment on federal actions affecting these properties included, or eligible, in the NRHP. The NRHP is the official list of important historic and prehistoric resources. The Archaeological and Historic Preservation Act of 1974 (54 U.S.C. §§ 312501-312508) requires the survey, recovery, and preservation of significant and prehistoric data that may be destroyed or irreparably lost because of a federal, federally funded, or federally licensed project.

Historic, architectural, archeological, and cultural resources are structures, buildings, sites, districts, or objects associated with important historical people, events, construction, or design associated with a historically significant movement, or with the potential to yield historic or prehistoric data, that are considered to a culture, a subculture, or a community for scientific,

religious, traditional, or other reasons (NPS, 1997). Historic and cultural resources can be divided into further categories: Architectural resources, Archeological resources, Native resources, and Traditional Cultural Properties (TCPs).

4.3.4.1 Affected Environment

All documents curated were done in association with the Texas Archeological Research Laboratory in Austin, Texas. Based on research from the Texas Archeological Site Atlas database and literature search, the proposed project area will not impact any previously recorded archeological sites or other recorded cultural resources. The National Register of Historic Places indicated no recorded archeological sites or historic properties that would be affected by the proposed action, there are also no historical or cultural resources adjacent to the proposed project.

In accordance with applicable federal laws and regulations, the Sponsor evaluated the proposed alternatives and APE for historic and cultural resources. The APE is "the geographic area or areas within which an undertaking may directly or indirectly cause alternations in the character or use of historic properties, if any such properties exist." (36 CFR § 800.16 (d)). The Sponsor assessed previously identified cultural resources within the APE and the potential for unidentified resources for each alternative. An intensive pedestrian cultural resources survey was conducted. Furthermore, a cultural resource survey was conducted to identify properties eligible for inclusion in the NRHP or listing as a State Antiquities Landmark. A total of two shovel tests were excavated across the project area for archeological sites or isolated finds. The cultural resources investigation report is attached as **Appendix A: Siting Report** and is located in **Appendix G: Environmental Documentation** within the Siting Report.

Actions that have the potential to affect historic and cultural resources typically involve construction, ground disturbance, or modification of a historic property or a property in the viewshed of a historic property or district. Other effects to consider include noise, vibration, lighting, and increased traffic. Because all actions with the potential to affect historic and cultural resources will occur within the project area, the APE is defined as the area shown on **Exhibit 1.2.** The existing ATCT was constructed in 2007 (less than 45 years old) and became a part of the FAA FCT program in 2018. It is a freestanding structure and is approximately 57 feet above ground level (AGL) to the cab, and 75 feet AGL to the top of the structure (not including antennas).

4.3.4.2 Environmental Consequences

The Sponsor, at the direction of the FAA, initiated consultation with the Texas Historical Commission (THC), which functions as the Texas's State Historic Preservation Office, to determine whether the implementation of the proposed action would adversely affect known historical sites or archeological sites. THC determined that there were no historic properties present or affected by the project, as well as no archeological comments that would affect the project. THC concurrence is included in **Appendix B.**

More information on significance thresholds and effects determinations for historical, architectural, archeological, and cultural resource impacts can be reviewed in the IIJA ATCT Final PEA and the FAA Order 1050.1F Desk Reference, Section 8.3.1 (FAA, 2020a).

Alternative 1: Proposed Action

The proposed action is not expected to impact any undiscovered archeological resources since the preferred alternative is not considered a high-probability area associated with prehistoric sites. In fact, a total of two (2) shovel tests were excavated within the project area, and no archeological sites or isolated finds were identified in the survey of these two soil profiles. However, should construction associated with the specific project area unearth any archeological resources, the provisions of emergency discovery as defined by THC would apply, and the cognizant agencies would be contacted. There are no significant impacts upon historic, architectural, archaeological, or cultural resources anticipated due to implementation of the proposed action. Mitigation measures may be required for unanticipated discoveries and will be coordinated with THC if required.

Alternative 2: No Action Alternative

Under the No Action Alternative, the current ATCT would not be removed and replaced, and activities associated with the ATCT would remain the same. No impacts to existing historical, architectural, archaeological, and cultural resources would occur.

4.3.4.3 Unanticipated Discoveries

Should there be an unanticipated discovery of cultural resources during project implementation, activities would immediately stop around the resource (FAA, 2020a). The resources would then be protected, and in compliance with applicable laws and regulations, the Sponsor would consult with THC on the discovery. The Sponsor would then consider the recommendations made by THC, conduct appropriate actions, and provide a report of those actions after they are complete (36 CFR § 800.13).

4.3.5 Visual Effects

Light emissions, and visual resources/character fall under the two categories of visual effects. Light emissions from outdoor lighting in streets, businesses, homes, and parking lots affect the darkness of the night sky, particularly in rural and more remote areas where fewer light sources are present. Visual character is the overall description of an area, such as rural, farmland, urban, coastland, or mountainous (FAA, 2020a).

4.3.5.1 Affected Environment

The Preferred Alternative is located on existing airport property and is located within the city limits of New Braunfels, Texas. The proposed site is located on the west side of the airfield and the only source of light comes from the existing ASOS. The proposed site is located approximately 0.30 miles away from the airport boundary. The site is adjacent to Westmeyer Road which has houses and street lighting.

Light Emission

The proposed ATCT site is located within the existing airport property. The proposed ATCT site and associated roads and parking will be lighted on the same schedule as the existing ATCT and parking. Airport facilities remain lit for safety and security purposes.

Visual Resources and Visual Character

Visual characteristics of the immediate area include a mowed and maintained grassy area, runways, and ASOS facility. The current area primarily consists of unimproved land to the north, south, and west. The east side of the proposed area is developed for airside facilities such as the runway and taxiway systems. An Airport Road and ASOS system is located just north of the proposed project area.

4.3.5.2 Environmental Consequences

More information on significance thresholds and effects determinations for visual effect impacts can be reviewed in the IIJA ATCT Final PEA and the FAA Order 1050.1F Desk Reference, Section 13.3.3 (FAA, 2020a).

Alternative 1: Proposed Action

The Preferred Alternative includes the construction of a proposed new ATCT on undeveloped, unlit land that is adjacent to a mowed vegetated area. Construction of the proposed new ATCT, parking lot, and access road will not introduce additional light emissions to the Airport.

The property surrounding the entirety of the proposed new ATCT is comprised of open property, owned and controlled by the airport and used for agricultural production (hay). In addition, several residential properties are located west and south of the proposed structure. The identified residential properties located along Westmeyer Road and Saur Lane fall between 1,700 and 4,000 feet from the proposed structure location, slightly closer in distance than where the properties are in relation to the current ATCT. Thus, significant visual impacts, including light emissions, glare, and viewshed are not anticipated as a result of the proposed ATCT construction.

Construction of the proposed new ATCT and removal of the existing ATCT would not affect or obstruct airport resources. Construction would occur during the daytime and no additional nighttime lights would be required. Replacement of the existing ATCT with a proposed new ATCT will result in minimal if any, effects on visual resources.

Alternative 2: No Action Alternative

Under the No Action Alternative, the current ATCT would not be removed and replaced, and activities associated with the ATCT would remain the same. No impacts to existing visual effects would occur.

4.3.6 Water Resources

Water resources include floodplains, surface water, groundwater, and wild and scenic rivers. These resources provide irrigation, drinking water and other water resources for communities, in addition to recreation and transportation opportunities, and habitat for vegetation and wildlife species.

4.3.6.1 Affected Environment

Wetlands

There are no wetlands present within the entirety of the New Braunfels National Airport property. This means there are no wetlands impacting the proposed project area. National Wetland Inventory (NWI) maps do not show any wetlands mapped within the project area. Wetlands in the vicinity of the Airport can be found in **Exhibit 4.1.**

Floodplains

Executive Order 11988, Floodplain Management (Exec. Or. 11988, 42 Red. Reg. 26351, May 25, 1977) and U.S. DOT Order 5650.2, Floodplain Management and Protection, requires that all federally funded actions must avoid floodplains if a "practicable alternative" is available. Floodplains are considered to be low-lying areas that are discussed in percent likelihood of inundation occurring within one year. Therefore, an area that has a 1% chance of inundation is referred to as the "base flood" or, more commonly, the "100-year" flood. The Federal Emergency Management Agency (FEMA) is the agency responsible for flood plain regulations. The nearest stream, Alligator Creek, runs northeast of BAZ property and creates Zone AE and Zone X in the vicinity of the Airport. Zone AE is designated as a special flood hazard area subject to inundation by the 1% annual chance of flood and has base flood elevations determined. Within this zone there is a floodway area over Alligator Creek, a floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights. The proposed action will not impede on any of the designated floodplains.

The proposed action falls within Zone X, which is an area determined to be outside of the 0.2% annual chance floodplain.

Exhibit 4.1 shows the associated floodplains for the APE, which were retrieved from the FEMA National Flood Hazard Layer (NFHL) Viewer.

Surface Water

There is no surface water present within the proposed ATCT construction area. The nearest stream, Alligator Creek, runs parallel to the northeast portion of the BAZ property. This area of interest can be found in **Exhibit 4.1.**

Groundwater

Wetland hydrology is not present in the proposed ATCT construction area.

Wild and Scenic Rivers

The proposed project area is located approximately 250 miles east of the closest Wild and Scenic River in Texas and is not discussed further.

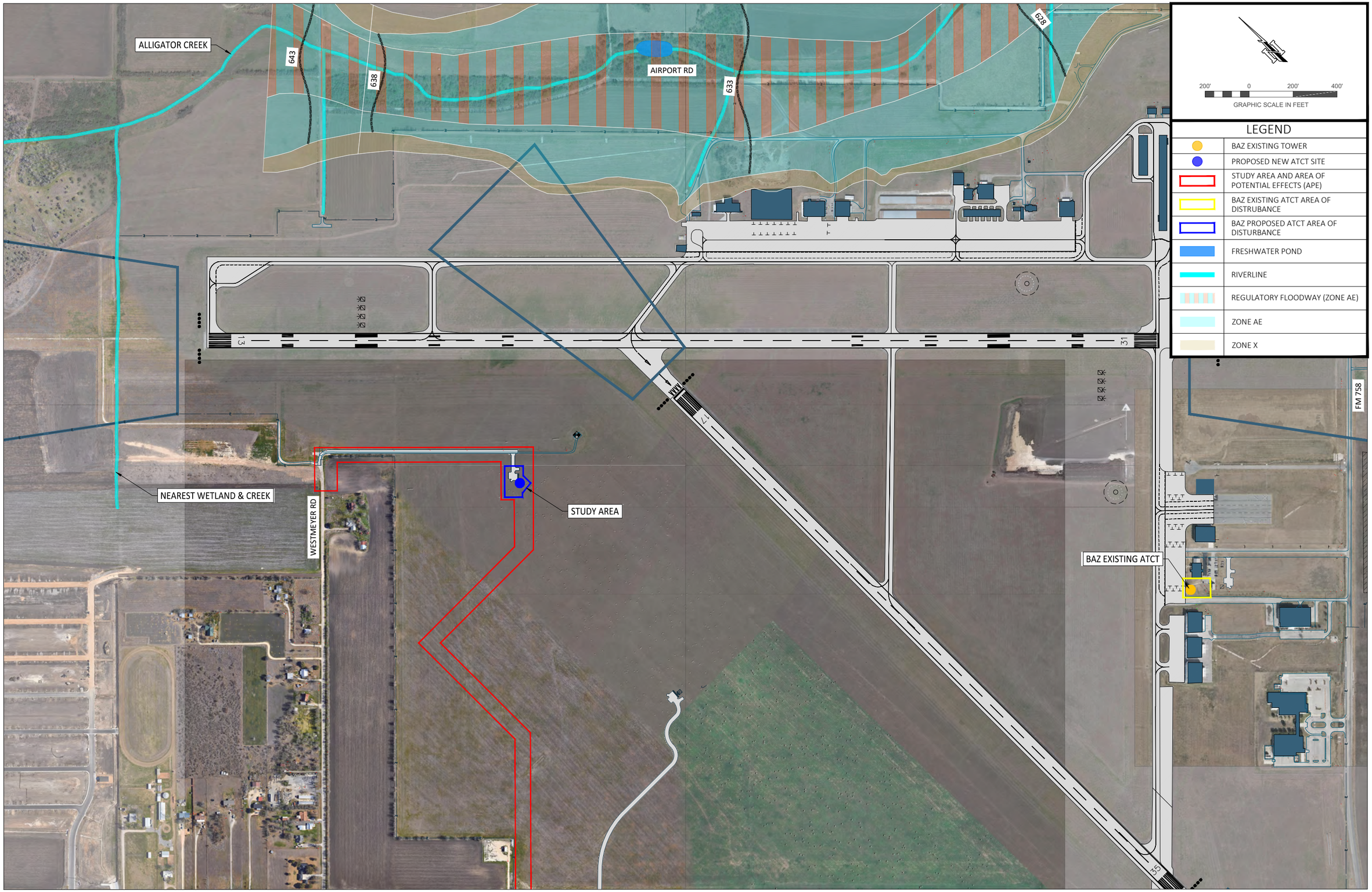


Exhibit 4.1: AERIAL IMAGE OF WETLANDS AND SURFACE WATER FEATURES NEAR BAZ AIRPORT

4.3.6.2 Environmental Consequences

More information on significance thresholds and effects determinations for water resource impacts can be reviewed in the IIJA ATCT Final PEA and the FAA Order 1050.1F Desk Reference, Sections 14.1.3 through 14.5.3.1 (FAA, 2020a).

Alternative 1: Proposed Action

The proposed action will not impact the floodplain, wetlands, surface water, ground water, or Wild and Scenic Rivers as a result of the project.

Alternative 2: No Action Alternative

Under the No Action Alternative, the current ATCT would not be removed and replaced, and activities associated with the ATCT would remain the same. No impacts to existing water resources would occur.

This section left blank intentionally

SECTION 5 | PUBLIC INVOLVEMENT

5.1 INTRODUCTION

The Sponsor has provided a 508-compliant electronic copy of this EA for review on the City of New Braunfels website at: https://newbraunfels.gov/3488/Airport. A hardcopy was also available for in-person review at the New Braunfels National Airport Terminal Building, 2333 FM 758, New Braunfels, TX 78130, and the City of New Braunfels City Hall, 550 Landa Street, New Braunfels, TX 78130. Comments were submitted to Michael Mitchell with KSA Engineers.

5.2 PUBLIC NOTICE OF AVAILABILITY

To comply with FAA requirements, a formal notice was published in the New Braunfels Herald-Zeitung announcing the publication of the Draft EA and a 30-day public comment period in the English paper of record. Dates of publication on the notice were Wednesday, July 16th, 2025, and Wednesday, July 30th, 2025. (See Appendix C)

The public comment period for the Draft EA ended on August 15, 2025. TxDOT, FAA, and the Sponsor, reviewed comments received from email at mmitchell@ksaeng.com. Only one (1) comment was received and there was not a request for a public meeting. Table 5.1 provides a summary of the comment and the response. **Appendix C** includes the comment (in its entirety) received on the Draft EA, as well as the tear sheet and signed affidavit of the formal posting for the Draft EA public comment period in the New Braunfels Herald-Zeitung.

Table 5-1. Comments Received on the Draft EA

Comment Received	Sponsor Response
Commentor supports the construction of the ATCT as quickly as possible due to the deteriorating physical condition, and the lack of visibility for controllers to see aircraft on the ground that are departing Runway 13 at Taxiway B or aircraft approach Runways 13 and Runway 17. The commentor is also requesting consideration for the installation of FAA Weather cameras connecting to their national reporting network be installed during construction of the new tower.	Thank you for your comments in support of the ATCT project. The installation of FAA weather cameras is not part of this project's scope of work or cost associated with design and construction; however, its feasibility will be discussed during the design of the ATCT.

SECTION 6 | LIST OF PREPARERS

This EA was prepared by:

TxDOT Aviation per State Block Grant Program MOA

Sana Drissi
Environmental Project Planner

FAA

John McFarlane
Regional Environmental Programs Manager
Planning and Programming Branch
Southwest Region

KSA

Grayson Cox, P.E. – Project Manager/Civil Engineer
16 years of experience

Michael Mitchell, Ed. D, C.M. – Senior Aviation Planner & Environmental Planner
10 years of experience

Elizabeth Burgess, C.M. – Aviation Planner
2 years of experience

SPHERE 3 ENVIRONMENTAL, INC

Adam T Black
B.A., Wildlife Science
32 years of experience

Kerri E. Smith
B.A., Biology
M.S., Biology
25 years of experience

SECTION 7 | REFERENCES

Booz Allen Hamilton International. (2023) *Bipartisan Infrastructure Law (BIL) Airport Traffic Control Tower (ATCT) Replacement Program*. FAA.

EPA. (2024, November). Nonattainment Areas for Criteria Pollutants (Green Book). Retrieved from https://www.epa.gov/green-book.

FAA. (2018). Order 6480.4B: Airport Traffic Control Tower Siting Process. FAA. Retrieved from https://www.faa.gov/documentLibrary/media/Order/FAA_Order_6480.4B.pdf.

FAA. (2023). FAA Order 1050.1F Desk Reference. Retrieved from https://www.faa.gov/media/71921.

FAA IIJA ATCT PEA. (2023). *Final Programmatic Environmental Assessment and Finding of No Significant Impact/Record of Decision for the Bipartisan Infrastructure Law-funded Airport Traffic Control Tower Replacement Program*. Washington, DC: FAA. Retrieved from https://www.faa.gov/sites/faa.gov/files/BIL_ATCT_Final_PEA_21Sept2023_%28signed%29.pdf.

FEMA. (2024, June). *FEMA Flood Map Service Center*. Retrieved from https://msc.fema.gov/portal/search.

Google Earth. (2024, December). https://earth.google.com/web/.

KSA. (2019). *New Braunfels Regional Airport Master Plan*.

National Wild and Scenic River System. (2024, December). *Find a River*. Retrieved from National Wild and Scenic River System: https://www.rivers.gov/map

Texas General Land Office. (2024, February). *Texas General Office GIS Data*. Retrieved from https://data-glo.hub.arcgis.com/datasets/fb1c76bcc2684b6aba4dd2adea987112/explore .

Sphere3. (2024, March). *Cultural Resources Investigation Report.* New Braunfels National Airport Proposed Air Traffic Control Tower 1.

Sphere3. (2024, March). *Cultural Resources Investigation Report.* New Braunfels National Airport Proposed Air Traffic Control Tower 2.

Sphere3. (2024, March). *Cultural Resources Investigation Report.* New Braunfels National Airport Proposed Air Traffic Control Tower 3.

Sphere3. (2024, March). *Threatened and Endangered Species Assessment.* New Braunfels National Airport Proposed Air Traffic Control Tower 1.

Sphere3. (2024, March). *Threatened and Endangered Species Assessment.* New Braunfels National Airport Proposed Air Traffic Control Tower 2.

Sphere3. (2024, March). *Threatened and Endangered Species Assessment.* New Braunfels National Airport Proposed Air Traffic Control Tower 3.

Sphere3. (2024, March). *Wetlands and Other Waters of the United State Assessment.* New Braunfels National Airport Proposed Air Traffic Control Tower 1.

Sphere3. (2024, March). *Wetlands and Other Waters of the United State Assessment.* New Braunfels National Airport Proposed Air Traffic Control Tower 2.

Sphere3. (2024, March). *Wetlands and Other Waters of the United State Assessment.* New Braunfels National Airport Proposed Air Traffic Control Tower 3.

USDA. (2024, December). *Natural Resources Conservation Service*. Retrieved from Web Soil Survey: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

USFWS. (2024, December). *National Wetlands Inventory*. Retrieved from https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/.

USGS. (2024, December). *U.S. Geological Survey Protected Area Database*. Retrieved from https://www.protectedlands.net/map/.

APPENDIX A | AIR TRAFFIC CONTROL SITING REPORT

New Braunfels National Airport (BAZ)

New Braunfels, Texas

Airport Traffic Control Tower Siting Report

December 2024

Submitted to FAA by the City of New Braunfels

NEW BRAUNFELS
NATIONAL AIRPORT

FEDERAL AVIATION ADMINISTRATION

Developed by:

CTBX / A Pond Brand

In association with

KSA

ATCT Siting Report (BAZ)
TABLE OF CONTENTS

ATCT Siting Report (BAZ)

TABLE OF CONTENTS

SUPPLEMENTAL INFORMATION

Executive Summary

The Recommended Site

Site 2 is the recommended location. It is situated on the western side of the airfield, just outside the critical area of the airport Automated Weather Observing System (AWOS). The proposed tower is expected to have eight sides with four (4) roof support columns and a floor area of 440 square feet (excluding the stairwell). This structure can accommodate up to 4 controller positions along with a supervisor. The eye height of the cab will be 115 feet Above Ground Level (AGL) and it will utilize slatwall-type consoles for mounting displays and monitors. Site 2 was selected as the recommended site following the Virtual Immersive Siting Tower Assessment (VISTA) Siting Assessment Panel held on June 25, 2024. It stands out as the optimal location regarding positioning, height, ease of construction, airfield visibility, and overall situational awareness. Site 2 fulfills all FAA VISTA siting criteria and is considered safe based on virtual reality viewing and the FAA VISTA siting criteria and is considered safe based on virtual reality viewing and the FAA Safety Management System (SMS). The proposed tower at this location will offer unobstructed views of all controlled airport surface areas and maximum visibility of airborne traffic. Site 1 was identified as an acceptable backup location. Site 3 was deemed non-viable through the siting assessment process.

Impacts

The impacts resulting from the proposed construction of this Air Traffic Control Tower (ATCT) at Site 2 are as follows:

- No hazards were identified as a result of the FAA VISTA Siting/Safety Assessment Panel on June 25th, 2024.
- There are no identified adverse effects in relation to Terminal Instrument Procedures (TERPS), impacts on navigational aids (NAVAIDs), Line of sight, Part 77, Future airport development, or local weather phenomena that could compromise acceptable visibility.

Site Comparison Chart

Item Description	Site 1			Site 2 Recommended		
Latitude	29°-42'-14.95'' N			29°-42'-32.53" N		
Longitude	98°-02'-53.70" W			98°-02'-50.77" W		
Eye-Level (AGL)	125'			115'		
Eye-Level (AMSL)	775'			766'		
Cab Floor Level (AGL)	120'			110'		
Cab Floor Level (AMSL)	770'			761'		
Top of Tower (AGL) incl air terminals	155'			145'		
Top of Tower (AMSL) incl air terminals	805'			796'		
Surveyed Ground Level (AMSL)	650'			651'		
Maximum Distance (to the farthest point on all runways and taxiways)	4810'			5197'		
2-Point Lateral Discrimination (Deg)	Exceeds Minimum			Exceeds Minimum		
Object Discrimination (Pass/Fail) Front View (Dodge Caravan)	PASS			PASS		
Object Discrimination (Pass/Fail) Front View (C-172)	PASS			PASS		
LOS Angle of Incidence (min 0.80°)	1.38°			1.34°		
ATCT Orientation Primary Direction	East			East		
Airport Quadrant	West			West		
Cab Size (effective floor area)	440 sf			440 sf		
Columns/Mullions	Columns			Columns		
Console Type (traditional, slat wall)	Slat wall			Slat wall		
Land Area (available)	2 acres			2 acres		
Access to ATCT Site (Yes or No)	No			Partial		
Tech Ops Preliminary Review Issues	No Impact			No Impact		
TERPS Impacts	Raises Min			No Impacts		
14 CFR Part 77 Impacts	No Penetration			Penetrate 7:1 by 40'		
Environmental Issues	None			None		
ATCT Potential Impacts on Future & Existing Navaids	No Impacts			Potential Impact on AWOS		
Comparative Cost Estimate	**$ 16,660,360**			**$ 15,708,560**		
Safety Assessment Initial Risk Ranking	**L**	**M**	**H**	**L**	**M**	**H**
	0	0	0	0	0	0
Safety Assessment Predicted Residual Risk Ranking	**L**	**M**	**H**	**L**	**M**	**H**
	0	0	0	0	0	0

APPROVAL AUTHORITIES

BRIAN V THROOP

Digitally signed by BRIAN V THROOP
Date: 2024.12.20 12:53:36 -06'00'

Director of Air Traffic Services, Central Service Area

DOUGLAS E LOCKWOOD II

Digitally signed by DOUGLAS E LOCKWOOD II
Date: 2024.12.20 13:13:20 -06'00'

Director of Technical Services, Central Service Area

MALCOLM ANDREWS

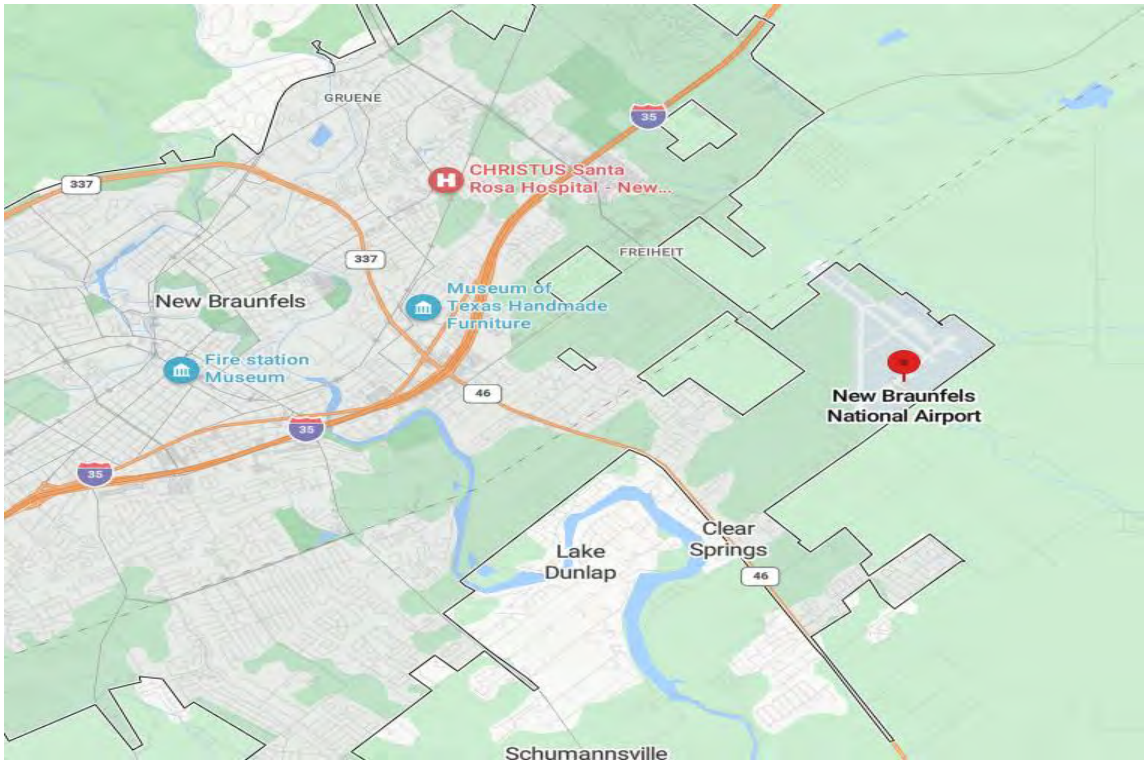
Digitally signed by MALCOLM ANDREWS
Date: 2025.01.27 11:44:57 -05'00'

Director of Facilities & Engineering Services, FAA Headquarters

1. Background Information

1.1 General Information

New Braunfels National Airport (BAZ) is a publicly accessible airport located in the city of New Braunfels, Guadalupe County, Texas. Designated as a general aviation facility by the Federal Aviation Administration's National Plan of Integrated Airport Systems, BAZ serves the general aviation community in south Texas, situated northeast of San Antonio and southwest of Austin. Owned by the city of New Braunfels and strategically positioned east of the city's business district, BAZ plays a crucial role in the local economy. The airport and its lessees provide a wide range of services, including aircraft sales, charter services, flight instruction, fuel provisions, hangar space, airborne ambulance services, and aircraft maintenance. Accessible via Interstate 35 to the northwest and Highway 46W to the southwest, BAZ serves as a key transportation hub in the region.



Vicinity Map of New Braunfels National Airport (↑NORTH)

BAZ is positioned 28 miles northeast of San Antonio International Airport, serving as the closest commercial airport to New Braunfels. Moreover, Stinson Municipal Airport is located 39 miles south of New Braunfels National Airport. Traveling north for 54 miles to

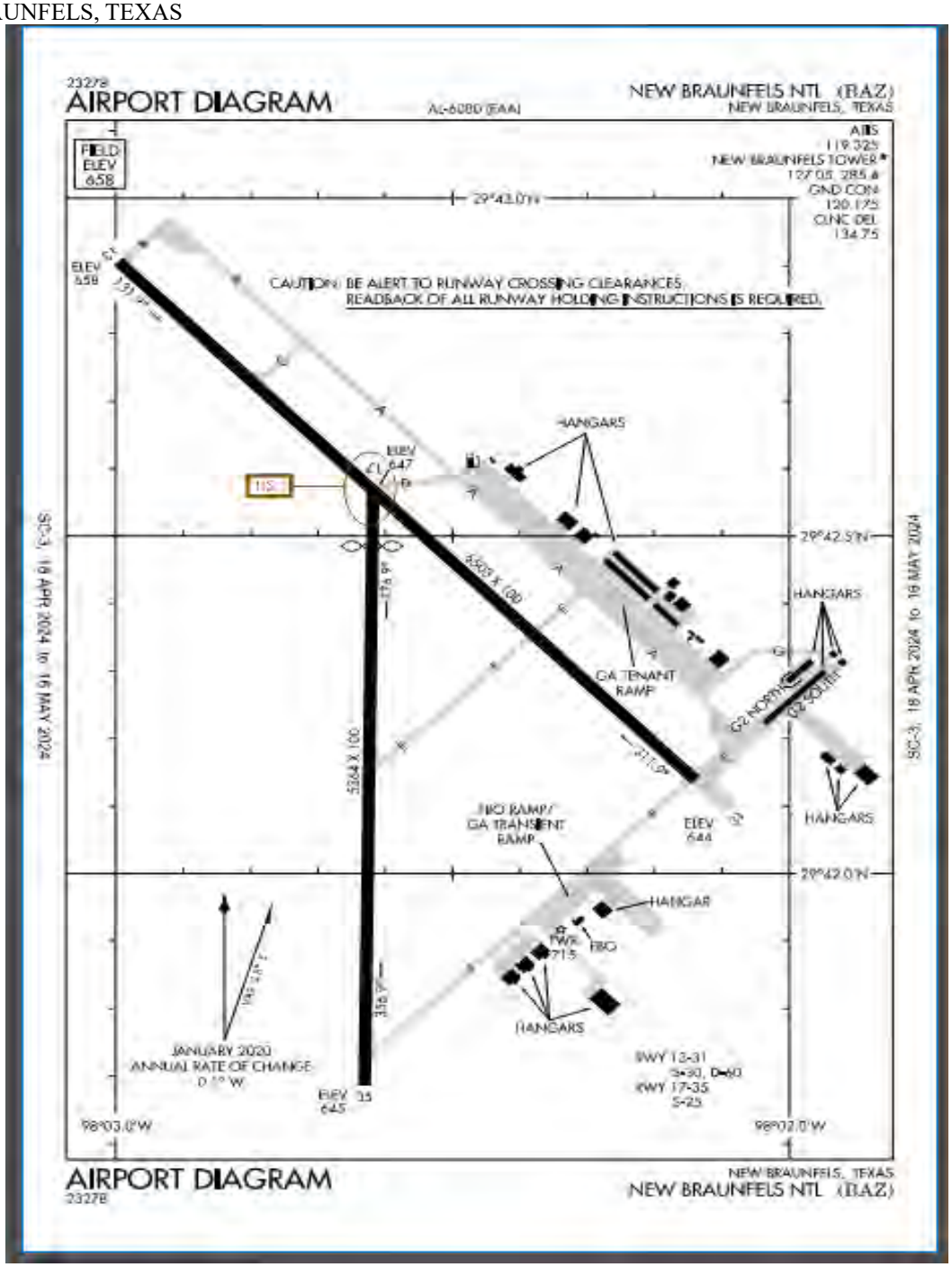
Austin, TX, leads to Austin-Bergstrom International Airport, another notable commercial airport. Additionally, George Bush International Airport is approximately 189 miles to the east. The region also features other general aviation airports such as San Marcos Regional Airport and Lockhart Municipal Airport.

Aeronautical Sectional Chart- New Braunfels, TX Area

BAZ primarily caters to general aviation aircraft, including single-engine, multi-engine, jet airplanes, and helicopters. Approach and departure control services are managed by the Houston Center Air Route Traffic Control Center (ARTCC). In 2023, the airport housed 170 aircraft, consisting of 138 single-engine, 11 multi-engine, 18 jet operations, and 3 helicopters. The airport is equipped with two paved runways and three taxiways to facilitate aircraft access. Larger aircraft at BAZ typically utilize Runway 13-31, while Runway 17-35 is designated for smaller aircraft operations.

BAZ Runway Data

Runway	Dimensions	Proposed
17-35	6503’ X 100’	6503’ X 100’
13-31	5364’ X 100’	6364’ X 100



Airport Diagram- BAZ

Aerial Photo – BAZ (Google Earth) (← North)

1.2 INSTRUMENT APPROACHES & LANDING AIDS

The airport is currently equipped with the following approach and landing aids:

- Precision Approach Path Indicators (4-box) – RW 13 & 31
- Runway Edge Lights (high intensity) – RW 13
- Runway Edge Lights (medium intensity) – RW 13
- Runway End Identifier Lights (REILS) – RW 13

RNAV (GPS) RWY 13
RNAV (GPS) RWY 17
RNAV (GPS) RWY 31
RNAV (GPS) RWY 35
VOR/DME-A

1.3 TRAFFIC PATTERNS & RUNWAY USAGE

According to BAZ Air Traffic Manager (ATM), traffic flow for all runways is normally left traffic. Pattern altitude is assumed at 1000 feet AGL. The percent runway usage is further broken down below into individual runways.

Percent Runway Usage

Runway 13 = 15%	Runway 17 = 40%
Runway 31 = 5%	Runway 35 = 40%

1.4 FAA CONTRACT TOWER

BAZ is a qualified airport in the Federal Aviation Administration's (FAA) Federal Contract Tower (FCT) Program. BAZ entered the Federal Contract Tower program in 2018. The airport's rotating beacon rests on top of the existing tower currently. BAZ's existing tower will be demolished at some point after its new tower is erected. The FCT program provides FAA funding for contract controllers while the Sponsor typically provides the building, ATC equipment, and maintenance.

1.5 PURPOSE OF THIS REPORT

The proposed facility will establish a Visual Flight Rules (VFR) ATCT at the BAZ. In the summer of 2023, the airport sponsor authorized a Notice-to-Proceed to CTBX / A Pond Brand (Atlanta, GA) under a subcontract to KSA Engineers (Longview, TX) to conduct this Siting Study per the VISTA process dated 11/5/2021.

The purpose of this report is to comprehensively document the most suitable location and height for an ATCT, based on the degree to which each siting criterion is met. The primary focus of these considerations is the safety of air traffic operations from the proposed sites. Furthermore, this report considers factors such as the cost of construction, availability of utilities, airport facilities development, and environmental issues. The determination of the ATCT height and site was guided by the requirements outlined by the FAA in the above-referenced documents. The information developed served as the foundation for selecting a Recommended Site, resulting in an FAA-approved Siting Report.

Following the FAA VISTA Siting Process mentioned above, the site selection was provided in compliance with the most recent version of the FAA SMS Manual.

The technical data sources for this study include the most recent Airport Layout Plan (ALP), Google Earth aerial photography, on-site reconnaissance, field survey, the FAA Visibility Tool, a 3D/VR model of the airport, and proposed ATCTs, utilities, access inventory, and preliminary tower design data.

2. SITING CRITERIA

2.1 THE VISTA SITING PROCESS

This Siting Report was prepared per the VISTA process memo dated 11/5/2021. Generally, the minimum height of the facility was first determined by the Line of Sight (LOS) calculated over a distance from the proposed ATCT location to the furthest point of the aircraft movement area ("key point") and then validated relative to the airfield configuration, airport buildings, and other considerations.

The LOS was analyzed to all critical points on the airfield relative to two basic perspectives, that is, (1) from the Air Traffic Control Specialist's (ATCS) eye to each runway and parallel taxiway and (2) from the ATCS's eye to other critical points (such as aircraft aprons and points of entry to the Aircraft Operational Area) relative to hangar/structure development areas that may obstruct the view. The LOS is then validated relative to airfield configuration, airport buildings, and other considerations in the 3D/VR model as experienced in virtual reality by an ATCS familiar with operations at BAZ.

The initial evaluation of BAZ for the siting of an ATCT analysis took into consideration the entire airfield for the study. That exercise resulted in five (5) initial candidate sites based upon factors having the potential for the successful siting and construction of an ATCT. Through the process of elimination for the most desirable locations, two (2) sites were selected for final consideration in this Siting Report. The following is a summary of considerations that were used in this siting analysis:

A. Maximum visibility of airborne traffic patterns and airfield movement surfaces must be available to all ATCS positions. A clear, unobstructed, and direct view of all active runways, taxiways, and landing areas should be available.

B. The site plot must provide sufficient area to accommodate the initial building, emergency generator, exterior transformers, and any planned future improvements, personnel, facility parking, etc. as prescribed by facility requirements.

C. Analyze Airport Planning Standards - Identify building restriction lines, object-free zones, runway visibility zones, aircraft parking aprons, buildings, aircraft movement areas, location of utilities, airfield lighting vault extensions, rotating beacon, and off-airport development.

D. TERPS Analysis – Evaluate ATCTs at each respective site for possible impacts on the existing and planned approaches, circling minimums and missed approach segments.

E. FAR Part 77 Surfaces - Evaluate ATCTs at each respective site for possible impacts to the existing and planned runway criteria.

F. Security Set-Back Criteria – The FAA does not have set-back requirements for the siting of contract towers. However, the security and safety of the working

environment of the ATCS are considered when choosing ATCT sites in this siting report.

G. Location of Utilities & Access - Identify the availability of utilities (sewer, water, gas, three-phase electric, telephone, cable, and airport lighting control vault) and ground access.

H. The ATCT must not be sited where it will derogate the performance of existing or planned electronic facilities (ILS, VOR, etc.)

I. A minimum vertical LOS of an angular intersection of 48 minutes (0.80 degrees) is used to determine controller eye height. This calculation is made from all aircraft movement areas, existing and future, from the airport to the ATCT location. Two human factors performance metrics, Object Discrimination Analysis and LOS Angle of Incidence, are applied to the furthermost distant key points to assess the impact of the proposed ATCT height on the ATCS distance perception. The FAA ATCT Visibility Analysis Tool (ATCTVAT) is used to assess human factors performance metrics. Two-point lateral discrimination analysis is also checked to ensure that two objects of distant key locations can be observed by the ATCS with sufficient lateral separation. ATCTVAT results for two (2) preferred sites are presented in the appendices.

J. Consideration shall be given to the impact or severity of direct and indirect sun glare and thermal distortion in determining ATCT orientation. The order of preference of the primary operational view is north, east, west, and finally south.

K. Visibility should not be impaired by direct or indirect external light sources. Such sources may be ramping lights, parking area lights, sports or industrial facilities, and reflective surfaces.

L. Visibility should be available for all ground operations of aircraft and to airport ground vehicles on ramps, aprons, and tie-down areas, and aircraft operational intersection areas.

M. Consideration must be given to local weather phenomena to preclude restriction on visibility due to fog, ground haze, or condensation on cab windows.

N. Exterior noise should be at a minimum and sites should be evaluated through a comparison of expected noise levels at each location.

O. Access to the site should avoid crossing areas of aircraft operations.

P. Consideration should be given to planned airport expansion as shown on the airport master plan. Particular attention should be given to the future construction of buildings, hangars, new or extended runways and taxiways, and other physical obstructions to preclude the relocation of the control tower.

Q. The ATCT should be sited in an area that is relatively free of jet exhaust fumes and impairments to visibility such as industrial smoke, dust, and fumes.

R. Airport design standards should not be adversely affected.

S. Radar facilities can be impacted by a tall tower or one that is too closely sited. Radar can also affect the electronic equipment in the ATCT if in proximity.

T. Security Set-Back Criteria where the FAA mandates a 20-foot clear zone inside the perimeter fence, followed by a 20-foot buffer zone just outside.

2.2 VISIBILITY PERFORMANCE ANALYSIS

A minimum vertical LOS and angular intersection of 48 minutes (0.80 degrees) is used to determine controller minimum eye height. This calculation is made from all aircraft movement areas, existing and future, from the airport to the ATCT location. The gradient of the surfaces of taxiways and runways along the LOS are also considered in this height calculation. Two human factors performance metrics, Object Discrimination Analysis and LOS Angle of Incidence, are applied to assess the impact of the proposed ATCT height on the ATCS distance and perception. The furthermost distant key points represent a "worst case" angle of incidence for ATCT siting and viewing perspective. The FAA ATC Visibility Analysis Tool (ATCVAT) was used to assess the human factors performance metrics. Two-point lateral discrimination analysis is also checked to ensure that two objects of distant key locations can be observed by the ATCS with sufficient lateral separation. ATCVAT results for the two (2) preferred sites that were considered for validation are presented in Appendix H.

2.3 OTHER SITING CONSIDERATIONS

Analyze Airport Planning Standards - Identify building restriction lines, object-free zones, runway visibility zones, aircraft parking aprons, buildings, aircraft movement areas, location of utilities, airfield lighting vault extensions, rotating beacon, and off-airport development.

TERPS Analysis – Evaluate ATCTs at each respective site for possible impacts on the existing and planned approaches, circling minimums and missed approach segments.

FAR Part 77 Surfaces - Evaluate ATCTs at each respective site for possible impacts to the existing and planned runway criteria.

TOPR – The Technical Operations Preliminary Report (TOPR) generated by the FAA using the NASWATCH IOEAAA tool as well as performing quantitative calculations to identify potential impacts to aviation facilities such as Instrument Landing Systems (ILS).

Location of Utilities & Access - Identify the availability of utilities (sewer, water, gas, three-phase electric, telephone, cable, and airport lighting controls). Determine ground access.

2.4 CONSTRUCTION COSTS

Rough Order of Magnitude (ROM) Cost Opinion - A ROM cost opinion for the construction of the ATCT building, Minimum Equipment List, access road, parking lot, fencing, and

utility extensions for each of the preferred sites. The ROMs are made purely for site comparative purposes and should not be used for construction budgets. ROM costs are presented on the Site Comparison Chart found in the Executive Summary and Appendix B. It should be noted that these are not FAA costs, as the responsibility for construction rests with the city of New Braunfels as the owner and operator of the facility. FAA Reimbursable Agreement costs are not shown in the ROM costs since these vary from facility to facility and will be provided by the FAA later closer to construction.

3. INITIAL SITES CONSIDERED

3.1 CANDIDATE SITES

After considering the entire airport, five (5) sites were identified and reviewed by airport management and the airport's general consultant. The siting considerations listed in the FAA Vista were uniformly factored in when evaluating these initial candidate sites. All sites were evaluated with the ATCTVAT (FAA Visibility Tool). Candidate Sites are Labeled 1,2,3,4, and 5. The following summarizes the pros and cons of all the sites considered.

Site 1 – On the undeveloped west side of the airfield. Plans are in place for the construction of the future terminal building and several hangars of different sizes. The development will also involve the installation of access and utility infrastructure, including the Air Traffic Control Tower (ATCT). The development of hangars will be a focal point for consideration in terms of LOS.

Site 2 – Currently on the undeveloped west side of the airfield Site 2 is located on the edge of AWOS critical area but will likely require the relocation of that facility. This site is centrally located on the airfield with unimpeded LOS for both runways.

Site 3 – Provides a new tower in essentially the same location as the existing tower. This location is approximately 300 feet east of the current tower and could easily tie into the already established infrastructure at this location.

Site 4 – A promising location on the north side of the airfield also has good LOS to both runways at BAZ. Surrounded by aircraft hangars on both sides, access to this location is optimal.

Site 5 - Another site located on the airfield’s northern quadrant with good sight lines to all 3 runways. Site 5 located on undeveloped airport property does not share the usual issues with access and utilities as the airport T hangars are in close proximity.

3.2 SITES ELIMINATED

Sites 4 and 5 were eliminated from further study based on input from airport management and the airport’s general consultant. This decision was made due to their perceived lack of feasibility compared to the remaining sites. Both sites 4 and 5 are situated within and near the future development hangar space areas that the airport is aiming to maximize. The preferred locations favored by the airport sponsors are centered around the new airport terminal, leading to the exclusion of sites 4 and 5. The main view from the cab will be to the southwest which is the least desirable direction.

The remaining land outside of the crowded hangar area in this quadrant of the airport is in a non-buildable flood plan.

Included in sites that were eliminated is Site 3 that was deemed non-viable during our siting assessment that took place on June 25 & 26 of 2024. Site 3 located on the far east end of the airfield had nearly a mile separating it from its key point the approach end of Runway 13. The air traffic manager determined this site would not improve safety at the airport.

4. PREFERED SITES

The sites still under consideration are Sites 1 & 2. Please consult Appendix C for the airfield locations of these sites. Below are the coordinates and AMSL elevations for each site.

Site	Latitude	Longitude	Elevation (AMSL)
1	N29°-42'-14.95"	W98°-02'-53.70"	650′
2	N29°-42'-32.53"	W98°-02'-50.77"	651′

4.1 SITE 1 – Future Terminal Location

4.1.1 Description

Site 1 is located on the west side of the airfield, currently undeveloped. This site is also home to a future terminal building.

4.1.2 Site Reference Data

Site 1 is located at Lat. 29° 42' 14.95" N; Long. 98° 02' 53.70" W at its center.
Ground Elevation is 650' MSL.
Eye Height is 125' AGL (775 feet MSL) at 5' above the proposed cab floor.
Top of antenna height 155 feet AGL' (805 feet MSL).

4.1.3 Siting Criteria Evaluation

4.1.3.1 TERPS

A detailed evaluation of the United States Standard for TERPS has been conducted for this study by this consultant as included in Appendix F. Findings were confirmed by the FAA Central Service Area Flight Procedures Office during the 7460 process for Site 1. Site 1 does affect a currently published instrument approach procedure at BAZ. A Not-To-Exceed (NEH) height of 800 MSL was exceeded by 5 feet.

4.1.3.2 Part 77

The ATCT at Site 1 is 2,527 feet from Runway 13 – 31 centerline it penetrates the existing and ultimate 7:1 surface by 134 feet. For Runway 17 - 35, which is approximately 1,642 feet from the runway centerline.

4.1.3.3 Impacts to Communications, Navigation & Surveillance Equipment

An FAA TOPR was received, and as a result, The airport was notified of the increase to minimums if this site was selected.

4.1.3.4 Visual Performance

LOS Angle of Incidence was measured from the proposed eye height of 125 feet AGL (775 Feet MSL) relative to the ground elevation (650 Feet MSL) at Site 1. The LOS to the furthest movement area of the airport from Site 1 is the runway extension slated for the approach end of runway 13 approximately 4810 feet away. This calculation results from the application of the required angle of incidence of 1.43 degrees. This is higher than the minimum of 0.80 to accommodate future hangar development. Calculations of eye heights are presented in Appendix H. Runway end elevations in this study were taken from the current ALP and checked by field survey. An eye height of 125 feet AGL satisfies the FAA Angle of Incidence criteria, is high enough to provide a clear LOS to the airport traffic pattern and all existing and future airfield movement areas, as well as provides for functional spaces in the building below the cab. The FAA uses the typical distance from the cab floor to the ATCS eye as 5 feet. When the 5 feet is subtracted from the eye height at Site 1, a cab floor height of 120 feet AGL (770 feet MSL) is the result.

Object Discrimination Analysis is the metric that determines how well an object the size of a Dodge Caravan or a Cessna 172 can be identified from the proposed site and height. Site 1 at the 125-foot AGL eye height produced Passing results (see Appendix H).

2-Point Lateral Discrimination is the analysis that quantifies the impact of tower height on the ability to laterally separate two critical points of the airport surface operations. A minimum of 8 minutes separation between objects is required such as an aircraft on a parallel taxiway concerning one on the runway end ready for take-off. All instances of 2-point Lateral Discrimination from Site 1 exceed the minimum separation.

Panoramic Views from Computer Simulation Digital still image files were taken during the VISTA Safety Assessment. They depict a sequential panoramic, 360-degree, view from the control cab at site 1 at the 775-foot MSL (125 ft AGL) eye height. It should be noted that the existing and future (ALP) buildings and pavement are depicted in the simulation also. The panoramic computer screenshots are presented in appendix D.

4.1.3.5 Sunlight/Daylight

At the VISTA Siting Panel, the BAZ ATM assessed this phenomenon. After evaluating factors such as sun glare off natural and manmade surfaces, thermal distortion, etc. It was concluded that these issues were either nonexistent or not a cause for concern.

4.1.3.6 Artificial Lighting

No impacts on nighttime ground and airborne operations due to airport lighting, background clutter, and municipal and industrial lighting have been identified by the BAZ Air Traffic Management team. Visibility challenges that may arise from the artificial ramp lighting of future airport development for Site 1 cannot be assessed or determined at this point.

4.1.3.7 Security

The FAA Office of Infrastructure Protection issued updated security measures for FSL-1A facilities of which Contract Towers are included. The FAA AXF Guidance Memorandum dated March 7, 2019, provides specific implementation guidance for the minimum level of physical security at Sponsor-owned and Sponsor-leased Contract Towers. Site 1 will comply with that guidance including but not necessarily limited to fencing, lighting, main door, cab door, and gate access control with cab monitored camera and intercom, keypads or card swipe entry devices at doors, and warning signage.

4.1.3.8 Rotating Beacon and Weather Sensor

The Airport Rotating Beacon is located on the roof of the existing tower. It is planned to be relocated to the roof of the new ATCT. Automated Surface Observing Systems (ASOS) is operated by the National Oceanic and Atmospheric Administration (NOAA) and has utilities. The electrical vault and rotating beacon are hardwired.

4.1.3.9 Infrastructure

KSA Engineers, the BAZ General Consultant, has provided a narrative regarding access and infrastructure. Their report depicting access and utility extensions to Site 1 is in Appendix L.

Access: The tower is situated in a developing area to the west of Runway 17-35. Access to the site will be provided by a 1,585-foot access road that will connect to Saur Lane.

Site Security: The location of Site 1 next to the upcoming passenger terminal will necessitate security fencing with a 20-foot clear zone outside the fence, along with a 20-foot buffer zone inward from the fence.

Utilities: Due to the undeveloped condition of Site 1, utility access will necessitate longer service runs. All utilities will be linked to existing sources near Saur Lane. A sewer line has been identified as conflicting with Site 1, and if chosen, it will need to be relocated by the city.

Airfield Lighting Connection to Vault: Site 1 is situated approximately 3,890 feet away from the airfield lighting vault. To minimize the cost of installing an underground control cable spanning under Runway 17-35 and taxiways, an alternative approach could involve establishing a UHF modem link from the ATCT to the vault if deemed more practical.

4.1.3.10 Safety Assessment

A Safety Assessment was conducted during the Siting Assessment Panel conducted on June 25 and 26, 2024. Site 1 was ranked 2nd of the preferred sites.

4.1.3.11 Operational Requirements

a) ATCT Orientation: The cab was rotated 20 degrees clockwise from a line drawn perpendicular to Runway 17 – 35 through the center of the cab. See Appendix D for a graphic depiction.
b) Weather: No unusual impacts.
c) Look-down Angle: No unusual impacts.
d) Look-up Angle: Clear views observed.
e) Look-Across Angle: Clear views observed.
f) Access: A paved roadway leading to the future passenger terminal will allow access to the site.
g) Non-Movement Areas: No issues identified.
h) Cab Size Evaluation: Sufficient for up to 4 controllers. A typical operation has no more than 2.
i) Rotating Beacon: Will move from the top of the existing tower to the top of the new ATCT.
j) Hold Short Lines: No impacts identified.
k) Construction: Construction of the tower will not affect LOS from the current tower.

4.1.3.12 Economic Considerations

Site 1 is the most expensive site for building and site development construction costs at **$16,660,3360.**

4.1.3.13 Environmental Considerations

BAZ is a sponsored owned facility, and A Phase 1 Environmental Site Assessment is not required. However, a phase 1 ESA has been completed by KSA. Site 1 had no negative impacts identified see Appendix G.

4.1.4 Summary for Site 1 – Future Terminal Area

Site 1 has been assessed at a controller eye height of 775 feet MSL (125 feet AGL). It is the tallest site compared to the other 2 sites under review. The reason this site exceeds the minimum LOS height required is to accommodate the development of the airport's west side. The new passenger terminal along with over 15 new hangars slated for the west side required Site 1 tower height to be elevated to effectively see the entire airfield. Also considered is the NEH height of 799 MSL which would affect the RNAV (GPS) Runway 31 procedure. This site is deemed appropriate as it provides unobstructed views of all current and future runways, associated taxiways, the planned passenger terminal area aircraft apron, and all other upcoming developments. It offers a clear perspective of all existing and future movement areas.

Site 1 is situated on the western side of the airfield, approximately 1,642 feet offset from the centerline of the nearest runway, Runway 17/35. Currently, access and utilities are not available at this remote location; however, the planned BAZ passenger terminal in the vicinity will address this issue. At the proposed eye height to see over future development, Site 1 will have unobstructed views of the airfield, with the farthest point being around 4,810 feet from the proposed extension to Runway 13. The primary views from this site will be towards the north and east, which is generally favored concerning the sun's position.

4.2 SITE 2 – AWOS Location

4.2.1 Description

Site 2 is also located on the west side of the airfield. This site is currently undeveloped near the airport's current AWOS system.

4.2.2 Site Reference Data

Site 2 is located at Lat. 29° 42’ 32.53” N; Long. 98° 02’ 50.77” W at its center.

Ground Elevation is 651’ MSL.

Eye Height is 115’ AGL (766 MSL) at 5’ above the proposed cab floor.

Top of antenna height 145’ AGL (796’ MSL).

4.2.3 Siting Criteria Evaluation

4.2.3.1 TERPS

A detailed evaluation of the United States Standard for TERPS has been conducted for this study by this consultant as included in Appendix F. That study did not find any impact on structures NEH 799 MSL established or known future approach procedures at BAZ.

4.2.3.2 FAR Part 77

Site 2 is set back approximately 1,030 feet from Runway 13 -31 centerline penetrating upon the 7:1 surface by 40 feet. For Runway 17 - 35, there is a clearance of 28 feet before the 7:1 surface elevation is exceeded.

4.2.3.3 Impacts to Communications, Navigation & Surveillance Equipment

An FAA Tech Operations Preliminary Report (TOPR) was received, and as a result, no issues were identified. The proximity of Site 2 to the airport’s current AWOS was discussed. The Automated Weather Observing System plans to be moved midfield long before the tower is erected.

4.2.3.4Visibility Performance Requirements

LOS Angle of Incidence was measured from the proposed eye height of 115 feet AGL (766 Feet MSL) relative to the ground elevation (651 Feet MSL) at Site 2. The LOS to the furthest movement area of the airport from Site 2 is the approach end of runway 35 approximately 5197 feet away. This calculation results from the application of the required angle of incidence of 1.34 degrees. This is higher than the minimum of .80 to accommodate future hangar development. Calculations of eye heights are presented in Appendix H. Runway end elevations in this study were taken from the current ALP and checked by field survey. An eye height of 115 feet AGL satisfies the FAA Angle of Incidence criteria and is high enough to provide a clear Line-of-Sight (LOS) to the airport traffic pattern and all existing and future airfield movement areas, as well as provides for functional spaces in the building below the cab. The FAA uses the typical distance from the cab floor to the ATCS eye as 5 feet.

When the 5 feet is subtracted from the eye height at Site 2, a cab floor height of 110 feet AGL (761 feet MSL) is the result.

Object Discrimination Analysis is the metric that determines how well an object the size of a Dodge Caravan or a Cessna 172 can be identified from the proposed site and height. Site 2 at the 115-foot AGL eye height produced Passing results (see Appendix H).

2-Point Lateral Discrimination is the analysis that quantifies the impact of tower height on the ability to laterally separate two critical points of the airport surface operations. A minimum of 8 minutes separation between objects is required such as an aircraft on a parallel taxiway with respect to one on the runway end ready for take-off. All instances of 2-point Lateral Discrimination from Site 2 exceed the minimum separation.

Panoramic Views from Computer Simulation

Digital still image files were taken during the VISTA Safety Assessment. They depict a sequential panoramic, 360-degree, view from the control cab at Site 2 at the 766-foot MSL (115 ft AGL) eye height. It should be noted that the existing and future (ALP) buildings and pavement are depicted in the simulation also. The panoramic computer screenshots are presented in Appendix D.

4.2.3.5 Sunlight/Daylight

At the VISTA Siting Panel, the BAZ ATM assessed this phenomenon. After evaluating factors such as sun glare off natural and manmade surfaces, thermal distortion, etc. It was concluded that these issues were either nonexistent or not a cause for concern for recommended Site 2.

4.2.3.6 Artificial Lighting

No impacts on nighttime ground and airborne operations due to airport lighting, background clutter, and municipal and industrial lighting have been identified by the BAZ Air Traffic Management team. Visibility challenges that may arise from the artificial ramp lighting of future airport development for Site 2 cannot be assessed or determined at this point.

4.2.3.7 Security

The FAA Office of Infrastructure Protection issued updated security measures for FSL-1A facilities of which Contract Towers are included. The FAA AXF Guidance Memorandum dated March 7, 2019, provides specific implementation guidance for the minimum level of physical security at Sponsor-owned and Sponsor-leased Contract Towers. Site 2 will comply with that guidance including but not necessarily limited to fencing, lighting, main door, cab door, and gate access control with cab monitored camera and intercom, keypads or card swipe entry devices at doors, and warning signage.

4.2.3.8 Rotating Beacon and Weather Sensor

The Airport Rotating Beacon is located on the roof of the existing tower. It is planned to be relocated to the roof of the new ATCT. ASOS is operated by NOAA and has utilities. The electrical vault and rotating beacon are hardwired.

4.2.3.9 Infrastructure

KSA Engineers, the BAZ General Consultant, has provided a narrative regarding access and infrastructure. Their report depicting access and utility extensions to Site 2 is in Appendix L.

Access: The tower is situated in a developing area southwest of Runway 13-31 adjacent to the airfields AWOS. Access to the tower would come via a 140-foot access road connected to the current AWOS driveway accessed by Westmeyer Road.

Site Security: The location of Site 2 next to the airfield AWOS will necessitate security fencing with a 20-foot clear zone outside the fence, along with a 20-foot buffer zone inward from the fence.

Utilities: Due to the undeveloped condition of Site 2, utility access will necessitate longer service runs. All utilities will be linked to existing sources near Saur Lane.

Airfield Light Connection to Vault: Site 2 is situated approximately 4,676 feet away from the airfield lighting vault. To minimize the cost of installing an underground control cable spanning under Runway 17-35 and taxiways, an alternative approach could involve establishing a UHF modem link from the ATCT to the vault if deemed more practical.

4.2.3.10 Safety Assessment

A Safety Assessment was conducted during the Siting Assessment Panel conducted on June 25 and 26, 2024. Site 2 was ranked 1st of the 3 preferred sites.

4.2.3.11 Operational Requirements

a) ATCT Orientation: The cab was rotated 0 degrees from a line drawn perpendicular to Runway 17 -35 Through the center of the cab. See Appendix D for graphic depiction.
b) Weather: No unusual impacts.
c) Look-down Angle: No unusual impacts.
d) Look-up Angle: Clear views observed.
e) Look-Across Angle: Clear views observed.
f) Access: The access road to the airport AWOS will be widened and paved and become the primary entry and exit for the new tower.
g) Non-Movement Areas: No issues identified.
h) Cab Size Evaluation: Sufficient for up to 4 controllers. A typical operation has no more than 2
i) Rotating Beacon: This will move from the top of the existing tower to the top of the new ATCT.
j) Hold Short Lines: No impacts identified.
k) Construction: Construction of the tower will not affect LOS from the current tower.

4.2.3.12 Economic Considerations (See Appendix B)

Site 2 is the **2nd most** expensive site for building and site development construction costs at **$15,708,560.**

4.3.3.13 Environmental Considerations

BAZ is a sponsored owned facility, and A Phase 1 Environmental Site Assessment is not required. However, a phase 1 ESA has been completed by KSA. Site 2 had no negative impacts identified see Appendix G.

4.2.4 Summary for Site 2 – AWOS Location

Site 2 was assessed with an eye height of 766 feet MSL (115 feet AGL) and is in the undeveloped midfield of the airport. This site is deemed appropriate as it offers unobstructed views of all current and future runways, associated taxiways, and the upcoming passenger terminal, which will be situated just south of the site. It is the nearest proposed location to the intersections of Runway 17-35 and 13-31.

Site 2, the westernmost site under consideration, is positioned around 500 feet south of the BAZ AWOS system. It is set back approximately 1,030 feet from the centerline of its nearest runway, Runway 13-31. This site offers unobstructed views of the airfield, with its farthest point being 5,197 feet away from the approach end of Runway 35. The predominant views from this site will be towards the east and south.

5. SITING ASSESSMENT

The preferred sites have been evaluated, in this report, in accordance with the VISTA Process for Contract Towers. They have undergone a Safety Assessment in accordance with the FAA SMS which is an objective identification of potential safety hazards and methods of removal or mitigation. Potential Hazards and Mitigation have been discussed and evaluated at the Safety Assessment Panel held at the BAZ on 6/25 - 6/26/2024.

6. Final Site Recommendations

ATCT Site Recommendation

BAZ Airport Traffic Control Tower
New Braunfels National Airport

This Agreement is made by and between ATO Terminal Program Operations, and the Terminal Area Office, collectively known as the "Parties." The purpose of this agreement is to address the siting requirements for the new BAZ ATCT.

Section 1. The parties agree that the siting requirements must be as follows:

Article 1: The location of the ATCT (NAD 1983 datum), hereinafter referred to as **Site 2**

Latitude: N 29° 42' 32.53"

Longitude: W 98° 02' 50.77"

Article 2: The ATCS eye height used in the computer simulation and panoramic photographs for this agreement is 766 feet MSL or 115 feet AGL, based on a 651 feet MSL site elevation.

Article 3: The total ATCT height including antennae and all other obstructions will be approximately 796 feet MSL or 145 feet AGL, assuming 35 feet from cab floor height level to the top of the structure and 651 feet MSL site elevation.

Article 4: The parties are in general concurrence with the assumptions documented in the final site selection report.

Section 2. The Airport Sponsor agrees to notify the assigned Technical Operations Engineering Services (Terminal) project engineer of any proposed, planned, or envisioned projects that would be constructed on airport property that could impact the LOS from the recommended ATCT sites.

Section 3. This agreement does not constitute a waiver of any right guaranteed by law, rule, regulation, or contract on behalf of any party. The Approval Authorities (signatures at the beginning of this report) unanimously agree with the choice of **Site 2** for the new ATCT at the New Braunfels National Airport.

7. CAB SIZE AND ORIENTATION

The cab size will be an octagon of approximately 500 sf to the windowsills and 440 sf after the stairwell is subtracted. Cab orientation is shown for each site in Appendix E.

SUPPLEMENTAL INFORMATION

Appendix A – Airport Concurrence Letter

Appendix B – Cost Estimate

Appendix C – All Sites Evaluated (Potentials & Preferred)

Appendix D – Panoramic Views

Appendix E – Drawings (Airport Layout Plan, Cab Layout, Orientation, Building Profile)

Appendix F – Obstruction Evals (TOPR/TERPS)/Airspace Analyses (OE/AAA)/NAVAIDs

Appendix G – Environmental Documentation

Appendix H – Air Traffic Control Visibility Analysis Tool (ATCVAT)

Appendix I – Servicing Security Element

Appendix J – Meeting Minutes

Appendix K – Safety Risk Management Document

Appendix L – Access & Utilities Infrastructure

Appendix A – AIRPORT CONCURRENCE LETTER

NEW BRAUNFELS
NATIONAL AIRPORT

September 24, 2024

RE: Airport Concurrence Form
Replace Airport Traffic Control Tower
New Braunfels National Airport (BAZ)
New Braunfels, Texas

The City of New Braunfels, acting as Sponsor for the New Braunfels National Airport, writes this letter to establish concurrence with the siting requirements and impacts of a new Airport Traffic Control Tower (ATCT) to permanently establish VFR Air Traffic Service at the New Braunfels National Airport. This signed document is intended to satisfy FAA national policy regarding written confirmation from the Airport owner/operator stating that the BAZ airport user community has been advised about the new ATCT and the impacts that the project would have on their operations.

Section 1. The siting requirements are as follows:

1. The center point location for the new ATCT (NAD-83) is identified as Site 2:

   Lat. 29° 42' 32.53" N
   Long. 98° 02' 50.77" W

2. The overall maximum ATCT height (air terminals) will be 796' MSL (145' AGL).

3. The ATCT controller eye height used for evaluating line-of-sight is 766' MSL (115' AGL).

4. The exact location of the ATCT is subject to moving no more than 25 feet within the boundaries of the approved site to efficiently accommodate access, utilities and parking.

5. The exact ATCT height is subject to and in accordance with Official Airspace Approval per FAA Form 7460-1 and FAA TERPS analysis and NASWATCH Report. The Airspace Final Determination dated September 23, 2024, and is referenced as ASN 2024-ASW-7694-NRA found no objections with subsequent provisions.

6. Sunrise, sunset, fog, snow, rain, look-down angle, ramp lighting, glare, industrial discharge, and other issues that can adversely affect controllers' view from the ATCT sight have been considered.

Section 2. The impacts that may result from the proposed construction of a new ATCT at **Site 2**:

1. As determined by the FAA Flight Procedures Team (FPT), the height of the new ATCT will not result in changes to existing instrument procedures.

2. Marking and lighting of the ATCT structure will be in accordance with the FAA's ASN 2024-ASW-7694-NRA determination letter dated September 23, 2024.

3. No other impacts.

Section 3. The submission of this signed document constitutes concurrence and adherence to FAA construction policy concerning appropriate public notification of the airport community regarding the intent to permanently commission the ATCT and any impacts therein concerning the use of the airport. The submission of this document does not waive the requirement of public comment as defined in the National Environmental Policy Act, the Council on Environmental Quality regulations implementing NEPA (Title 40 of the United States Code of Federal Regulations, Parts 1500-1517), and other statutes, orders, directives, or policy concerning environmental assessment and alternatives.

Dr. Robert Lee, AAE
Airport Director
New Braunfels National Airport

4800 Fredericksburg Rd., Suite 200SL
San Antonio, TX 78229
(210) 208-9400

January 22, 2024.

KSA Engineering Inc.
Mr. Grayson Cox, P.E.

RE: New Braunfels Regional Airport
Heli Facility 101403
City of New Braunfels, Texas

Dear Mr. Cox:
KSA Engineering Inc. requested that AG3 Group, LLC. provide survey and elevation data at 3 proposed air traffic control tower sites as well as key points on the airfield, and at ground and roof elevations of specific buildings, for their use in evaluating proposed air traffic control tower sites. The field data was collected on December 18-22, 2023.

I, Dan Clark, RPLS # 6011, do hereby certify that the survey data as shown on the aforementioned project as annotated on the drawing of New Braunfels International Airport, New Braunfels, Texas for the proposed ATCT Locations, Existing Key Points, and Survey Data, complies with the following standards of accuracy:

A. Elevations are referenced to NAVD88, Geoid 12B and are accurate within 0.10 ft.

B. Northing/Easting values are accurate within 0.07' and are referenced to, NAD83 – Texas State Plane, South Central Zone. All coordinates are grid and denoted in US Survey feet.

Appendix B – COST ESTIMATES

Comparative Cost Estimate			Date Prepared: 7/3/2024				Estimate Type
Airport Name: Advanced Requirments Definition for potential replacement of the BAZ ATCT							ROM (Ad Hoc)
Location: New Braunfels, T.X.			**LOC ID/Site: KBAZ Site 1**				X Estimate
Preparing Organization: Pond & Company			**Estimator/Engineer Contact**: Grayson				Controlled (Planning Phase)
Class of Work: Construction of New ATCT			Cox gcox@ksaeng.com				IGCE (Procurement Phase)
Item	**Quantity**		**Material Cost - $**		**Equipment & Labor Cost - $**		
	Unit of Measure	Number of Units	Per Unit	Total	Per Unit	Total	**Total Cost - $**
Construction							
Tower Shaft (155 FT AGL)	ft	0					
	ft	155	$100,000.00	$15,500,000.00			$15,500,000.00
Mobilization & Site Prep.							
Contractor Quality Control Program (CQCP)	LS	1	15,000	15,000.00			$15,000.00
Staging & Storage	EA	1	5,000.00	5,000.00			$5,000.00
SWPPP	LS	1	8,000.00	8,000.00			8,000.00
Mobilization	LS	1	74,700.00	74,700.00			74,700.00
Clearing & Grubbing	SY	8,600	2.00	17,200.00			17,200.00
Prep Safety Plan Compliance Doc.	LS	1	5,000.00	5,000.00			5,000.00
							15 % Contingencies 18,735.00
Utility Service & Associated Improvments	LS,SY,CY						
Cable in Conduit (PVC)(4")	LF	1,690	18	30,420.00			$30,420.00
3- Phase Electrical in Conduit (PVC)(6")	LF	1,685	25	42,125.00			$42,125.00
Telephone in Conduit (PVC) (4")	LF	1,690	18	30,420.00			$30,420.00
Water Main (PVC)(6")(open cut)	LF	1,704	65	110,760.00			$110,760.00
Fire Hydrant Assesmbly	EA	1	8,000.00	8,000.00			$8,000.00
Tapping Valve (6"X12')	EA	1	3,500.00	3,500.00			$3,500.00
Gate Valve (6")	EA	2	3,000.00	6,000.00			$6,000.00
SDR-35 PVC Sewer (8") (open cut)	LF	1,675	70	117,250.00			$117,250.00
SDR-35 PVC Sewer (24") (open cut)	LF	200	125	25,000			$25,000.00
Sewer Manhole (Pre-cast)(4ft Dia)	EA	3	12,000	36,000.00			$36,000.00
Connect Existing Sewer Line	EA	1	2,500	2,500.00			$2,500
NBU Service Fees (Estimated)	LS	1	50,000.00	50,000.00			$50,000.00
							15 % Contingencies $69,300.00
Pavement & Associated Improvements							
FL BS (Comp in Place)(TY A GR 1) (12")	SY	6,085	25	152,125.00			152,125.00
Lime (Hydrated Line)(Slurry)(12")	TON	85	225	19,125.00			19,125.00
Lime Treatment (exsiting materials(12")(6%)	SY	6,515	6	39,090.00			39,090.00
D-GR HMA (Meth) TY-D SAC B PG70-22	TON	595	135	80,325.00			80,325.00
Class A Concrete (3,000 PSI)(Sidewalk) (4")	SY	55	120	6,600.00			6,600.00
							15 % Contingencies $44,590.00
Miscellaneous Site Work							
6' Chain Link Security Fence w/ 3-sB-Wire	LF	605	55	$33,275.00			$33,275.00
Vehicle Gate and Operator (Electric Sliding)	EA	1	30,000.00	$30,000.00			$30,000.00
Seed or Sod Disturbed Areas	SY	3,150	5	$15,750.00			$15,750.00
Detention Excavation & Concrete Discharge	EA	1	18,000	$18,000.00			$18,000.00
Handicap Accessible Sign	EA	1	750	$750.00			$750.00
Refi Pav Mrk TY II (W) Solid)(6")	LF	215	6	$1,290.00			$1,290.00
Prefab Pav Mrk TY C (W)(symbol)(Handicap)	EA	1	800	$800.00			$800.00
Site Lighting	LS	1	25,000	$25,000			25,000.00
							15 % Contingencies $18,730.00
						Subtotal	**$16,660,360**

Comparative Cost Estimate				Date Prepared: 7/3/2024			Estimate Type
Airport Name: Advanced Requirments Definition for potential replacement of the BAZ ATCT							ROM (Ad Hoc)
Location: New Braunfels, T.X.			**LOC ID/Site: KBAZ Site 2**				X Estimate
Preparing Organization: Pond & Company			**Estimator/Engineer Contact**: Grayson Cox gcox@ksaeng.com				Controlled (Planning Phase)
Class of Work: Construction of New ATCT			gcox@ksaeng.com				IGCE (Procurement Phase)

Item	Quantity		Material Cost - $		Equipment & Labor Cost - $		
	Unit of Measure	Number of Units	Per Unit	Total	Per Unit	Total	Total Cost - $
Construction							
Tower Shaft (145 FT AGL)	ft	0					
	ft	145	$100,000.00	$14,500,000.00			$14,500,000.00
Mobilization & Site Prep.							
Contractor Quality Control Program (CQCP)	LS	1	15,000	15,000.00			$15,000.00
Staging & Storage	EA	1	5,000.00	5,000.00			$5,000.00
SWPPP	LS	1	8,000.00	8,000.00			8,000.00
Mobilization	LS	1	77,800.00	77,800.00			77,800.00
Clearing & Grubbing	SY	3,080	2.50	7,700.00			7,700.00
Prep Safety Plan Compliance Doc.	LS	1	5,000.00	5,000.00			5,000.00
							15 % Contingencies 17,780.00
Utility Service & Associated Improvments	LS,SY,CY						
Cable in Conduit (PVC)(4")	LF	215	18	3,870.00			3,870.00
3- Phase Electrical in Conduit (PVC)(6")	LF	3,350	25	83,750.00			83,750.00
Telephone in Conduit (PVC) (4")	LF	215	18	3,870.00			$3,870.00
Water Main (PVC)(6")(open cut)	LF	3,568	65	231,920.00			$231,920.00
Fire Hydrant Assesmbly	EA	1	8,000.00	8,000.00			$8,000.00
Tapping Valve (6"X12')	EA	1	3,500.00	3,500.00			$3,500.00
Gate Valve (6")	EA	2	3,000.00	6,000.00			$6,000.00
SDR-35 PVC Sewer (8") (open cut)	LF	60	70	4,200.00			$4,200.00
Connect Existing Sewer Line	EA	1	2,500	2,500.00			$2,500
NBU Service Fees (Estimated)	LS	1	50,000.00	50,000.00			$50,000.00
							15 % Contingencies $59,650.00
Pavement & Associated Improvements							
FL BS (Comp in Place)(TY A GR 1) (12")	SY	3,800	25	95,000.00			95,000.00
Lime (Hydrated Line)(Slurry)(%)	TON	60	225	13,500.00			13,500.00
Lime Treatment (exsiting materials(12")(6%)	SY	4,670	6	28,020.00			28,020.00
D-GR HMA (Meth) TY-D SAC B PG70-22	TON	353	135	47,655.00			47,655.00
Class A Concrete (3,000 PSI)(Sidewalk) (4")	SY	45	120	5,400.00			5,400.00
							15 % Contingencies $28,440.00
Miscellaneous Site Work							
6' Chain Link Security Fence w/ 3-sB-Wire	LF	565	55	$31,075.00			$31,075.00
Vehicle Gate and Operator (Electric Sliding)	EA	1	30,000.00	$30,000.00			$30,000.00
Seed or Sod Disturbed Areas	SY	2,630	5	$13,150.00			$13,150.00
Detention Excavation & Concrete Discharge	EA	1	18,000	$18,000.00			$18,000.00
Handicap Accessible Sign	EA	1	750	$750.00			$750.00
Refi Pav Mrk TY II (W) Solid)(6")	LF	240	6	$1,440.00			$1,440.00
Prefab Pav Mrk TY C (W)(symbol)(Handicap)	EA	1	800	$800.00			$800.00
Site Lighting	LS	1	25,000	$25,000			25,000.00
ASOS Relocation & Utility Extensions	LS	1	225,000.00	225,000.00			225,000.00
							15 % Contingencies $51,790.00
						Subtotal	**$15,708,560**

Appendix C – ALL SITES CONSIDERED (Potentials & Preferred)

SITING REPORT
AIRPORT TRAFFIC CONTROL TOWER (ATCT)
NEW BRAUNFELS NATIONAL AIRPORT (BAZ)
NEW BRAUNFELS, TEXAS

Potential Sites

North ↑

SITING REPORT
AIRPORT TRAFFIC CONTROL TOWER (ATCT)
NEW BRAUNFELS NATIONAL AIRPORT (BAZ)
NEW BRAUNFELS, TEXAS

Preferred Sites

Site 1

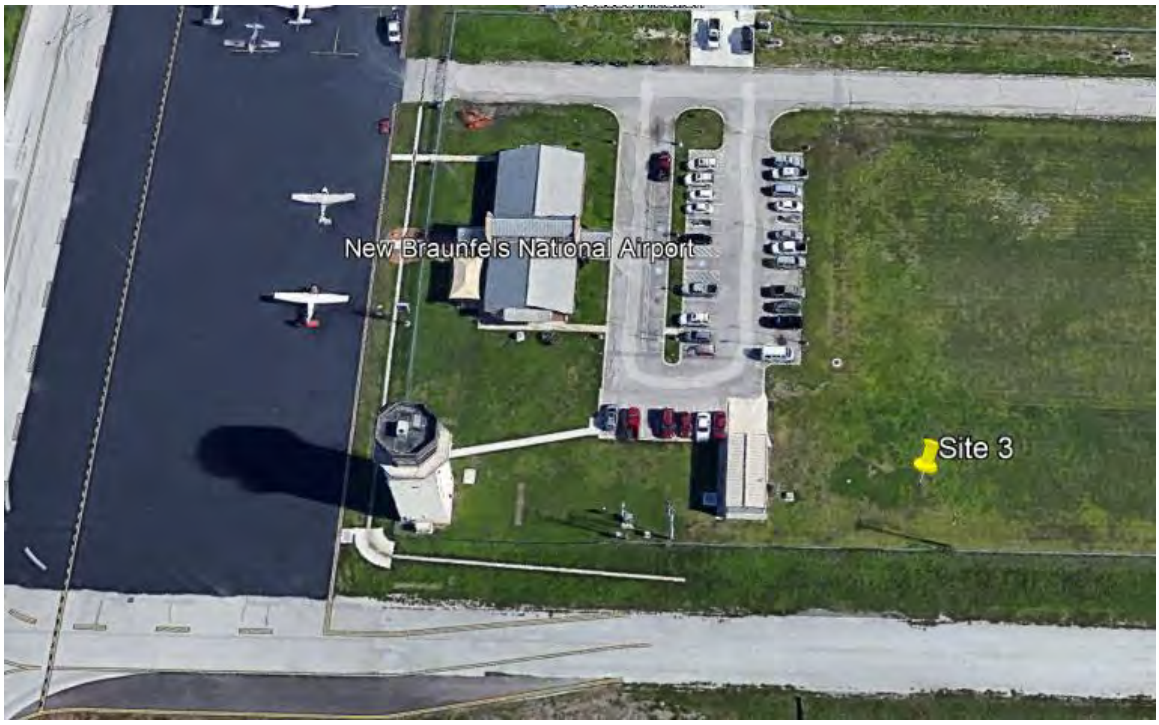
Site 2

North

SITING REPORT
AIRPORT TRAFFIC CONTROL TOWER (ATCT)
NEW BRAUNFELS NATIONAL AIRPORT (BAZ)
NEW BRAUNFELS, TEXAS

(Determined Non-Viable During Assessment)

Site 3



North ↑

4.3 Site 3- Near Existing Tower Location (Determined Non-Viable During Assessment)

4.3.1 Description

Site 3 is in the southeast portion of the airfield, just east of the existing ATCT for BAZ.

4.3.2 Site Reference Data

Site 3 is located at Lat. 29° 41' 53.70" N; Long. 98° 02' 18.60" W at its center.
Ground Elevation is 641' MSL.
Eye Height is 127' AGL (770' MSL) at 5' above the proposed cab floor.
Top of antenna height 157' AGL (800' MSL)

4.3.3 Siting Criteria

4.3.3.1 TERPS

A detailed evaluation of the United States Standard for TERPS has been conducted for this study by this consultant as included in Appendix F. That study did not find any impact on established or known future approach procedures at BAZ.

4.3.3.2 FAR Part 77

Site 3 has 14 feet of clearance on the 7:1 surface for Runway 13 - 31. It is set back approximately 1,678 feet from the runway centerline. For Runway 17 - 35, there is a clearance of 132 feet before the 7:1 surface elevation is exceeded; this site is set back 2461 feet from the runway centerline.

4.3.3.3 Impacts to Communications, Navigation & Surveillance Equipment

A detailed evaluation of the United States Standard for TERPS has been conducted for this study by this consultant as included in Appendix F. That study did not find any impact on established or known future approach procedures at BAZ.

4.3.3.4 Visual Performance

LOS Angle of Incidence was measured from the proposed eye height of 127 feet AGL (768 Feet MSL) relative to the ground elevation (641 Feet MSL) at Site 3. The LOS to the furthest movement area of the airport from Site 3 is the approach end of the Runway 13 extension approximately 7800 feet away. This calculation results from the application of the required minimum angle of incidence of 48 minutes or 0.80 degrees. Calculations of eye heights are presented in Appendix H. Runway end elevations in this study were taken from the current ALP and checked by field survey. A minimum eye height of 127 feet AGL satisfies the FAA Angle of Incidence criteria, is high enough to provide a clear LOS to the airport traffic pattern and all existing and future airfield movement areas, as well as provides for functional spaces in the building below the cab. The FAA uses the typical distance from the cab floor to the ATCS eye as 5 feet. When the 5 feet is subtracted from the eye height at Site 3, a cab floor height of 122 feet AGL (763 feet MSL) is the result.

Object Discrimination is the metric that determines how well an object the size of a Dodge Caravan or a Cessna 172 can be identified from the proposed site and height. Site 3 at the 769-foot MSL eye height produced Passing results (see Appendix H).

2-Point Lateral Discrimination is the analysis that quantifies the impact of tower height on the ability to laterally separate two critical points of the airport surface operations. A minimum of 8 minutes separation between objects is required such as an aircraft on a parallel taxiway concerning one on the runway end ready for take-off. All instances of 2-point Lateral Discrimination from Site 3 exceed the minimum separation.

Panoramic Views from Computer Simulation Digital still image files were not taken after this site was deemed nonviable by the ATM.

4.3.3.5 Sunlight/Daylight

This phenomenon was not evaluated at the VISTA Siting Panel by the BAZ ATM After Site 3 was deemed nonviable.

4.3.3.6 Artificial Lighting

No impacts to night-time ground and airborne operations were identified as this site was deemed nonviable at the onset of evaluation.

4.3.3.7 Security

The FAA Office of Infrastructure Protection issued updated security measures for FSL-1A facilities of which Contract Towers are included. The FAA AXF Guidance Memorandum dated March 7, 2019, provides specific implementation guidance for the minimum level of physical security at Sponsor-owned and Sponsor-leased Contract Towers. Site 3 will

comply with that guidance including but not necessarily limited to fencing, lighting, main door, cab door, and gate access control with cab monitored camera and intercom, keypads or card swipe entry devices at doors, and warning signage.

4.3.3.8 Rotating Beacon and Weather Sensor

The Airport Rotating Beacon is located on the roof of the existing tower. It is planned to be relocated to the roof of the new ATCT. ASOS is operated by NOAA and has utilities. The electrical vault and rotating beacon are hardwired.

4.3.3.9 Infrastructure

KSA Engineers, the BAZ General Consultant, has provided a narrative regarding access and infrastructure. Their report depicting access and utility extensions to Site 3 is in Appendix L.

Access: No new roadways are required for site access. Automobile parking will be provided in the general are shown adjacent to the existing ATCT.

Site Security: The location of Site 3 next to the airfield's existing tower will necessitate security fencing with a 20-foot clear zone outside the fence, along with a 20-foot buffer zone inward from the fence.

Utilities: Due to the proximity of existing infrastructure, access to needed utilities is available with short runs.

4.3.3.10 Safety Assessment

This site was determined to be a nonviable site at the onset of evaluation.

4.3.3.11 Operational Requirements (Site 3 Non-viable)

a) ATCT Orientation: N/A
b) Weather: N/A
c) Look-down Angle: N/A
d) Look-up Angle: N/A
e) Look-Across Angle: N/A
f) Construction: N/A
g) Access: N/A
h) Non-Movement Areas: N/A
i) Cab Size Evaluation: N/A
j) Rotating Beacon: N/A
k) Hold Short Lines: N/A
l) Construction: N/A

4.3.3.12 Economic Considerations

Site 3 is the **least** expensive site for building and site development construction costs at **$13,682,065**.

4.3.3.13 Environmental Considerations

BAZ is a sponsored-owned facility, and A Phase 1 Environmental Site Assessment is not required. However, a phase 1 ESA has been completed by KSA. Site 3 had no negative impacts identified see Appendix G.

4.3.4 Summary for Site 3 – Near Existing Tower Location

Site 3 during our assessment was deemed non-viable by the BAZ ATM. The key point from this tower location was the approach end of Runway 13 nearly 1 miles away. Even with aids such as binoculars view, and safety of the airfield would not be improved.

Site 3 was evaluated at a controller eye height of 770 MSL (127 AGL). It's the tallest in height of the 3 sites proposed, and closest to the existing tower at BAZ. This site is suitable with no obstructed views to all existing and future runways, associated taxiways, and general aviation aircraft aprons.

Site 3 is situated at the far eastern end of the airfield, just 300 feet east of the current tower. It is set back approximately 2,461 feet from the centerline of Runway 35/17, with a key point distance of 7,800 feet from the future Runway 13 extension approach. Utilities and infrastructure for this location are already established due to its proximity to the current airport infrastructure.

Site Comparison Chart

Item Description	Site 1			Site 2 Recommended			Site 3 Non-Viable		
Latitude	29°-42'-14.95'' N			29°-42'-32.53" N			29°-41'-53.70" N		
Longitude	98°-02'-53.70" W			98°-02'-50.77" W			98°-02'-18.60" W		
Eye-Level (AGL)	125'			115'			127'		
Eye-Level (AMSL)	775'			766'			768'		
Cab Floor Level (AGL)	120'			110'			122'		
Cab Floor Level (AMSL)	770'			761'			763'		
Top of Tower (AGL) incl air terminals	155'			145'			157'		
Top of Tower (AMSL) incl air terminals	805'			796'			798'		
Surveyed Ground Level (AMSL)	650'			651'			641'		
Maximum Distance (to the farthest point on all runways and taxiways)	4810'			5197'			7800'		
2-Point Lateral Discrimination (Deg)	Exceeds Minimum			Exceeds Minimum			Exceeds Minimum		
Object Discrimination (Pass/Fail) Front View (Dodge Caravan)	PASS			PASS			PASS		
Object Discrimination (Pass/Fail) Front View (C-172)	PASS			PASS			PASS		
LOS Angle of Incidence (min 0.80°)	1.43°			1.34°			0.80°		
ATCT Orientation Primary Direction	East			East			West		
Airport Quadrant	West			West			South		
Cab Size (effective floor area)	440 sf			440 sf			440 sf		
Columns/Mullions	Columns			Columns			TBD		
Console Type (traditional, slat wall)	Slat wall			Slat wall			TBD		
Land Area (available)	2 acres			2 acres			1.5 acres		
Access to ATCT Site (Yes or No)	No			Partial			Yes		
Tech Ops Preliminary Review Issues	No Impact			No Impact			TBD		
TERPS Impacts	Raises Min			No Impacts			No Impacts		
14 CFR Part 77 Impacts	No Penetration			Penetrate 7:1 by 40'			No Penetration		
Environmental Issues	None			None			None		
ATCT Potential Impacts on Future & Existing Navaids	No Impacts			Potential Impact on AWOS			No Impact		
Comparative Cost Estimate	$ 16,660,360			$ 15,708,560			$ 16,682,065		
Safety Assessment Initial Risk Ranking	**L**	**M**	**H**	**L**	**M**	**H**	**L**	**M**	**H**
	0	0	0						
Safety Assessment Predicted Residual Risk Ranking	**L**	**M**	**H**	**L**	**M**	**H**	**L**	**M**	**H**
	0	0	0						

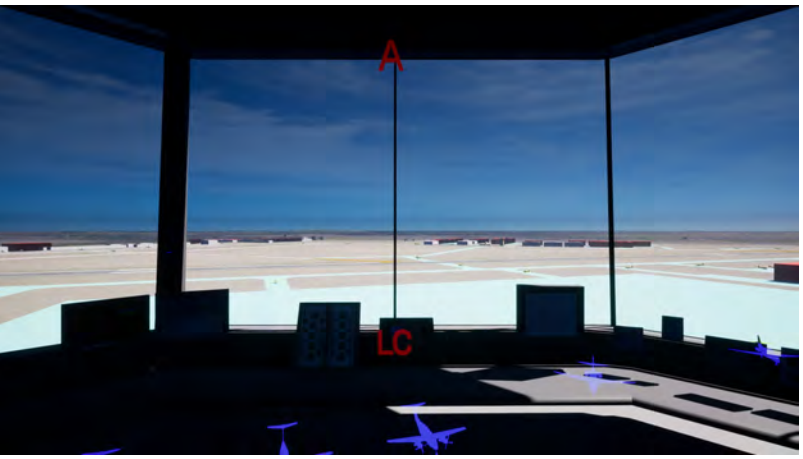
Appendix D – PANORAMIC VIEWS

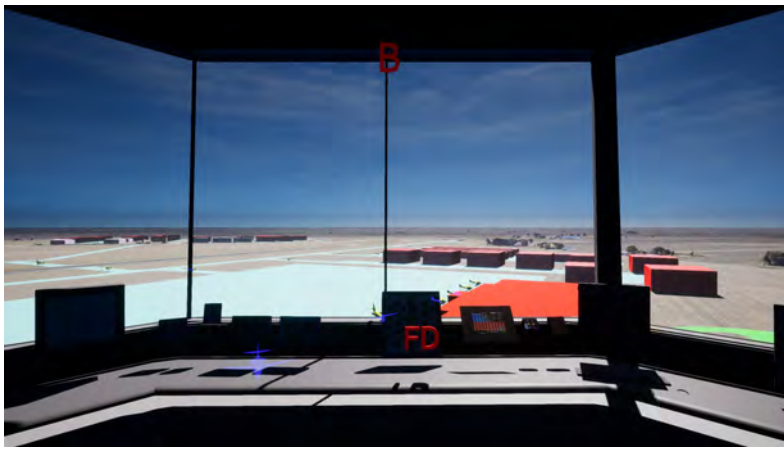
(3D Model Screenshots)

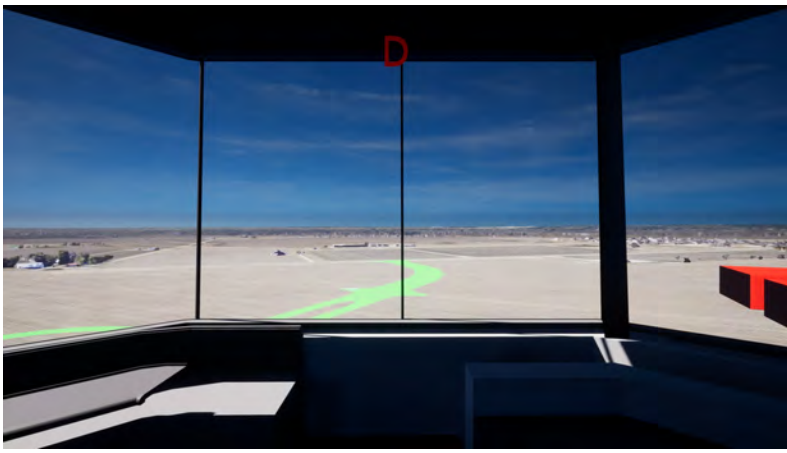
BAZ Site 1

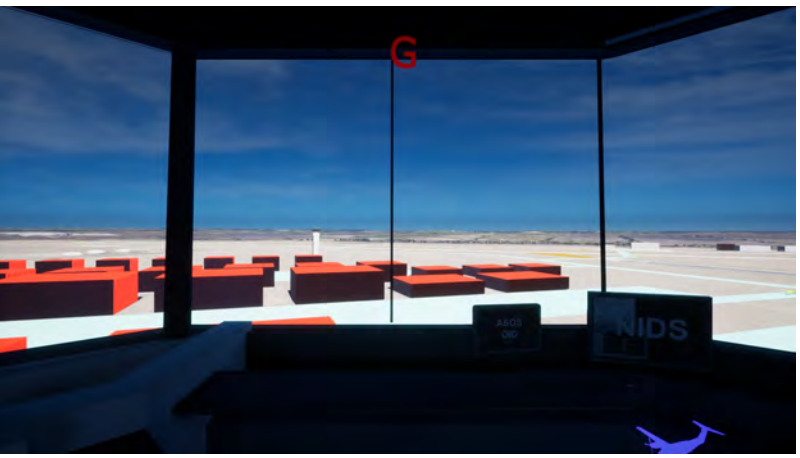

Resume
Save
Load
Model
Reset
Quit
Main Menu
Print W Menu
Print Screen
Location
Planes
Taxi
Tower
Cab
Control
Weather
Site
Site 1
Latitude: 29°42'14.95"
Longitude: -98°2'53.7"
GR Elevation: 650.0
CF Height: 120.0
Height at Eye Level: 125.0
Height at Roof: 134.0
Top of Antenna:155.0
Rotation:20.0°
Move Tower
1'
5'
10'
Up
Down
CW
CCW
Position
Elevation
Rotation
(5 ° increments)
SCALE
1 : 1
A
LC
Data attribution

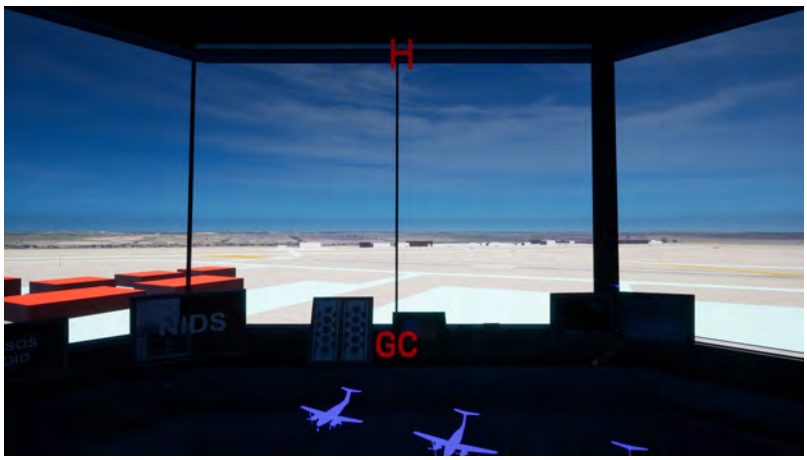
BAZ Site 1







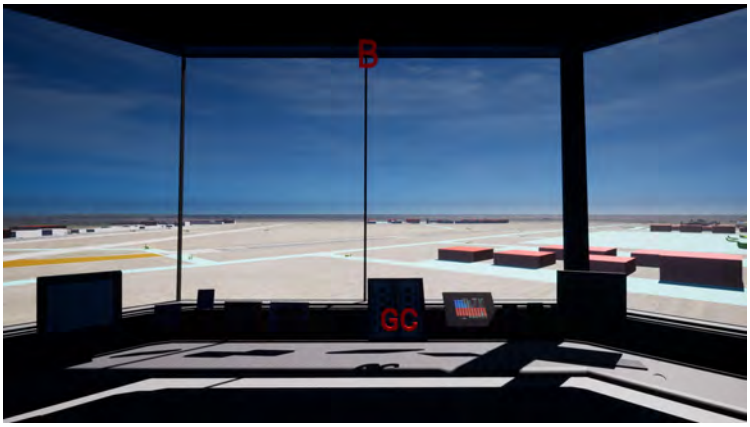


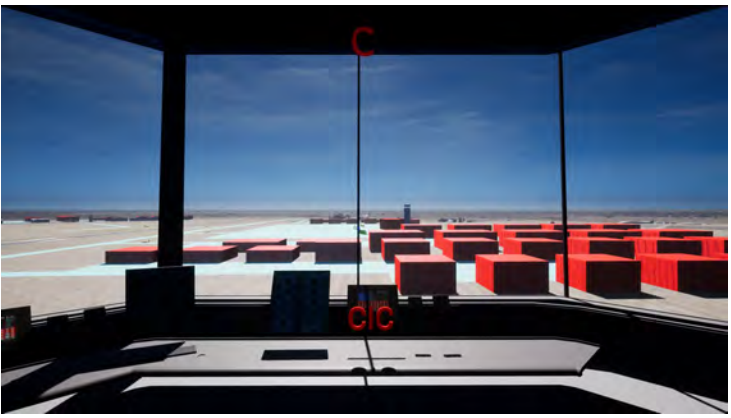


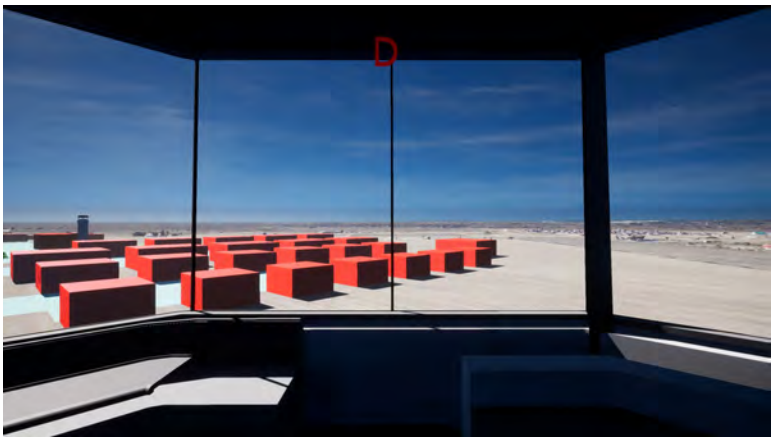
BAZ Site 2

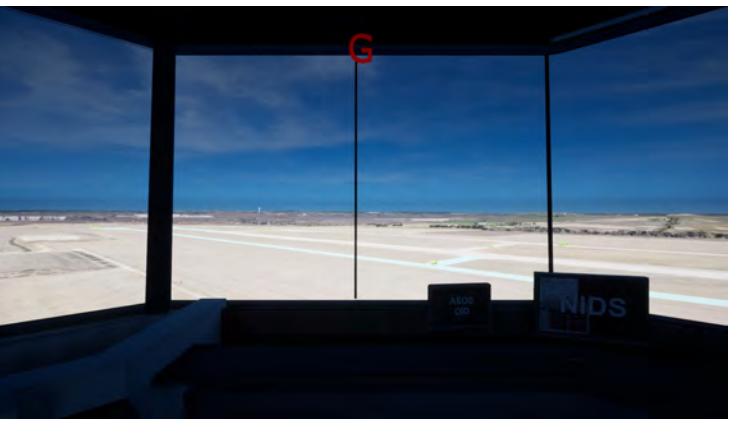

Resume
Save
Load
Model
Reset
Quit
Main Menu
Print W Menu
Print Screen
Location
Planes
Taxi
Tower
Cab
Control
Weather
Site
Site 2
Latitude: 29°42'32.53"
Longitude: -98°2'50.77"
GR Elevation: 651.0
CF Height: 110.0
Height at Eye Level: 115.0
Height at Roof: 124.0
Top of Antenna:145.0
Rotation:0.0°
Move Tower
1'
5'
10'
Up
Down
CW
CCW
Position
Elevation
Rotation
(5 ° increments)
SCALE
1 : 1
A
LC

BAZ Site 2









Appendix E – Drawings (Airport Layout Plan, Cab Layout, Orientation, Building Profile)

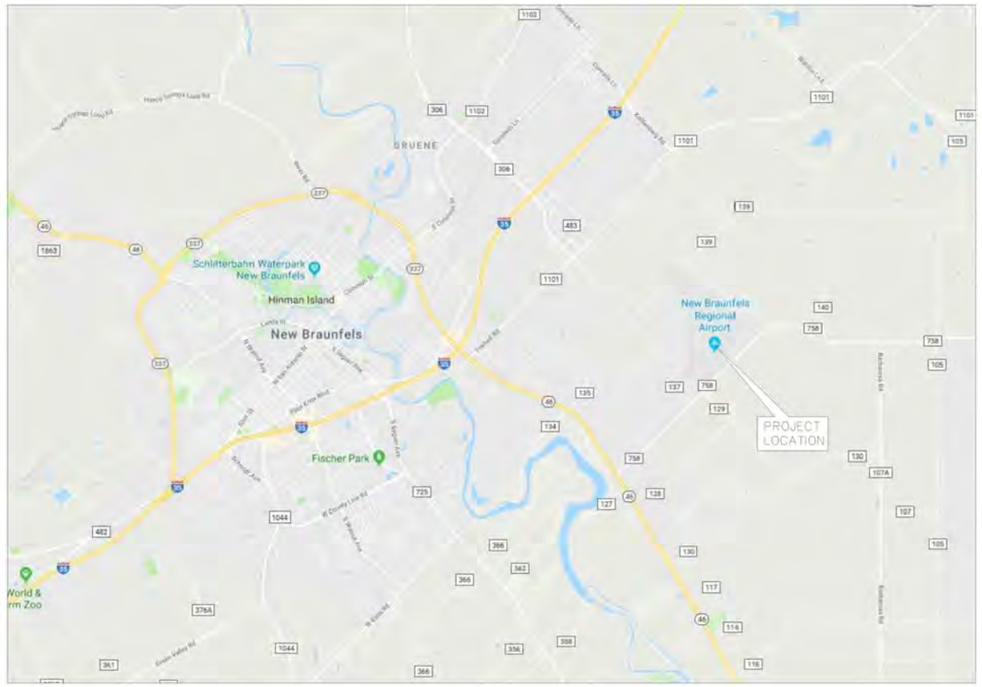
AIRPORT LAYOUT PLAN

FOR

NEW BRAUNFELS REGIONAL AIRPORT

NEW BRAUNFELS, TEXAS

LOCATION MAP



VICINITY MAP

SHEET INDEX	
NO.	TITLE
1	TITLE SHEET
2	AIRPORT LAYOUT DRAWING
3	INNER PORTION OF THE APPROACH SURFACE DRAWING – RUNWAY 13
4	INNER PORTION OF THE APPROACH SURFACE DRAWING – RUNWAY 31
5	INNER PORTION OF THE APPROACH SURFACE DRAWING – RUNWAY 17
6	INNER PORTION OF THE APPROACH SURFACE DRAWING – RUNWAY 35
7	INNER PORTION OF THE APPROACH SURFACE DRAWING – RUNWAY 17
8	INNER PORTION OF THE APPROACH SURFACE DRAWING – RUNWAY 35
9	DEPARTURE SURFACE DRAWING – RUNWAY 13–31
10	DEPARTURE SURFACE DRAWING – RUNWAY 17–35
11	TERMINAL AREA DRAWING
12	TERMINAL AREA DRAWING
13	TERMINAL AREA DRAWING
14	LAND USE DRAWING
15	EXHIBIT A PROPERTY MAP

MAYOR
BARRON CASTELL

CITY COUNCIL
SHANE HINES
JUSTIN MEADOWS
HARRY BOWERS
METTHEW E. HOYT
WAYNE PETERS
LEAH A. GARCIA

CITY MANAGER
ROBERT CAMARENO

AIRPORT MANAGER
ROBERT LEE

REV	DESCRIPTION	DATE	APPROVED

TEXAS DEPARTMENT OF TRANSPORTATION
AVIATION DIVISION

ALP APPROVED ACCORDING TO FAA AC 150/5300-13 CHANGE 16 PLUS THE REQUIREMENTS OF A FAVORABLE ENVIRONMENTAL FINDING AND FAA NRA STUDY PRIOR TO THE START OF ANY LAND ACQUISITION OR CONSTRUCTION ON AIRPORT PROPERTY.

DAVID FULTON, DIRECTOR, AVIATION DIVISION — DATE

AIRPORT SPONSOR

CURRENT AND FUTURE DEVELOPMENT DEPICTED ON THIS ALP IS APPROVED AND SUPPORTED BY AIRPORT SPONSOR.

SPONSOR ACKNOWLEDGES APPROVAL OF ALP BY TXDOT DOES NOT CONSTITUTE A COMMITMENT TO FUNDING.

SIGNATURE — DATE

TITLE, AIRPORT SPONSOR'S REPRESENTATIVE

PREPARED BY:

KSA
8875 Synergy Drive
McKinney, Texas 75070
T.972-542-2995
F.972-542-6750
www.ksaeng.com

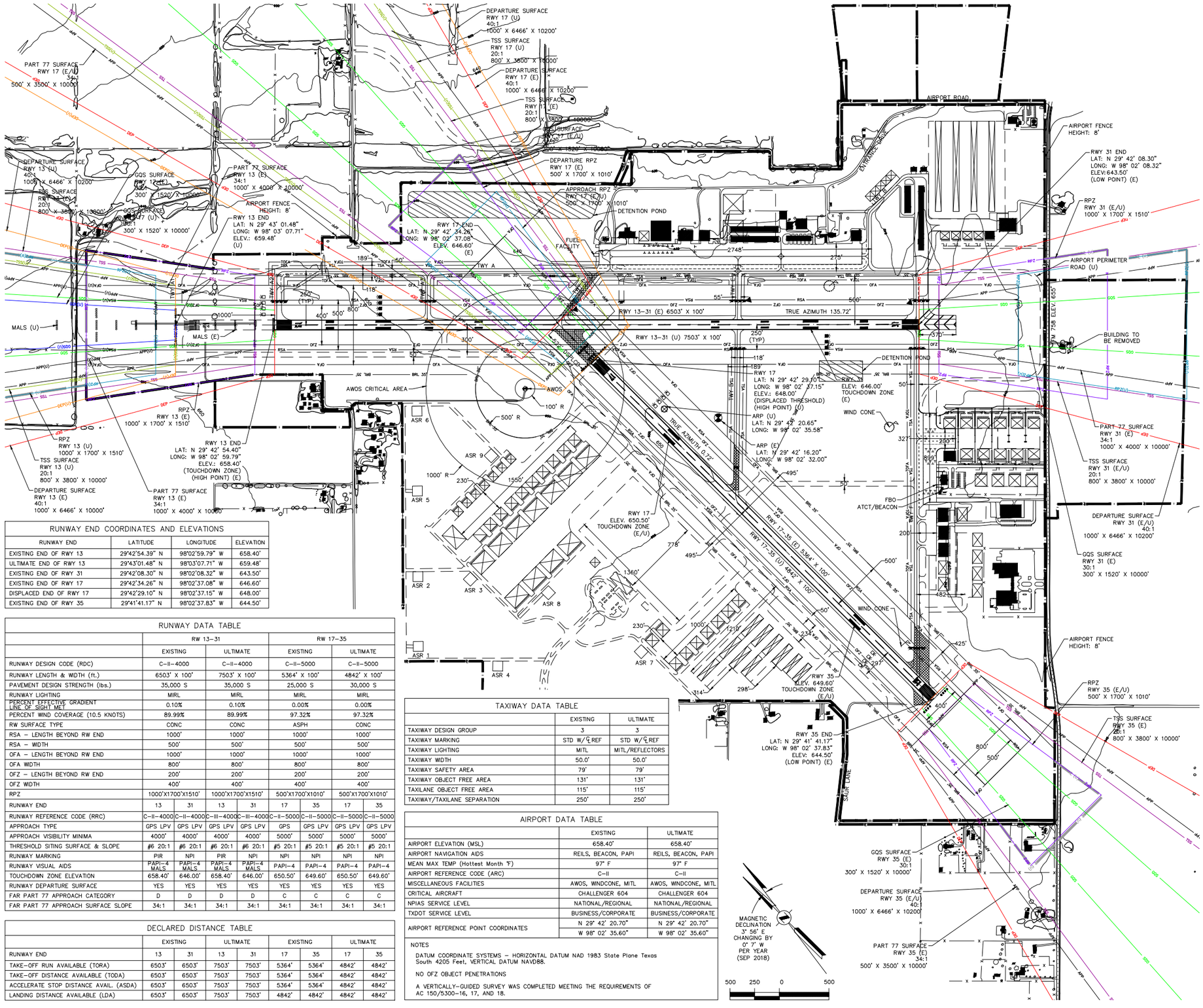
M. MALLONEE — SEPTEMBER 2018
DESIGNED BY — DATE

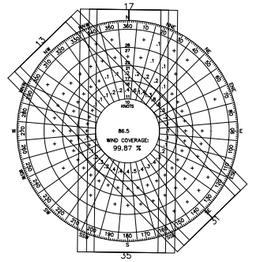
C. MOERI — SEPTEMBER 2018
DRAWN BY — DATE

TITLE SHEET
NEW BRAUNFELS REGIONAL AIRPORT
NEW BRAUNFELS, TEXAS (BAZ)

Texas Department of Transportation
Aviation Division

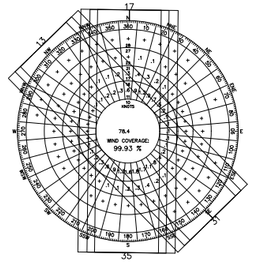
SHEET 1 OF 15





IFR WIND COVERAGE			
RUNWAY	10.5 KNOTS	13 KNOTS	16 KNOTS
RUNWAY 13–31	91.65%	95.09%	98.52%
RUNWAY 17–35	97.07%	98.70%	99.57%
COMBINED COVERAGE	99.77%	99.81%	99.87%

STATION 722550, NEW BRAUNFELS REGIONAL
AIRPORT 24,635 OBSERVATIONS
JAN. 2008 – DEC 2017
WWW.NCDC.NOAA.GOV



AWWR WIND COVERAGE			
RUNWAY	10.5 KNOTS	13 KNOTS	16 KNOTS
RUNWAY 13–31	89.99%	94.74%	98.56%
RUNWAY 17–35	97.32%	98.98%	99.75%
COMBINED COVERAGE	99.87%	99.90%	99.93%

STATION 722550, NEW BRAUNFELS REGIONAL
AIRPORT 137,874 OBSERVATIONS
JAN. 2008 – DEC 2017
WWW.NCDC.NOAA.GOV

ALD LEGEND		
FEATURE	EXISTING	ULTIMATE
RUNWAY/TAXIWAY OUTLINE		
RUNWAY/TAXIWAY TO BE REMOVED		
BUILDINGS/FACILITIES		
AIRPORT PROPERTY LINE		
AIRPORT PROPERTY LINE w/FENCE		
FENCE LINE		
BUILDING RESTRICTION LINE (BRL)		BRL 0'
AIRPORT REFERENCE POINT		
WIND CONE & SEGMENTED CIRCLE		
THRESHOLD LIGHTS		
RW END IDENTIFIER LIGHTS (REILS)		
C&G BEACON		
VGSI		
HOLD POSITION AND SIGN		
ASOS/AWOS		
PACS AND SACS MARKERS		
GROUND CONTOURS	1620	
SIGNIFICANT OBJECT LOCATION		
TREES/BRUSH		
NONDIRECTIONAL BEACON (NDB)		
PAPI		

RUNWAY END COORDINATES AND ELEVATIONS			
RUNWAY END	LATITUDE	LONGITUDE	ELEVATION
EXISTING END OF RWY 13	29°42'54.39" N	98°02'59.79" W	658.40'
ULTIMATE END OF RWY 13	29°43'01.48" N	98°03'07.71" W	659.48'
EXISTING END OF RWY 31	29°42'08.30" N	98°02'08.32" W	643.50'
EXISTING END OF RWY 17	29°42'34.26" N	98°02'37.08" W	646.60'
DISPLACED END OF RWY 17	29°42'29.10" N	98°02'37.15" W	648.00'
EXISTING END OF RWY 35	29°41'41.17" N	98°02'37.83" W	644.50'

RUNWAY DATA TABLE								
	RW 13–31				RW 17–35			
	EXISTING		ULTIMATE		EXISTING		ULTIMATE	
RUNWAY DESIGN CODE (RDC)	C–II–4000		C–II–4000		C–II–5000		C–II–5000	
RUNWAY LENGTH & WIDTH (ft.)	6503' X 100'		7503' X 100'		5364' X 100'		4842' X 100'	
PAVEMENT DESIGN STRENGTH (lbs.)	35,000 S		35,000 S		25,000 S		30,000 S	
RUNWAY LIGHTING	MIRL		MIRL		MIRL		MIRL	
PERCENT EFFECTIVE GRADIENT LINE OF SIGHT MET	0.10%		0.10%		0.00%		0.00%	
PERCENT WIND COVERAGE (10.5 KNOTS)	89.99%		89.99%		97.32%		97.32%	
RW SURFACE TYPE	CONC		CONC		ASPH		CONC	
RSA – LENGTH BEYOND RW END	1000'		1000'		1000'		1000'	
RSA – WIDTH	500'		500'		500'		500'	
OFA – LENGTH BEYOND RW END	1000'		1000'		1000'		1000'	
OFA WIDTH	800'		800'		800'		800'	
OFZ – LENGTH BEYOND RW END	200'		200'		200'		200'	
OFZ WIDTH	400'		400'		400'		400'	
RPZ	1000'X1700'X1510'		1000'X1700'X1510'		500'X1700'X1010'		500'X1700'X1010'	
RUNWAY END	13	31	13	31	17	35	17	35
RUNWAY REFERENCE CODE (RRC)	C–II–4000	C–II–4000	C–II–4000	C–II–4000	C–II–5000	C–II–5000	C–II–5000	C–II–5000
APPROACH TYPE	GPS LPV	GPS LPV	GPS LPV	GPS LPV	GPS	GPS LPV	GPS LPV	GPS LPV
APPROACH VISIBILITY MINIMA	4000'	4000'	4000'	4000'	5000'	5000'	5000'	5000'
THRESHOLD SITING SURFACE & SLOPE	#6 20:1	#6 20:1	#6 20:1	#6 20:1	#5 20:1	#5 20:1	#5 20:1	#5 20:1
RUNWAY MARKING	PIR	NPI	PIR	NPI	NPI	NPI	NPI	NPI
RUNWAY VISUAL AIDS	PAPI–4 MALS	PAPI–4 MALS	PAPI–4 MALS	PAPI–4 MALS	PAPI–4	PAPI–4	PAPI–4	PAPI–4
TOUCHDOWN ZONE ELEVATION	658.40'	646.00'	658.40'	646.00'	650.50'	649.60'	650.50'	649.60'
RUNWAY DEPARTURE SURFACE	YES	YES	YES	YES	YES	YES	YES	YES
FAR PART 77 APPROACH CATEGORY	D	D	D	D	C	C	C	C
FAR PART 77 APPROACH SURFACE SLOPE	34:1	34:1	34:1	34:1	34:1	34:1	34:1	34:1

DECLARED DISTANCE TABLE								
	EXISTING		ULTIMATE		EXISTING		ULTIMATE	
RUNWAY END	13	31	13	31	17	35	17	35
TAKE–OFF RUN AVAILABLE (TORA)	6503'	6503'	7503'	7503'	5364'	5364'	4842'	4842'
TAKE–OFF DISTANCE AVAILABLE (TODA)	6503'	6503'	7503'	7503'	5364'	5364'	4842'	4842'
ACCELERATE STOP DISTANCE AVAIL. (ASDA)	6503'	6503'	7503'	7503'	5364'	5364'	4842'	4842'
LANDING DISTANCE AVAILABLE (LDA)	6503'	6503'	7503'	7503'	4842'	4842'	4842'	4842'

TAXIWAY DATA TABLE		
	EXISTING	ULTIMATE
TAXIWAY DESIGN GROUP	3	3
TAXIWAY MARKING	STD W/℄REF	STD W/℄REF
TAXIWAY LIGHTING	MITL	MITL/REFLECTORS
TAXIWAY WIDTH	50.0'	50.0'
TAXIWAY SAFETY AREA	79'	79'
TAXIWAY OBJECT FREE AREA	131'	131'
TAXILANE OBJECT FREE AREA	115'	115'
TAXIWAY/TAXILANE SEPARATION	250'	250'

AIRPORT DATA TABLE		
	EXISTING	ULTIMATE
AIRPORT ELEVATION (MSL)	658.40'	658.40'
AIRPORT NAVIGATION AIDS	REILS, BEACON, PAPI	REILS, BEACON, PAPI
MEAN MAX TEMP (Hottest Month °F)	97° F	97° F
AIRPORT REFERENCE CODE (ARC)	C–II	C–II
MISCELLANEOUS FACILITIES	AWOS, WINDCONE, MITL	AWOS, WINDCONE, MITL
CRITICAL AIRCRAFT	CHALLENGER 604	CHALLENGER 604
NPIAS SERVICE LEVEL	NATIONAL/REGIONAL	NATIONAL/REGIONAL
TXDOT SERVICE LEVEL	BUSINESS/CORPORATE	BUSINESS/CORPORATE
AIRPORT REFERENCE POINT COORDINATES	N 29° 42' 20.70"	N 29° 42' 20.70"
	W 98° 02' 35.60"	W 98° 02' 35.60"

NOTES

DATUM COORDINATE SYSTEMS – HORIZONTAL DATUM NAD 1983 State Plane Texas South 4205 Feet, VERTICAL DATUM NAVD88.

NO OFZ OBJECT PENETRATIONS

A VERTICALLY–GUIDED SURVEY WAS COMPLETED MEETING THE REQUIREMENTS OF AC 150/5300–16, 17, AND 18.

EXEEDS STANDARDS
NONE

MODIFICATION TO STANDARDS
NONE

REV	DESCRIPTION	DATE	APPROVED

TEXAS DEPARTMENT OF TRANSPORTATION
AVIATION DIVISION

ALP APPROVED ACCORDING TO FAA AC 150/5300-13 CHANGE 16 PLUS THE REQUIREMENTS OF A FAVORABLE ENVIRONMENTAL FINDING AND FAA NRA STUDY PRIOR TO THE START OF ANY LAND ACQUISITION OR CONSTRUCTION ON AIRPORT PROPERTY.

DAVID FULTON, DIRECTOR, AVIATION DIVISION — DATE

AIRPORT SPONSOR

CURRENT AND FUTURE DEVELOPMENT DEPICTED ON THIS ALP IS APPROVED AND SUPPORTED BY AIRPORT SPONSOR

SPONSOR ACKNOWLEDGES APPROVAL OF ALP BY TXDOT DOES NOT CONSTITUTE A COMMITMENT TO FUNDING.

SIGNATURE — DATE

TITLE, AIRPORT SPONSOR'S REPRESENTATIVE

PREPARED BY:

KSA
3995 Synergy Drive
McKinney, Texas 75070
T.972-542-2565
F.972-542-6750
www.ksaeng.com

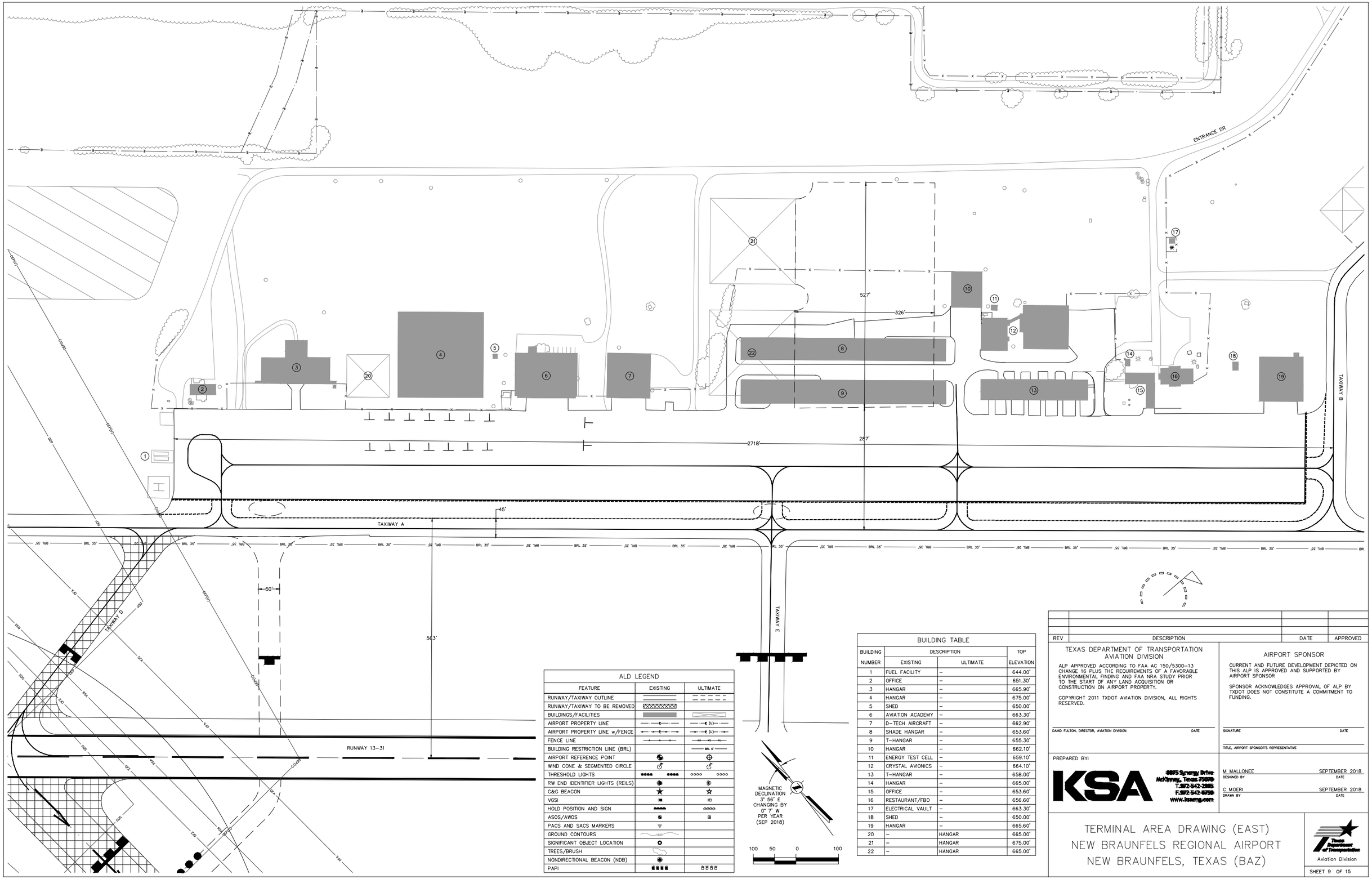
M MALLONEE — SEPTEMBER 2018
DESIGNED BY — DATE

C MOERI — SEPTEMBER 2018
DRAWN BY — DATE

AIRPORT LAYOUT DRAWING
NEW BRAUNFELS REGIONAL AIRPORT
NEW BRAUNFELS, TEXAS (BAZ)

Texas Department of Transportation
Aviation Division

SHEET 2 OF 15



ALD LEGEND		
FEATURE	EXISTING	ULTIMATE
RUNWAY/TAXIWAY OUTLINE		
RUNWAY/TAXIWAY TO BE REMOVED		
BUILDINGS/FACILITIES		
AIRPORT PROPERTY LINE		
AIRPORT PROPERTY LINE w/FENCE		
FENCE LINE		
BUILDING RESTRICTION LINE (BRL)		BRL 0'
AIRPORT REFERENCE POINT		
WIND CONE & SEGMENTED CIRCLE		
THRESHOLD LIGHTS		
RW END IDENTIFIER LIGHTS (REILS)		
C&G BEACON		
VGSI		
HOLD POSITION AND SIGN		
ASOS/AWOS		
PACS AND SACS MARKERS		
GROUND CONTOURS		
SIGNIFICANT OBJECT LOCATION		
TREES/BRUSH		
NONDIRECTIONAL BEACON (NDB)		
PAPI		

BUILDING TABLE			
BUILDING NUMBER	DESCRIPTION		TOP ELEVATION
	EXISTING	ULTIMATE	
1	FUEL FACILITY	–	644.00'
2	OFFICE	–	651.30'
3	HANGAR	–	665.90'
4	HANGAR	–	675.00'
5	SHED	–	650.00'
6	AVIATION ACADEMY	–	663.30'
7	D-TECH AIRCRAFT	–	662.90'
8	SHADE HANGAR	–	653.60'
9	T-HANGAR	–	655.30'
10	HANGAR	–	662.10'
11	ENERGY TEST CELL	–	659.10'
12	CRYSTAL AVIONICS	–	664.10'
13	T-HANGAR	–	658.00'
14	HANGAR	–	665.00'
15	OFFICE	–	653.60'
16	RESTAURANT/FBO	–	656.60'
17	ELECTRICAL VAULT	–	663.30'
18	SHED	–	650.00'
19	HANGAR	–	665.60'
20	–	HANGAR	665.00'
21	–	HANGAR	675.00'
22	–	HANGAR	665.00'

REV	DESCRIPTION	DATE	APPROVED

TEXAS DEPARTMENT OF TRANSPORTATION
AVIATION DIVISION

ALP APPROVED ACCORDING TO FAA AC 150/5300-13 CHANGE 16 PLUS THE REQUIREMENTS OF A FAVORABLE ENVIRONMENTAL FINDING AND FAA NRA STUDY PRIOR TO THE START OF ANY LAND ACQUISITION OR CONSTRUCTION ON AIRPORT PROPERTY.

DAVID FULTON, DIRECTOR, AVIATION DIVISION — DATE

AIRPORT SPONSOR

CURRENT AND FUTURE DEVELOPMENT DEPICTED ON THIS ALP IS APPROVED AND SUPPORTED BY AIRPORT SPONSOR

SPONSOR ACKNOWLEDGES APPROVAL OF ALP BY TXDOT DOES NOT CONSTITUTE A COMMITMENT TO FUNDING.

SIGNATURE — DATE

TITLE, AIRPORT SPONSOR'S REPRESENTATIVE

PREPARED BY:

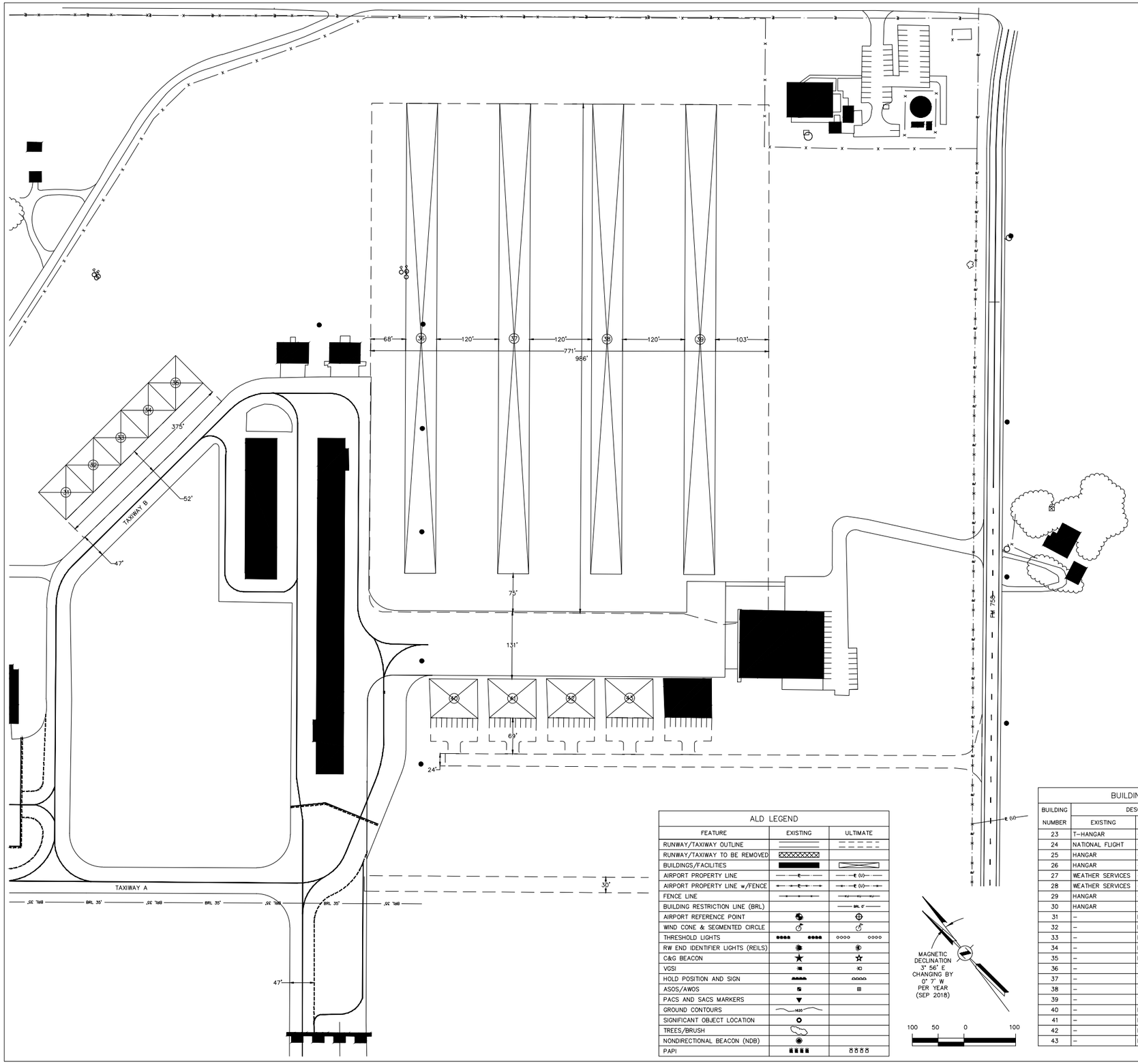
KSA
3995 Synergy Drive
McKinney, Texas 75069
T.972-542-2385
F.972-542-6790
www.ksaeng.com

M MALLONEE — SEPTEMBER 2018
DESIGNED BY — DATE

C MOERI — SEPTEMBER 2018
DRAWN BY — DATE

TERMINAL AREA DRAWING (EAST)
NEW BRAUNFELS REGIONAL AIRPORT
NEW BRAUNFELS, TEXAS (BAZ)

Texas Department of Transportation
Aviation Division



ALD LEGEND		
FEATURE	EXISTING	ULTIMATE
RUNWAY/TAXIWAY OUTLINE		
RUNWAY/TAXIWAY TO BE REMOVED		
BUILDINGS/FACILITIES		
AIRPORT PROPERTY LINE		
AIRPORT PROPERTY LINE w/FENCE		
FENCE LINE		
BUILDING RESTRICTION LINE (BRL)		BRL 0'
AIRPORT REFERENCE POINT		
WIND CONE & SEGMENTED CIRCLE		
THRESHOLD LIGHTS		
RW END IDENTIFIER LIGHTS (REILS)		
C&G BEACON		
VGSI		
HOLD POSITION AND SIGN		
ASOS/AWOS		
PACS AND SACS MARKERS		
GROUND CONTOURS		
SIGNIFICANT OBJECT LOCATION		
TREES/BRUSH		
NONDIRECTIONAL BEACON (NDB)		
PAPI		

BUILDING TABLE			
BUILDING NUMBER	DESCRIPTION EXISTING	DESCRIPTION ULTIMATE	TOP ELEVATION
23	T-HANGAR	–	657.40'
24	NATIONAL FLIGHT	–	660.10'
25	HANGAR	–	657.40'
26	HANGAR	–	659.00'
27	WEATHER SERVICES	–	657.40'
28	WEATHER SERVICES	–	750.10'
29	HANGAR	–	665.00'
30	HANGAR	–	675.00'
31	–	HANGAR	665.00'
32	–	HANGAR	665.00'
33	–	HANGAR	665.00'
34	–	HANGAR	665.00'
35	–	HANGAR	665.00'
36	–	T-HANGAR	665.00'
37	–	T-HANGAR	665.00'
38	–	T-HANGAR	665.00'
39	–	T-HANGAR	665.00'
40	–	HANGAR	665.00'
41	–	HANGAR	665.00'
42	–	HANGAR	665.00'
43	–	HANGAR	665.00'

REV	DESCRIPTION	DATE	APPROVED

TEXAS DEPARTMENT OF TRANSPORTATION
AVIATION DIVISION

ALP APPROVED ACCORDING TO FAA AC 150/5300-13 CHANGE 16 PLUS THE REQUIREMENTS OF A FAVORABLE ENVIRONMENTAL FINDING AND FAA NRA STUDY PRIOR TO THE START OF ANY LAND ACQUISITION OR CONSTRUCTION ON AIRPORT PROPERTY.

DAVID FULTON, DIRECTOR, AVIATION DIVISION — DATE

AIRPORT SPONSOR

CURRENT AND FUTURE DEVELOPMENT DEPICTED ON THIS ALP IS APPROVED AND SUPPORTED BY AIRPORT SPONSOR

SPONSOR ACKNOWLEDGES APPROVAL OF ALP BY TXDOT DOES NOT CONSTITUTE A COMMITMENT TO FUNDING.

SIGNATURE — DATE

TITLE, AIRPORT SPONSOR'S REPRESENTATIVE

PREPARED BY:

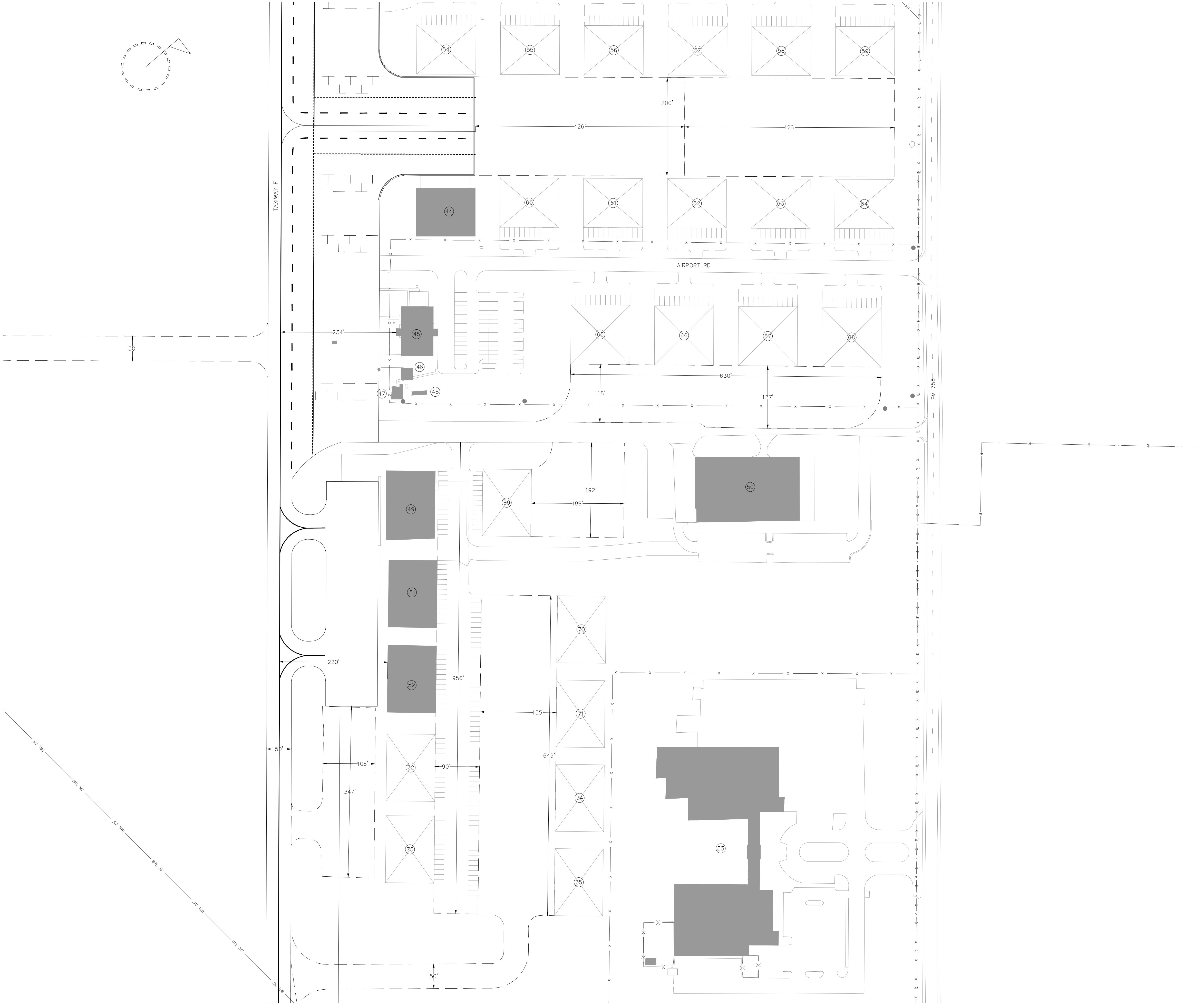
KSA
3875 Synergy Drive
McKinney, Texas 75069
T.972-542-2395
F.972-542-6750
www.ksaeng.com

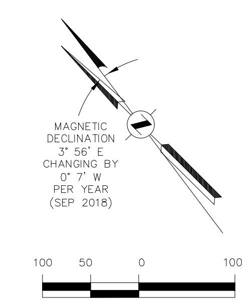
M MALLONEE — SEPTEMBER 2018
DESIGNED BY — DATE

C MOERI — SEPTEMBER 2018
DRAWN BY — DATE

TERMINAL AREA DRAWING (SOUTHEAST)
NEW BRAUNFELS REGIONAL AIRPORT
NEW BRAUNFELS, TEXAS (BAZ)

Texas Department of Transportation
Aviation Division





ALD LEGEND

FEATURE	EXISTING	ULTIMATE
RUNWAY/TAXIWAY OUTLINE		
RUNWAY/TAXIWAY TO BE REMOVED		
BUILDINGS/FACILITIES		
AIRPORT PROPERTY LINE		(U)
AIRPORT PROPERTY LINE w/FENCE		(U)
FENCE LINE	x x x	xu xu xu
BUILDING RESTRICTION LINE (BRL)		BRL 0'
AIRPORT REFERENCE POINT		
WIND CONE & SEGMENTED CIRCLE		
THRESHOLD LIGHTS	●●●● ●●●●	○○○○ ○○○○
RW END IDENTIFIER LIGHTS (REILS)		
C&G BEACON	★	☆
VGSI		
HOLD POSITION AND SIGN		
ASOS/AWOS		⊞
PACS AND SACS MARKERS	▼	
GROUND CONTOURS	1620	
SIGNIFICANT OBJECT LOCATION	○	
TREES/BRUSH		
NONDIRECTIONAL BEACON (NDB)	◉	
PAPI		

BUILDING TABLE

BUILDING NUMBER	DESCRIPTION EXISTING	DESCRIPTION ULTIMATE	TOP ELEVATION
44	TODDCOE AVIATION	–	665.00'
45	TERMINAL	–	665.00'
46	SHED	–	650.00'
47	ATCT	–	715.00'
48	SHED	–	650.00'
49	ALFA AIRCRAFT	–	665.00'
50	HANGAR	–	665.00'
51	HANGAR	–	665.00'
52	HANGAR	–	675.00'
53	ALAMO COLLEGE	–	675.00'
54	–	HANGAR	665.00'
55	–	HANGAR	665.00'
56	–	HANGAR	665.00'
57	–	HANGAR	665.00'
58	–	HANGAR	665.00'
59	–	HANGAR	665.00'
60	–	HANGAR	665.00'
61	–	HANGAR	665.00'
62	–	HANGAR	665.00'
63	–	HANGAR	665.00'
64	–	HANGAR	665.00'
65	–	HANGAR	665.00'
66	–	HANGAR	665.00'
67	–	HANGAR	665.00'
68	–	HANGAR	665.00'
69	–	HANGAR	665.00'
70	–	HANGAR	665.00'
71	–	HANGAR	665.00'
72	–	HANGAR	665.00'
73	–	HANGAR	665.00'
74	–	HANGAR	665.00'
75	–	HANGAR	665.00'

REV	DESCRIPTION	DATE	APPROVED

TEXAS DEPARTMENT OF TRANSPORTATION AVIATION DIVISION

ALP APPROVED ACCORDING TO FAA AC 150/5300–13 CHANGE 16 PLUS THE REQUIREMENTS OF A FAVORABLE ENVIRONMENTAL FINDING AND FAA NRA STUDY PRIOR TO THE START OF ANY LAND ACQUISITION OR CONSTRUCTION ON AIRPORT PROPERTY.

DAVID FULTON, DIRECTOR, AVIATION DIVISION — DATE

AIRPORT SPONSOR

CURRENT AND FUTURE DEVELOPMENT DEPICTED ON THIS ALP IS APPROVED AND SUPPORTED BY AIRPORT SPONSOR

SPONSOR ACKNOWLEDGES APPROVAL OF ALP BY TXDOT DOES NOT CONSTITUTE A COMMITMENT TO FUNDING.

SIGNATURE — DATE

TITLE, AIRPORT SPONSOR'S REPRESENTATIVE

PREPARED BY:

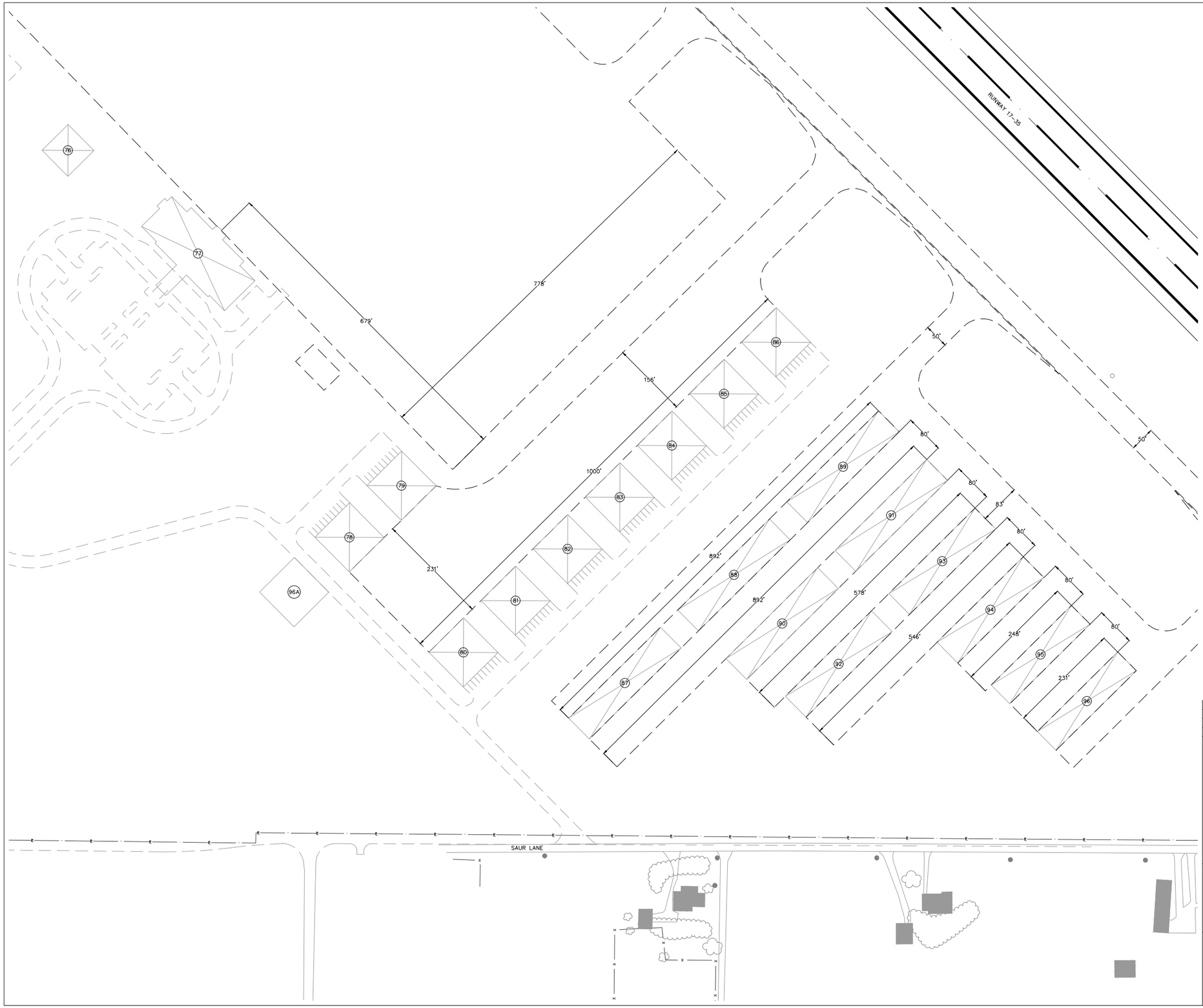
KSA
8875 Synergy Drive
McKinney, Texas 75070
T.972-542-2995
F.972-542-6750
www.ksaeng.com

M MALLONEE — SEPTEMBER 2018
DESIGNED BY — DATE

C MOERI — SEPTEMBER 2018
DRAWN BY — DATE

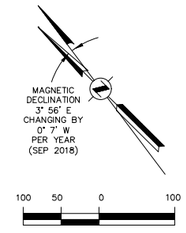
TERMINAL AREA DRAWING
NEW BRAUNFELS REGIONAL AIRPORT
NEW BRAUNFELS, TEXAS (BAZ)

Texas Department of Transportation
Aviation Division



ALD LEGEND		
FEATURE	EXISTING	ULTIMATE
RUNWAY/TAXIWAY OUTLINE		
RUNWAY/TAXIWAY TO BE REMOVED		
BUILDINGS/FACILITIES		
AIRPORT PROPERTY LINE		
AIRPORT PROPERTY LINE w/FENCE		
FENCE LINE		
BUILDING RESTRICTION LINE (BRL)		
AIRPORT REFERENCE POINT		
WIND CONE & SEGMENTED CIRCLE		
THRESHOLD LIGHTS		
RW END IDENTIFIER LIGHTS (REILS)		
C&G BEACON		
VGSI		
HOLD POSITION AND SIGN		
ASOS/AWOS		
PACS AND SACS MARKERS		
GROUND CONTOURS		
SIGNIFICANT OBJECT LOCATION		
TREES/BRUSH		
NONDIRECTIONAL BEACON (NDB)		
PAPI		

BUILDING TABLE			
BUILDING NUMBER	DESCRIPTION EXISTING	DESCRIPTION ULTIMATE	TOP ELEVATION
76	–	ATCT	715.00'
77	–	TERMINAL	665.00'
78	–	HANGAR	665.00'
79	–	HANGAR	665.00'
80	–	HANGAR	665.00'
81	–	HANGAR	665.00'
82	–	HANGAR	665.00'
83	–	HANGAR	665.00'
84	–	HANGAR	665.00'
85	–	HANGAR	665.00'
86	–	HANGAR	665.00'
87	–	T-HANGAR	665.00'
88	–	T-HANGAR	665.00'
89	–	T-HANGAR	665.00'
90	–	T-HANGAR	665.00'
91	–	T-HANGAR	665.00'
92	–	T-HANGAR	665.00'
93	–	T-HANGAR	665.00'
94	–	T-HANGAR	665.00'
95	–	T-HANGAR	665.00'
96	–	T-HANGAR	665.00'
96A	ASR	–	–



REV	DESCRIPTION	DATE	APPROVED

TEXAS DEPARTMENT OF TRANSPORTATION
AVIATION DIVISION

ALP APPROVED ACCORDING TO FAA AC 150/5300-13 CHANGE 16 PLUS THE REQUIREMENTS OF A FAVORABLE ENVIRONMENTAL FINDING AND FAA NRA STUDY PRIOR TO THE START OF ANY LAND ACQUISITION OR CONSTRUCTION ON AIRPORT PROPERTY.

DAVID FULTON, DIRECTOR, AVIATION DIVISION — DATE

AIRPORT SPONSOR

CURRENT AND FUTURE DEVELOPMENT DEPICTED ON THIS ALP IS APPROVED AND SUPPORTED BY AIRPORT SPONSOR

SPONSOR ACKNOWLEDGES APPROVAL OF ALP BY TXDOT DOES NOT CONSTITUTE A COMMITMENT TO FUNDING.

SIGNATURE — DATE

TITLE, AIRPORT SPONSOR'S REPRESENTATIVE

PREPARED BY:

KSA
3865 Synergy Drive
McKinney, Texas 75070
T.972-542-2585
F.972-542-6759
www.ksaeng.com

M MALLONEE — SEPTEMBER 2018
DESIGNED BY — DATE

C MOERI — SEPTEMBER 2018
DRAWN BY — DATE

TERMINAL AREA DRAWING (WEST)
NEW BRAUNFELS REGIONAL AIRPORT
NEW BRAUNFELS, TEXAS (BAZ)

Texas Department of Transportation
Aviation Division

AWOS CRITICAL AREA

1550'

925'

1700'

778'

681'

950'

331'

231'

ALD LEGEND		
FEATURE	EXISTING	ULTIMATE
RUNWAY/TAXIWAY OUTLINE		
RUNWAY/TAXIWAY TO BE REMOVED		
BUILDINGS/FACILITIES		
AIRPORT PROPERTY LINE		
AIRPORT PROPERTY LINE w/FENCE		
FENCE LINE		
BUILDING RESTRICTION LINE (BRL)		
AIRPORT REFERENCE POINT		
WIND CONE & SEGMENTED CIRCLE		
THRESHOLD LIGHTS		
RW END IDENTIFIER LIGHTS (REILS)		
C&G BEACON		
VGSI		
HOLD POSITION AND SIGN		
ASOS/AWOS		
PACS AND SACS MARKERS		
GROUND CONTOURS		
SIGNIFICANT OBJECT LOCATION		
TREES/BRUSH		
NONDIRECTIONAL BEACON (NDB)		
PAPI		

BUILDING TABLE			
BUILDING NUMBER	DESCRIPTION EXISTING	DESCRIPTION ULTIMATE	TOP ELEVATION
97	–	HANGAR	665.00'
98	–	HANGAR	665.00'
99	–	HANGAR	665.00'
100	–	HANGAR	665.00'
101	–	HANGAR	665.00'
102	–	HANGAR	665.00'
103	–	HANGAR	665.00'
104	–	HANGAR	665.00'
105	–	HANGAR	665.00'
106	–	HANGAR	665.00'
107	–	HANGAR	665.00'
108	–	HANGAR	665.00'
109	–	HANGAR	665.00'
110	–	HANGAR	665.00'
111	–	HANGAR	665.00'
112	–	HANGAR	665.00'
113	–	HANGAR	665.00'
114	–	HANGAR	665.00'
115	–	HANGAR	665.00'
116	–	HANGAR	665.00'
117	–	HANGAR	665.00'
118	–	HANGAR	665.00'
119	–	HANGAR	665.00'
120	–	HANGAR	665.00'
121	–	HANGAR	665.00'
122	–	HANGAR	665.00'
123	–	HANGAR	665.00'
124	–	HANGAR	665.00'
125	–	HANGAR	665.00'
126	ASR	–	–
127	ASR	–	–
128	ASR	–	–
129	ASR	–	–
130	ASR	–	–
131	–	HANGAR	665.00'

MAGNETIC DECLINATION 3° 56' E CHANGING BY 0° 7' W PER YEAR (SEP 2018)

100 50 0 100

REV	DESCRIPTION	DATE	APPROVED

TEXAS DEPARTMENT OF TRANSPORTATION
AVIATION DIVISION

ALP APPROVED ACCORDING TO FAA AC 150/5300-13 CHANGE 16 PLUS THE REQUIREMENTS OF A FAVORABLE ENVIRONMENTAL FINDING AND FAA NRA STUDY PRIOR TO THE START OF ANY LAND ACQUISITION OR CONSTRUCTION ON AIRPORT PROPERTY.

DAVID FULTON, DIRECTOR, AVIATION DIVISION — DATE

AIRPORT SPONSOR

CURRENT AND FUTURE DEVELOPMENT DEPICTED ON THIS ALP IS APPROVED AND SUPPORTED BY AIRPORT SPONSOR

SPONSOR ACKNOWLEDGES APPROVAL OF ALP BY TXDOT DOES NOT CONSTITUTE A COMMITMENT TO FUNDING.

SIGNATURE — DATE

TITLE, AIRPORT SPONSOR'S REPRESENTATIVE

PREPARED BY:

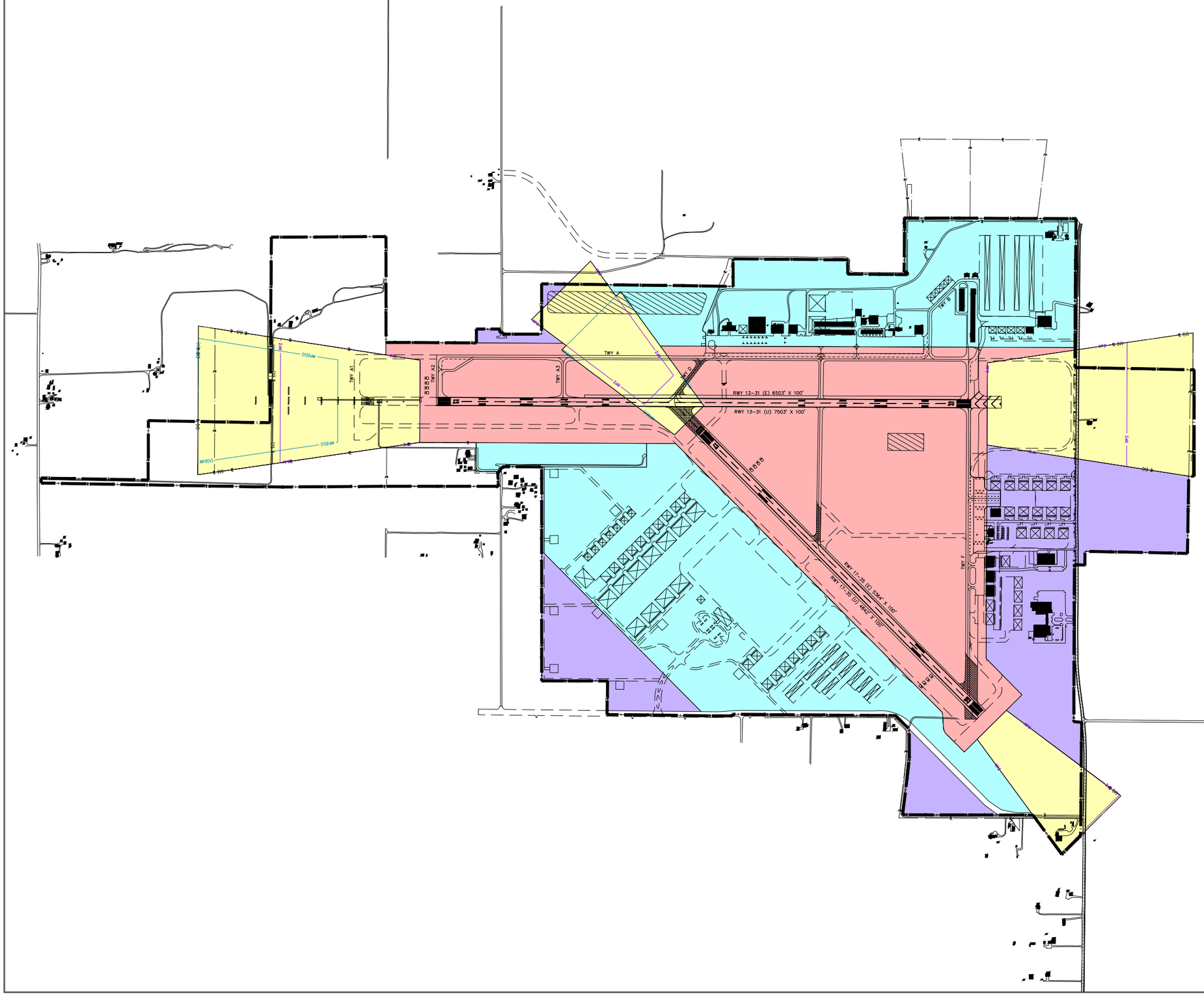
KSA
3875 Synergy Drive
McKinney, Texas 75070
T.972-542-2395
F.972-542-6750
www.ksaeng.com

M MALLONEE — SEPTEMBER 2018
DESIGNED BY — DATE

C MOERI — SEPTEMBER 2018
DRAWN BY — DATE

TERMINAL AREA DRAWING (WEST)
NEW BRAUNFELS REGIONAL AIRPORT
NEW BRAUNFELS, TEXAS (BAZ)

Texas Department of Transportation
Aviation Division



LEGEND

	AVIATION MOVEMENT AREA (ON AIRPORT)
	AVIATION DEVELOPMENT AREA (ON AIRPORT)
	AVIATION RELATED/AVIATION COMPATIBLE DEVELOPMENT AREA (ON AIRPORT)
	RPZ/NON-DEVELOPMENT AREA (ON AIRPORT)

MAGNETIC DECLINATION 3° 56' E CHANGING BY 0° 7' W PER YEAR (SEP 2018)

600 300 0 600

REV	DESCRIPTION	DATE	APPROVED

TEXAS DEPARTMENT OF TRANSPORTATION
AVIATION DIVISION

ALP APPROVED ACCORDING TO FAA AC 150/5300-13 CHANGE 16 PLUS THE REQUIREMENTS OF A FAVORABLE ENVIRONMENTAL FINDING AND FAA NRA STUDY PRIOR TO THE START OF ANY LAND ACQUISITION OR CONSTRUCTION ON AIRPORT PROPERTY.

DAVID FULTON, DIRECTOR, AVIATION DIVISION — DATE

AIRPORT SPONSOR

CURRENT AND FUTURE DEVELOPMENT DEPICTED ON THIS ALP IS APPROVED AND SUPPORTED BY AIRPORT SPONSOR

SPONSOR ACKNOWLEDGES APPROVAL OF ALP BY TXDOT DOES NOT CONSTITUTE A COMMITMENT TO FUNDING.

SIGNATURE — DATE

TITLE, AIRPORT SPONSOR'S REPRESENTATIVE

PREPARED BY:

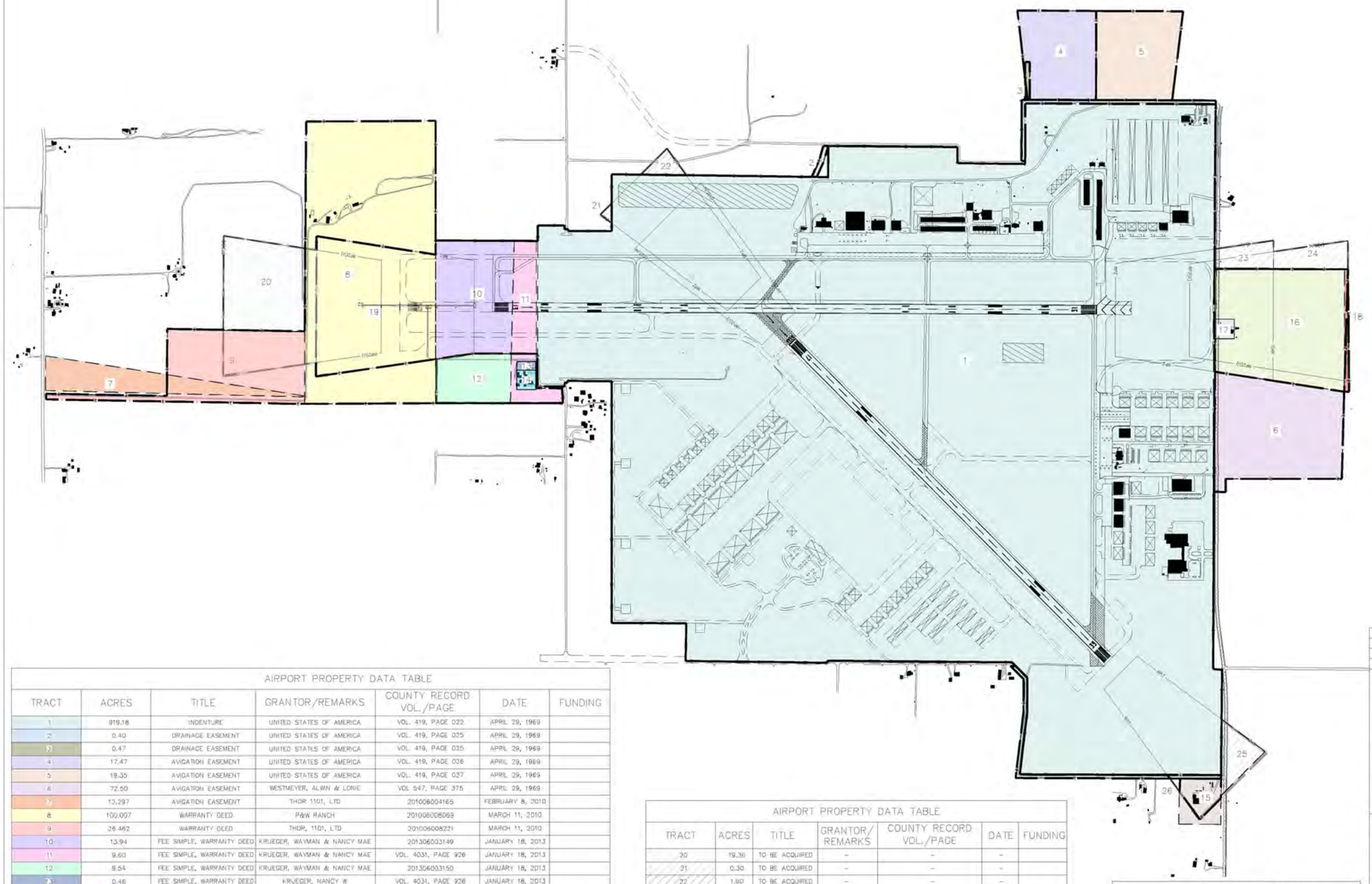
KSA
3875 Synergy Drive
McKinney, Texas 75069
T:972-542-2385
F:972-542-6759
www.ksaeng.com

M MALLONEE — SEPTEMBER 2018
DESIGNED BY — DATE

C MOERI — SEPTEMBER 2018
DRAWN BY — DATE

LAND USE DRAWING
NEW BRAUNFELS REGIONAL AIRPORT
NEW BRAUNFELS, TEXAS (BAZ)

Texas Department of Transportation
Aviation Division



AIRPORT PROPERTY DATA TABLE						
TRACT	ACRES	TITLE	GRANTOR/REMARKS	COUNTY RECORD VOL./PAGE	DATE	FUNDING
1	919.18	INDENTURE	UNITED STATES OF AMERICA	VOL. 419, PAGE 022	APRIL 29, 1969	
2	0.40	DRAINAGE EASEMENT	UNITED STATES OF AMERICA	VOL. 419, PAGE 025	APRIL 29, 1969	
3	0.47	DRAINAGE EASEMENT	UNITED STATES OF AMERICA	VOL. 419, PAGE 025	APRIL 29, 1969	
4	17.47	AVIGATION EASEMENT	UNITED STATES OF AMERICA	VOL. 419, PAGE 026	APRIL 29, 1969	
5	19.35	AVIGATION EASEMENT	UNITED STATES OF AMERICA	VOL. 419, PAGE 027	APRIL 29, 1969	
6	72.50	AVIGATION EASEMENT	WESTMEYER, ALWIN & LONIE	VOL 547, PAGE 375	APRIL 29, 1969	
7	12.297	AVIGATION EASEMENT	THOR 1101, LTD	201006004165	FEBRUARY 8, 2010	
8	100.007	WARRANTY DEED	P&W RANCH	201006008069	MARCH 11, 2010	
9	26.462	WARRANTY DEED	THOR, 1101, LTD	201006008221	MARCH 11, 2010	
10	13.94	FEE SIMPLE, WARRANTY DEED	KRUEGER, WAYMAN & NANCY MAE	201306003149	JANUARY 18, 2013	
11	9.60	FEE SIMPLE, WARRANTY DEED	KRUEGER, WAYMAN & NANCY MAE	VOL. 4031, PAGE 926	JANUARY 18, 2013	
12	9.54	FEE SIMPLE, WARRANTY DEED	KRUEGER, WAYMAN & NANCY MAE	201306003150	JANUARY 18, 2013	
13	0.46	FEE SIMPLE, WARRANTY DEED	KRUEGER, NANCY W	VOL. 4031, PAGE 926	JANUARY 18, 2013	
14	1.0	FEE SIMPLE, WARRANTY DEED	KRUEGER, NANCY MAE	VOL. 4031, PAGE 926	JANUARY 18, 2013	
15	5	FEE SIMPLE, WARRANTY DEED	BURRIS, HAROLD & TUBBS, JAMES	VOL. 4087 & 0904	MAY 17, 2013	
16	45.53	FEE SIMPLE, WARRANTY DEED	DEERING, ELAINE V.	VOL. 25376 & 26447	OCTOBER 21, 2016	
17	1	FEE SIMPLE, WARRANTY DEED	DEERING, ELAINE V.	VOL 25376 & 26447	OCTOBER 21, 2016	
18	1.506	GIFT DEED	DEERING, ELAINE V.	VOL. 2120, PAGE 475	DECEMBER 18, 2016	
19	0.619	UTILITY EASEMENT	CITY OF NEW BRAUNFELS	201006008069	FEBRUARY 12, 2016	

AIRPORT PROPERTY DATA TABLE						
TRACT	ACRES	TITLE	GRANTOR/REMARKS	COUNTY RECORD VOL./PAGE	DATE	FUNDING
20	19.26	TO BE ACQUIRED	-	-	-	
21	0.30	TO BE ACQUIRED	-	-	-	
22	1.60	TO BE ACQUIRED	-	-	-	
23	3.88	TO BE ACQUIRED	-	-	-	
24	4.56	TO BE ACQUIRED	-	-	-	
25	4.40	TO BE ACQUIRED	-	-	-	
26	0.25	TO BE ACQUIRED	-	-	-	

* ACREAGE IS APPROXIMATED. MEETS AND BOUND SURVEY REQUIRED FOR ACCURACY.

AIRPORT PROPERTY MAP LEGEND		
FEATURE	EXISTING	ULTIMATE
RUNWAY/TAXIWAY OUTLINE		
BUILDINGS/FACILITIES		
AIRPORT PROPERTY LINE		
RUNWAY PROTECTION ZONE (RPZ)		
PARCEL BOUNDARY		

REV	DESCRIPTION	DATE	APPROVED

TEXAS DEPARTMENT OF TRANSPORTATION
AVIATION DIVISION

ALP APPROVED ACCORDING TO FAA AC 150/5300-13 CHANGE 18 PLUS THE REQUIREMENTS OF A FAVORABLE ENVIRONMENTAL FINDING AND FAA NRA STUDY PRIOR TO THE START OF ANY LAND ACQUISITION OR CONSTRUCTION ON AIRPORT PROPERTY.

DAVID FULTON, DIRECTOR, AVIATION DIVISION — DATE

AIRPORT SPONSOR

CURRENT AND FUTURE DEVELOPMENT DEPICTED ON THIS ALP IS APPROVED AND SUPPORTED BY AIRPORT SPONSOR.

SPONSOR ACKNOWLEDGES APPROVAL OF ALP BY TXDOT DOES NOT CONSTITUTE A COMMITMENT TO FUNDING.

SIGNATURE — DATE

TITLE, AIRPORT SPONSOR'S REPRESENTATIVE

PREPARED BY:

KSA
8875 Synergy Drive
McKinney, Texas 75070
T.972-542-2995
F.972-542-6750
www.ksaeng.com

M. MALLONEE — SEPTEMBER 2018
DESIGNED BY — DATE

C. MOERI — SEPTEMBER 2018
DRAWN BY — DATE

EXHIBIT A PROPERTY MAP
NEW BRAUNFELS REGIONAL AIRPORT
NEW BRAUNFELS, TEXAS (BAZ)

Texas Department of Transportation
Aviation Division

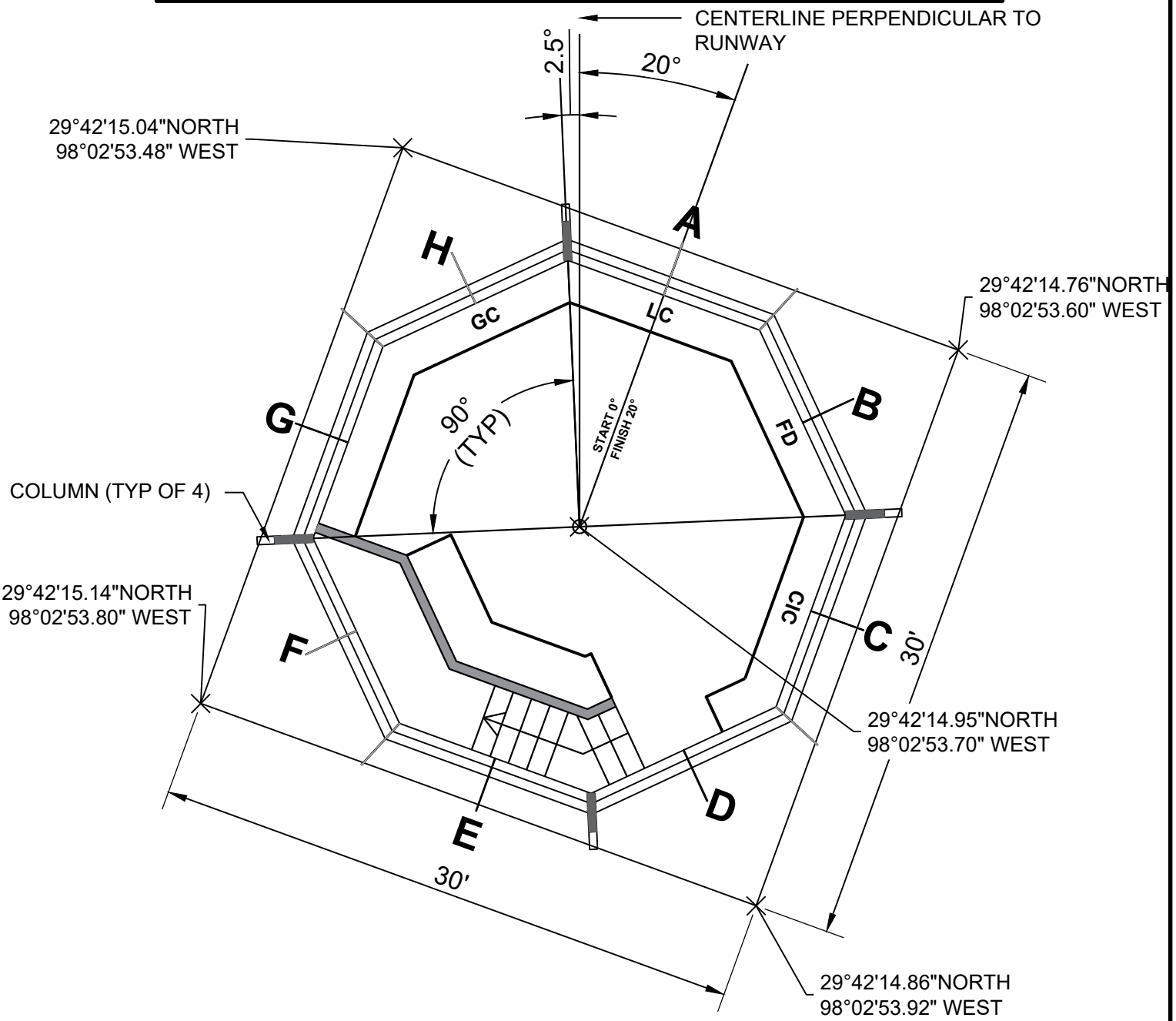
SHEET 15 OF 15

(BAZ) NEW BRAUNFELS NATIONAL AIRPORT

NEW BRAUNFELS, TEXAS

Control Positions/Cab Orientation

17 RUNWAY 17/35 35



SITE 1

Columns, Left Stairs

26 JUN 2024

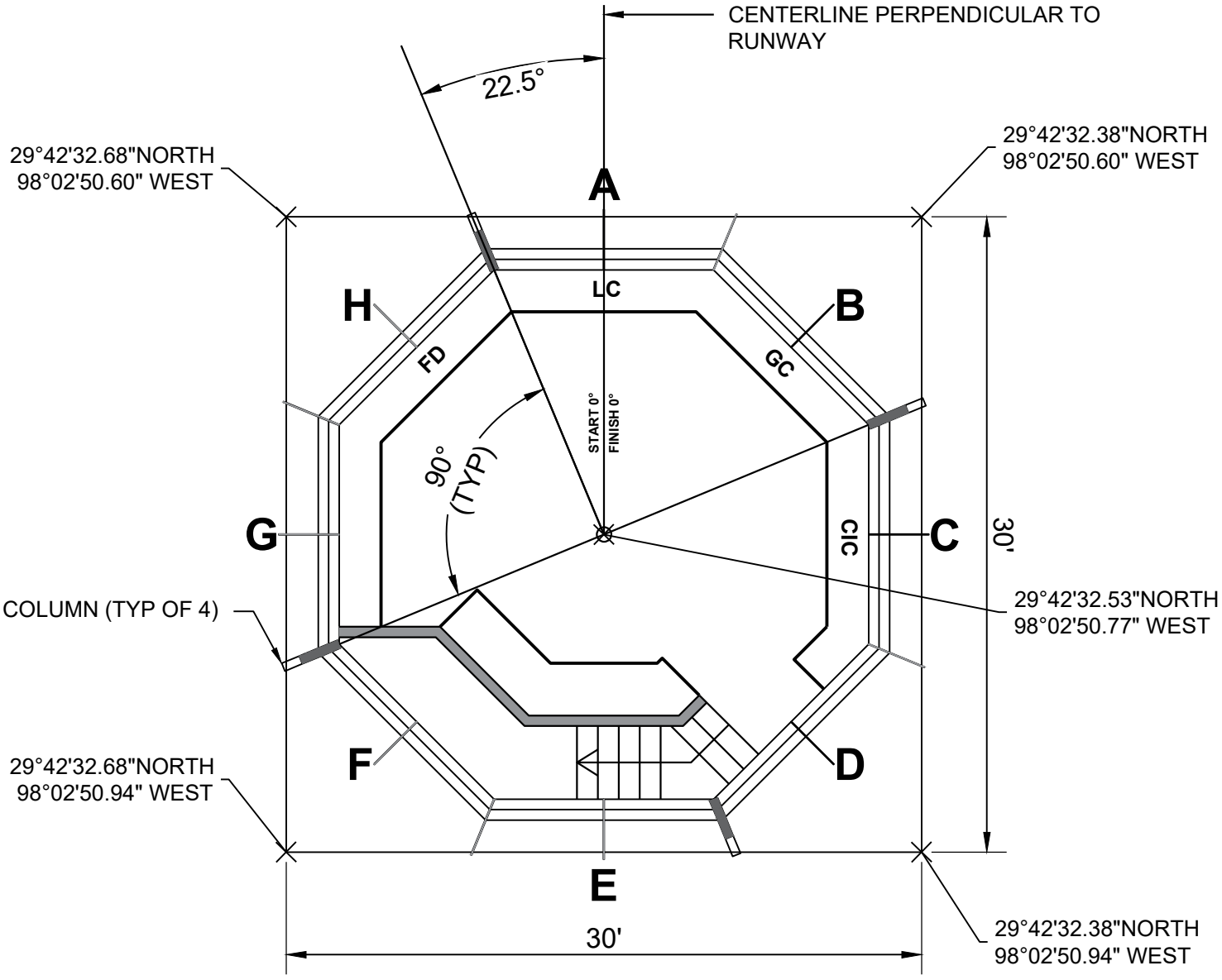
(BAZ) NEW BRAUNFELS NATIONAL AIRPORT

NEW BRAUNFELS, TEXAS

N

Control Positions/Cab Orientation

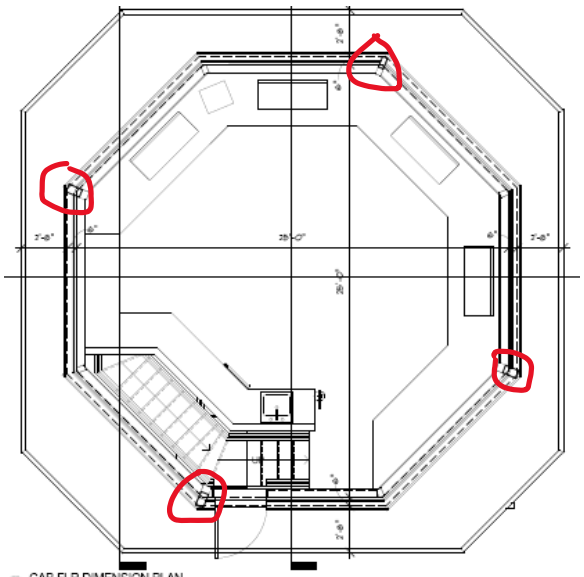
17 RUNWAY 17/35 35



SITE 2

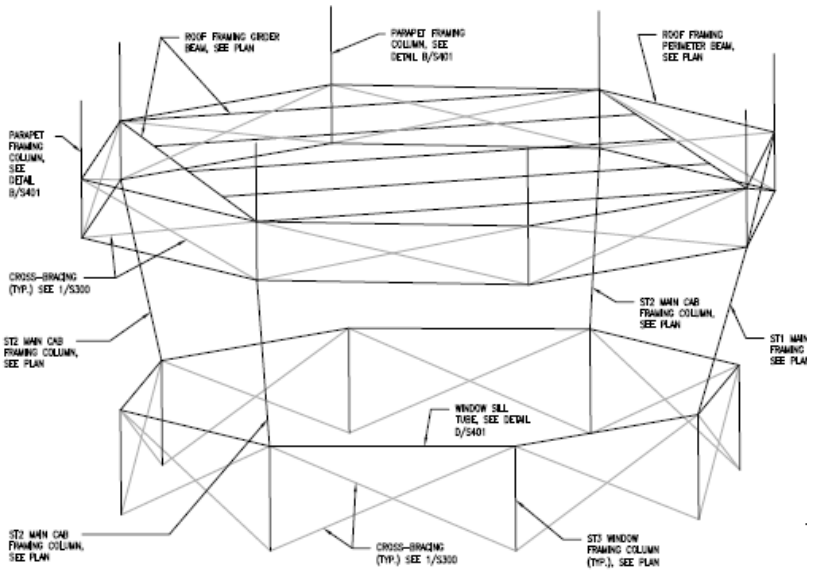
Columns, Left Stairs

26 JUN 24

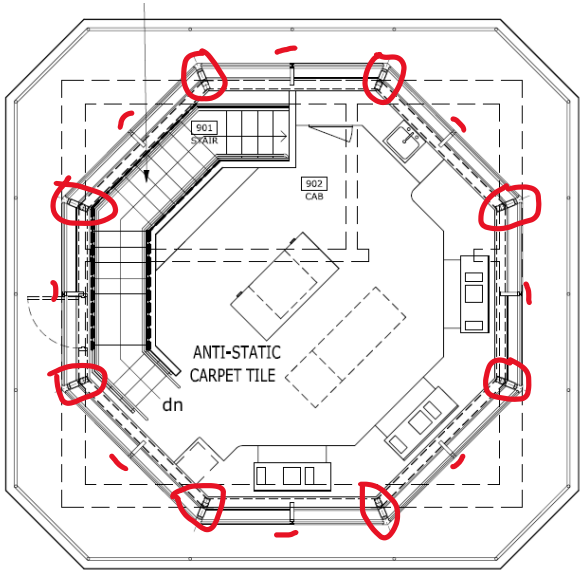


3 CAB FLR DIMENSION PLAN
1/4" = 1'-0"

COLUMNS

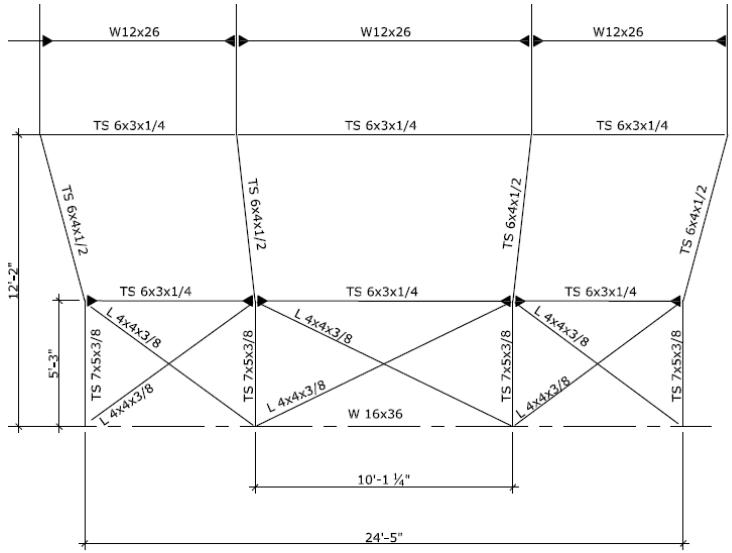


3 S300 FRAMING ISOMETRIC
SCALE: 1/4"=1'-0"



3 NINTH FLOOR FINISH PLAN
1/4" = 1'-0"

MUILLIONS



3 S-300 FRAMING SECTION
SCALE: 1/4"=1'-0"
(1:48)

Appendix F – OBSTRUCTION EVALS (TOPR/TERPS)/Airspace Analyses (OE/AAA)/NAVAIDS

Airspace Analysis
New Braunfels National Airport
Proposed New ATCT Locations

Summary Report

Three (3) proposed sites for a new Air Traffic Control Tower at the New Braunfels National Airport (KBAZ), New Braunfels, TX, were provided to me by Pond & Company. I was asked to evaluate each site at a primary MSL elevation determined by Pond & Company. The MSL elevations were determined by adding 30 feet to the eye height AGL elevation which is standard practice for FAA contract air traffic control towers. The AGL elevation is then added to the ground elevation. The locations and elevations evaluated are as follows:

Proposed Elevations

SITE	AGL Height	Ground Elev.	MSL Elevation	Geodetic Coordinates
1	155.0’	650.0’	805’	29 42 14.95N-098 02 53.70W
2	115.0’	651.0’	766’	29 42 32.53N-098 02 50.77W
3	157.0’	641.0’	798’	29 41 53.57N-098 02 18.80W

Existing Instrument Approaches

Using the FAA Terminal Area Route Generation Evaluation & Traffic Simulation (TARGETS) Tool I have evaluated all of the currently published Instrument Approach Procedures and Departure Procedures at the New Braunfels National Airport using the site coordinates and MSL elevations provided to me by Pond & Company. In addition, I evaluated a proposed future RNAV (GPS) procedure to RWY 13 after a proposed 1000 foot runway extension to the northwest. I also evaluated a proposed future RNAV (GPS) RWY 17 procedure to a displaced threshold 522 feet south of the existing RWY 17 threshold.

Proposed Control Tower Site 1, at the proposed MSL elevation of 805 feet, does affect a currently published instrument approach procedure at the New Braunfels National Airport. The controlling procedure for Tower Site 1 is the RNAV (GPS) RWY 31 Instrument Approach Procedure. The Obstacle Clearance Surface for Category A circling minimums for this procedure is penetrated by 5.0 feet over the site. The effect of this 5 foot penetration can be mitigated by amending the instrument approach procedure as follows.

The Category A circling minimums could be increased from a Minimum Descent Altitude (MDA) of 1100 feet to a Minimum Descent Altitude (MDA) of 1120 feet. The No Exceed Height for ATCT Site 1 is 800 feet MSL.

Proposed Control Tower Site 2, at the proposed MSL elevation of 766 feet, does not affect any currently published instrument approach or departure procedures at the New Braunfels National Airport. The controlling procedure for Tower Site 2 is the RNAV (GPS) RWY 31 Instrument Approach Procedure. The Obstacle Clearance Surface for Category A circling minimums for this procedure has 34.0 feet of clearance over the site. The No Exceed Height for ATCT Site 2 is 800 feet MSL.

Proposed Control Tower Site 3, at the proposed MSL elevation of 798 feet, does not affect any currently published instrument approach procedure at the New Braunfels National Airport. The controlling procedure for Tower Site 3 is the RNAV (GPS) RWY 31 Instrument Approach Procedure. The Obstacle Clearance Surface for Category A circling minimums for this procedure has 2.0 feet of clearance over the site. The No Exceed Height for ATCT Site 2 is 800 feet MSL.

Proposed Instrument Approach

Proposed RNAV (GPS) procedures to Rwy 13 and Rwy 31 were also evaluated. The Airport Layout Plan (ALP) for Rwy 13-31 shows a proposed 1000 foot extension to the northwest with no displaced threshold for a landing distance of 7,503 feet. Moving the threshold for Rwy 13 to the northwest will increase the clearance over all three proposed tower sites and will have no adverse effect. A proposed RNAV (GPS) procedure to a proposed displaced threshold for Rwy 17 was also evaluated. There is no adverse effect.

Circling and Departure Minimums

Circling minimums were evaluated, and as stipulated above, the Category A circling minimums for the RNAV (GPS) RWY 31 approach are affected by proposed Tower Site 1. The MDA for Category A circling would be raised from 1100 feet MSL to 1120 feet MSL.No other circling minimums are affected.

Departure procedures were evaluated, and the proposed tower locations do not affect departure minimums or departure procedures at the airport.

John D. Mogul
Airspace Consultant

BAZ ATCT FAR Part 77 Estimate

RUNWAY 13/31	Dist to RW CL	Primary Surface Width	Horiz Dist under 7:1	Elevation at RW CL	7:1 Surface Elevation	Height at Top of Tower	FAR PART 77 Penetration
SITE 1	2,527 FT	1000 FT	2,027 FT	649' msl	939' msl	805'msl	134 FT CLEAR
SITE 2	1030 FT	1000 FT	530 FT	650' msl	726' msl	766' msl	40 FT PENE
SITE 3	1678 FT	1000 FT	1178 FT	645' msl	813' msl	799' msl	14 FT CLEAR

BAZ ATCT FAR Part 77 Estimate

RUNWAY 17/35	Dist to RW CL	Primary Surface Width	Horiz Dist under 7:1	Elevation at RW CL	7:1 Surface Elevation	Height at Top of Tower	FAR PART 77 Penetration
SITE 1	1642 FT	1000 FT	1142 FT	652' msl	815' msl	805'msl	10 ft CLEAR
SITE 2	1496 FT	1000 FT	996 FT	652' msl	794' msl	766' msl	28 FT CLEAR
SITE 3	2461 FT	1000 FT	1961 FT	651' msl	931' msl	799' msl	132 FT CLEAR

Federal Aviation Administration
10101 Hillwood Parkway
Federal Aviation Administration
Fort Worth, TX 76177

Jesse Carriger

May 10, 2024

TO:
New Braunfels National Airport
Attn: Robert Lee
2333 FM 758
New Braunfels, TX 78130
rlee@newbraunfels.gov

CC:
KSA Engineers
Attn: Abi Fleischmann
4833 Spicewood Springs
Suite 204
Austin, TX 78759
afleischmann@ksaeng.com

RE: *(See attached Table 1 for referenced case(s))*
FINAL DETERMINATION

Table 1 - Letter Referenced Case(s)

ASN	Prior ASN	Location	Latitude (NAD83)	Longitude (NAD83)	AGL (Feet)	AMSL (Feet)
2024-ASW-3193-NRA		NEW BRAUNFELS,TX	29-42-14.60N	98-02-53.26W	155	806
2024-ASW-3194-NRA		NEW BRAUNFELS,TX	29-42-14.58N	98-02-54.11W	155	806
2024-ASW-3195-NRA		NEW BRAUNFELS,TX	29-42-15.32N	98-02-54.14W	155	806
2024-ASW-3196-NRA		NEW BRAUNFELS,TX	29-42-15.34N	98-02-53.29W	155	806

If FDC NOTAMS ARE REQUIRED, the following Airport Operations Contact(s) (AOC) are approved to handle FDC NOTAM coordination.
The AOC must create and/or log into their OE/AAA account and select “Search Archives”. The aeronautical study number (ASN) associated with the proposed obstruction is to be entered (see FAA determination letter for ASN). The NOTAM can be extended or cancelled through the AOC’s account. If the AOC is having difficulty using the tool, please contact the OE/AAA support desk at 202-580-7500 or refer to the online instructions.

Name	Email	Phone
Robert Lee	Rlee@nbtexas.org	(830) 221-4295

Description: Siting phase for New Braunfels National Airport ATCT project (Proposed ATCT Site 1), Structure height listed as maximum height tower (antenna)

We do not object with conditions to the construction described in this proposal provided:

You comply with the requirements set forth in FAA Advisory Circular 150/5370-2, "Operational Safety on Airports During Construction."

The following comments were received from the respective divisions for this project.

Flight Procedures:
IFR Effect

At 806' AMSL. Obstacle penetrates the circling area segment. With 4D Accuracy Code (AC) the RNAV (GPS) RWY 31 CIRCLING CAT A CMDA 1160, HAA 498, NEH 799. With 1A AC the RNAV (GPS) RWY 31 CIRCLING CAT A CMDA 1120, HAA 448, NEH 799. "FDC NOTAMS ARE REQUIRED. All requests for FDC NOTAM action must be made utilizing the users OE/AAA account. The Sponsor (or Sponsor's representative) is to log into their OE/AAA account and go to "Search Archives". The aeronautical study number (ASN) associated with the proposed obstruction is to be entered (see FAA determination letter for ASN). If the Sponsor (or Sponsor's representative) is having difficulty using the tool, please contact the OE/AAA support desk 202-580-7500 or refer to the online instructions. Request must be initiated a minimum of 5 business days prior to conducting operations/construction to allow for processing and issuance of NOTAMS. The Sponsor (or Sponsor's representative) is responsible to verify NOTAMS are active prior to beginning operations.

For current Advisory Circulars go to www.oeaaa.faa.gov

A separate notice to the FAA is required for any construction equipment, such as temporary cranes, whose working limits would exceed the height and lateral dimensions of your proposal.

This determination does not constitute FAA approval or disapproval of the physical development involved in the proposal. It is a determination with respect to the safe and efficient use of navigable airspace by aircraft and with respect to the safety of persons and property on the ground.

In making this determination, the FAA has considered matters such as the effects the proposal would have on existing or planned traffic patterns of neighboring airports, the effects it would have on the existing airspace structure and projected programs of the FAA, the effects it would have on the safety of persons and property on the ground, and the effects that existing or proposed manmade objects (on file with the FAA), and known natural objects within the affected area would have on the airport proposal.

This determination expires on November 10, 2025 unless:
(a) extended, revised or terminated by the issuing office.
(b) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for the completion of construction, or the date the FCC denies the application.

NOTE: Request for extension of the effective period of this determination must be obtained at least 15 days prior to expiration date specified in this letter.

If you have any questions concerning this determination contact Frank Snell (817) 222-5698 Frank.Snell@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2024-ASW-3193-NRA.

Frank Snell
ADO
Signature Control No: 617993536-621257119

Federal Aviation Administration
10101 Hillwood Parkway
Federal Aviation Administration
Fort Worth, TX 76177

Anthony Bryant

September 23, 2024

TO:
New Braunfels National Airport
Attn: Robert Lee
2333 FM 758
New Braunfels, TX 78130
rlee@newbraunfels.gov

CC:
KSA Engineers
Attn: Abi Fleischmann
4833 Spicewood Springs
Suite 204
Austin, TX 78759
afleischmann@ksaeng.com

RE: *(See attached Table 1 for referenced case(s))*
FINAL DETERMINATION

Table 1 - Letter Referenced Case(s)

ASN	Prior ASN	Location	Latitude (NAD83)	Longitude (NAD83)	AGL (Feet)	AMSL (Feet)
2024-ASW-7694-NRA		NEW BRAUNFELS,TX	29-42-20.70N	98-02-35.60W	1	652
2024-ASW-7695-NRA		NEW BRAUNFELS,TX	29-42-32.18N	98-02-50.32W	145	796
2024-ASW-7696-NRA		NEW BRAUNFELS,TX	29-42-32.15N	98-02-51.17W	145	796
2024-ASW-7697-NRA		NEW BRAUNFELS,TX	29-42-32.89N	98-02-51.21W	145	796
2024-ASW-7698-NRA		NEW BRAUNFELS,TX	29-42-32.92N	98-02-50.36W	145	796

Description: Initial siting phase for New Braunfels National Airport ATCT, Structure height listed as maximum height of tower (antenna)

We do not object with conditions to the construction described in this proposal provided:

You comply with the requirements set forth in FAA Advisory Circular 150/5370-2, "Operational Safety on Airports During Construction."

Recommend following AWOS Siting Order 6560.20, for the ASOS serving BAZ airport. The proposal includes future Tower structure in close proximity to the proposed ASOS facility and may affect the ASOS wind sensors. Contact the Operations Control Center (OCC) prior to the start of the project in order to schedule any necessary service outages.

For current Advisory Circulars go to www.oeaaa.faa.gov

A separate notice to the FAA is required for any construction equipment, such as temporary cranes, whose working limits would exceed the height and lateral dimensions of your proposal.

This determination does not constitute FAA approval or disapproval of the physical development involved in the proposal. It is a determination with respect to the safe and efficient use of navigable airspace by aircraft and with respect to the safety of persons and property on the ground.

In making this determination, the FAA has considered matters such as the effects the proposal would have on existing or planned traffic patterns of neighboring airports, the effects it would have on the existing airspace structure and projected programs of the FAA, the effects it would have on the safety of persons and property on the ground, and the effects that existing or proposed manmade objects (on file with the FAA), and known natural objects within the affected area would have on the airport proposal.

This determination expires on March 23, 2026 unless:
(a) extended, revised or terminated by the issuing office.
(b) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for the completion of construction, or the date the FCC denies the application.

NOTE: Request for extension of the effective period of this determination must be obtained at least 15 days prior to expiration date specified in this letter.

If you have any questions concerning this determination contact Frank Snell (817) 222-5698 Frank.Snell@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2024-ASW-7694-NRA.

Frank Snell
ADO
Signature Control No: 630405027-634016585

Federal Aviation Administration
10101 Hillwood Parkway
Federal Aviation Administration
Fort Worth, TX 76177

Jesse Carriger

May 10, 2024

TO:
New Braunfels National Airport
Attn: Robert Lee
2333 FM 758
New Braunfels, TX 78130
rlee@newbraunfels.gov

CC:
KSA Engineers
Attn: Abi Fleischmann
4833 Spicewood Springs
Suite 204
Austin, TX 78759
afleischmann@ksaeng.com

RE: *(See attached Table 1 for referenced case(s))*
FINAL DETERMINATION

Table 1 - Letter Referenced Case(s)

ASN	Prior ASN	Location	Latitude (NAD83)	Longitude (NAD83)	AGL (Feet)	AMSL (Feet)
2024-ASW-3203-NRA		NEW BRAUNFELS,TX	29-41-53.59N	98-02-17.99W	157	799
2024-ASW-3204-NRA		NEW BRAUNFELS,TX	29-41-53.18N	98-02-18.61W	157	799
2024-ASW-3205-NRA		NEW BRAUNFELS,TX	29-41-53.72N	98-02-19.19W	157	799
2024-ASW-3206-NRA		NEW BRAUNFELS,TX	29-41-54.23N	98-02-18.57W	157	799

Description: Siting phase for New Braunfels National Airport ATCT project (Proposed ATCT Site 3), Structure height listed as maximum height tower (antenna)

We do not object with conditions to the construction described in this proposal provided:

You comply with the requirements set forth in FAA Advisory Circular 150/5370-2, "Operational Safety on Airports During Construction."

For current Advisory Circulars go to www.oeaaa.faa.gov

A separate notice to the FAA is required for any construction equipment, such as temporary cranes, whose working limits would exceed the height and lateral dimensions of your proposal.

This determination does not constitute FAA approval or disapproval of the physical development involved in the proposal. It is a determination with respect to the safe and efficient use of navigable airspace by aircraft and with respect to the safety of persons and property on the ground.

In making this determination, the FAA has considered matters such as the effects the proposal would have on existing or planned traffic patterns of neighboring airports, the effects it would have on the existing airspace structure and projected programs of the FAA, the effects it would have on the safety of persons and property

on the ground, and the effects that existing or proposed manmade objects (on file with the FAA), and known natural objects within the affected area would have on the airport proposal.

This determination expires on November 10, 2025 unless:
(a) extended, revised or terminated by the issuing office.
(b) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for the completion of construction, or the date the FCC denies the application.

NOTE: Request for extension of the effective period of this determination must be obtained at least 15 days prior to expiration date specified in this letter.

If you have any questions concerning this determination contact Frank Snell (817) 222-5698 Frank.Snell@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2024-ASW-3203-NRA.

Frank Snell
ADO
Signature Control No: 617997883-621258299

Appendix G – Environmental Documentation

March 10, 2024 Project Number: 050097.00

Wetlands and Other Waters of the United States Assessment
New Braunfels National Airport
Proposed Air Traffic Control Tower 1
Guadalupe County, Texas

Prepared for:
KSA Engineers, Inc.
4833 Spicewood Springs Rd, Suite 204
Austin, TX 78759

Prepared by:
Sphere 3 Environmental, Inc.
1501 Bill Owens Parkway
Longview, Texas 75604
903-297-4673

INTRODUCTION

Sphere 3 Environmental, Inc. (Sphere 3) was retained by KSA Engineers, Inc. (KSA) to conduct an assessment of the New Braunfels National Airport proposed Air Traffic Control Tower (ATCT) 1 in Guadalupe County, Texas. John Quine, Sphere 3 Biologist, and Sydney Moore, Sphere 3 Environmental Scientist, conducted a field survey to delineate wetlands and other waters of the United States on February 20, 2024. The proposed project area consists of a 200-foot by 200-foot area located to the west of the runways (Figures 1 and 2).

No wetlands or other waters of the United States are present within the proposed ATCT 1 project area. No United States Army Corps of Engineers (USACE) permit is required for the construction of the project.

SURVEY METHODS

Wetland delineation was conducted in accordance with the three-parameter approach outlined in Technical Report 10-20, the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region* (Version 2.0). The three-parameter approach was utilized to assess the site's vegetation, soils, and hydrology to determine the presence or absence of wetlands. Dominant species include flora that cumulatively total 50 percent of the areal coverage and any other single species accounting for at least 20 percent areal coverage within the plot. The wetland indicator status of each species was determined using the *Great Plains Region: 2020 Regional Wetland Plant List* (USFWS 2020) accessed online at the USACE's NWPL – National Wetland Plant List website. Munsell Soil Color Charts (2000 Revised Washable Edition) were used to identify the hue and chroma of soil samples.

Sphere 3 utilized Trimble's mapping grade GeoXT Global Positioning System (GPS) to map wetlands, streams, project boundaries, and other important features of the project. After field data collection was completed, the GPS data was exported into ESRI's ArcGIS Geographic Information System for impact analysis and map production.

EXISTING CONDITIONS

According to the Natural Resources Conservation Service's Web Soil Survey, the proposed project is located on Branyon clay, 0 to 1 percent slopes.

The project area has an herbaceous layer composed of Bermudagrass (*Cynodon dactylon*), geranium (*Geranium* sp.), white clover (*Trifolium repens*), and vetch (*Vicia* sp.). No field indicators of wetland hydrology or hydric soil are present within this community.

FLOODPLAIN

The project is not located within the 100-year floodplain (Zone A) (Figure 3).

SUMMARY

Sphere 3 has surveyed the proposed New Braunfels National Airport's proposed ATCT 1 a project area for wetlands and other waters of the United States. The investigation revealed no wetlands or other waters of the United States within the project area. No USACE permit is required to construct the project.

LITERATURE CITED

National Wetland Plant List, version 3.5 http://wetland-plants.usace.army.mil; U.S. Army Corps of Engineers Research and Development Center. Cold Regions Research and Engineering Laboratory, Hanover, NH.

Munsell Color X-Rite. 2000 Revised Washable Edition. *Munsell Soil Color Charts*. New Windsor, NY.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey Version 3.4.0. Available online at http://websoilsurvey.nrcs.usda.gov/. Date Last Modified July 31, 2019. Accessed February 21, 2024.

United States Army Corps of Engineers. 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0),* ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-10-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

United States Fish and Wildlife Service. 2021. National Wetlands Inventory website. United States Department of the Interior, Fish and Wildlife Service, Washington, D.C. https://www.fws.gov/program/national-wetlands-inventory/wetlands-mapper Date Last Modified May 1, 2021. Accessed February 21, 2024.

Attachment A:

Figures

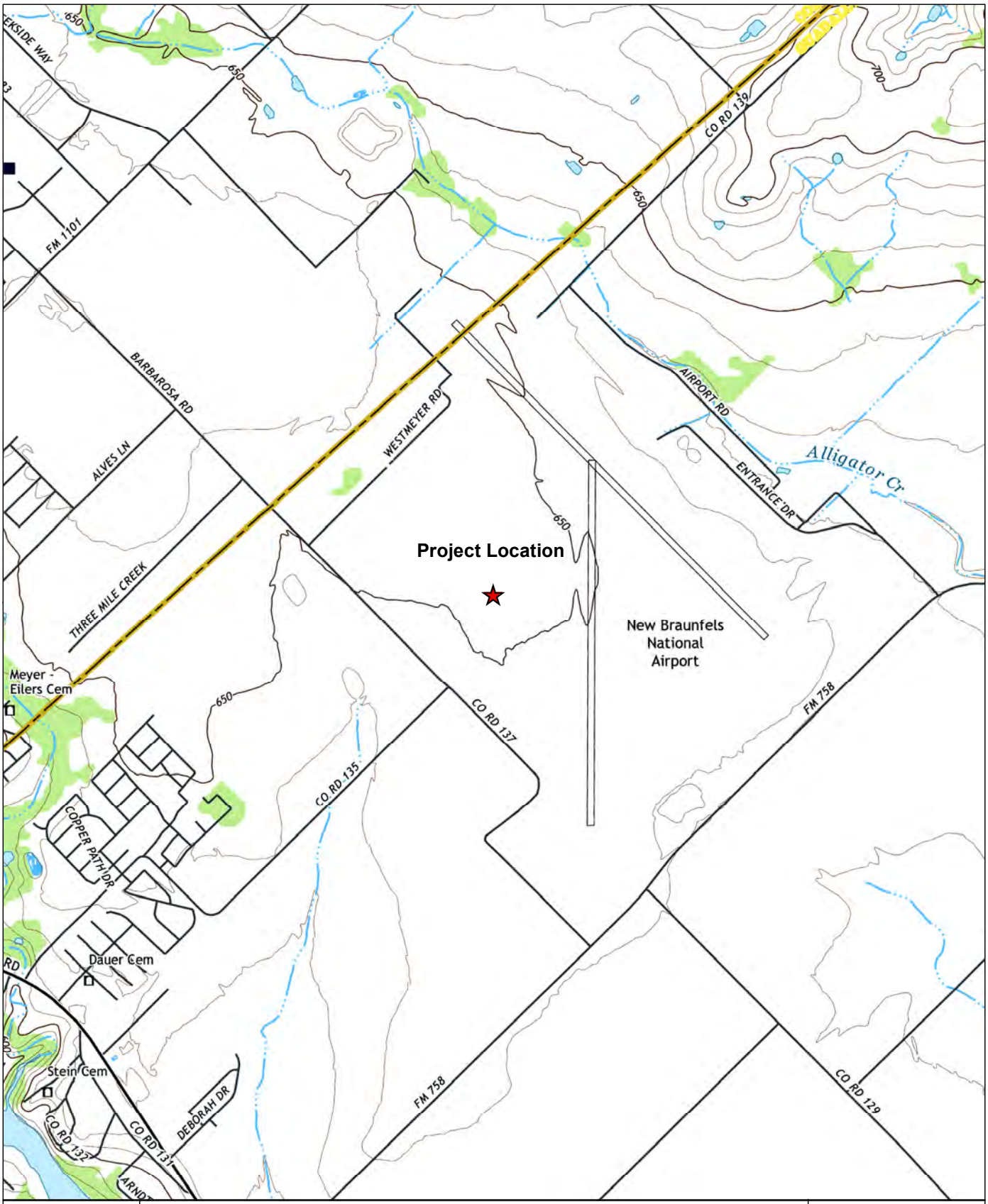


Figure 1
Topographic Features of the Proposed ATCT 1
in Guadalupe County, TX

N
W E
S

Feet
0 1,000 2,000 4,000 6,000 8,000

KSA Engineers, Inc.
Project Number: 050097.00

Date: 02/20/2024

Base Map: USGS 7.5 Minute Topographic
Quadrangle: New Braunfels East, TX (Published 2022)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

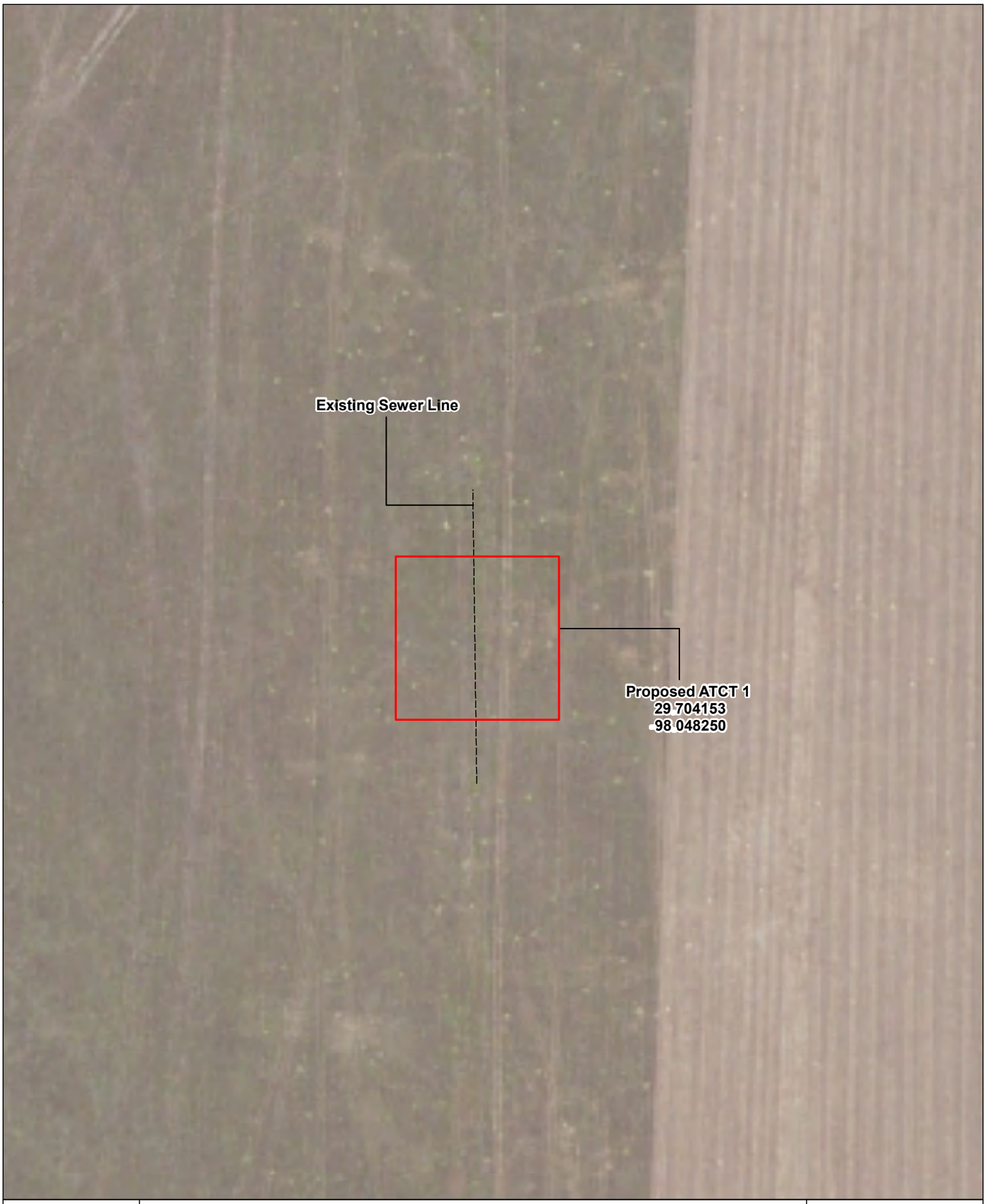


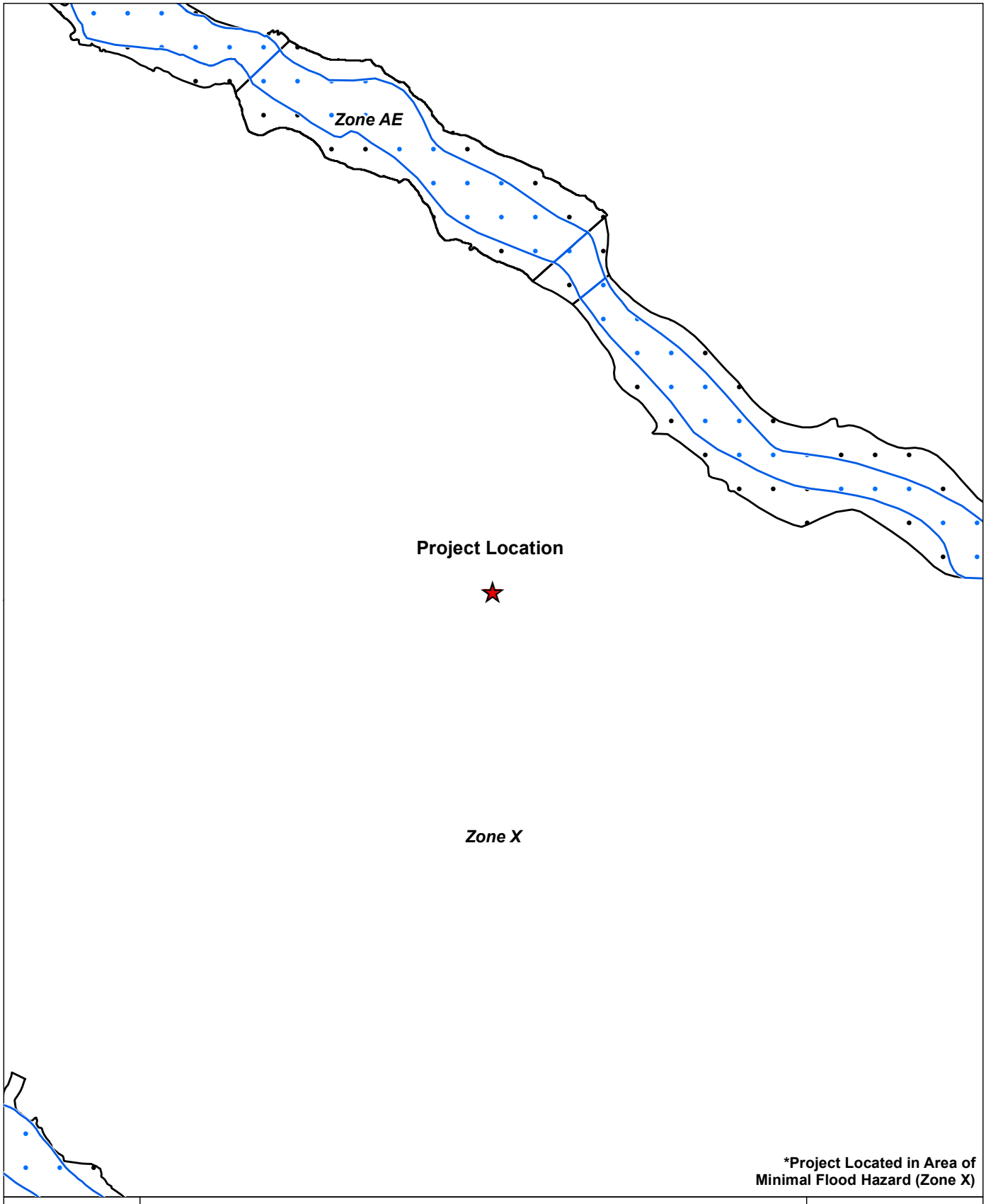
Figure 2
Aerial Photograph of the Proposed ATCT 1
in Guadalupe County, TX

N
W E
S

0 100 200 400 600 Feet

KSA Engineers Project Number: 050097.00	Date: 02/20/2024	Base Map: NRCS Geospatial Data Gateway 2022 NAIP Aerial Imagery (Guadalupe County,TX)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com



***Project Located in Area of Minimal Flood Hazard (Zone X)**

Figure 3
Floodplain Data of the Proposed ATCT 1
in Guadalupe County, TX

N
W E
S

0 1,000 2,000 4,000 6,000 8,000 Feet

KSA Engineers, Inc. Project Number: 050097.00	Date: 02/20/2024	Base Map: Flood Insurance Rate Map Panel No. 48091C0460F Guadalupe County, TX

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

Attachment B:

Site Photos

Photograph: 1 **Date:** February 20, 2024 **County Name:** Guadalupe County, Texas **Description:** Photograph showing the herbaceous layer of the proposed project area with the airport in the background.	

Photograph: 2 **Date:** February 20, 2024 **County Name:** Guadalupe County, Texas **Description:** Photograph showing the herbaceous layer within the proposed project area.	

Attachment C:

Data Sheet

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: New Braunfels National Airport City/County: Guadalupe, County Sampling Date: 02/20/24

Applicant/Owner: KSA Engineers State: TX Sampling Point: Up1

Investigator(s): John Quine/Sydney Moore Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): None Slope (%): 0-1

Subregion (LRR): LRR-J Lat: 29.7040013 Long: -98.04828911 Datum: WGS1984

Soil Map Unit Name: Branyon clay, 0-1 percent slopes NWI classification: Not mapped as wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

None of the three required criteria are present. The sample location is not located within a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 30' x 30')			
1. Cynodon dactylon	70	Y	FACU
2. Geranium sp.	20	N	FAC
3. Trifolium repens	10	N	FACU
4. Vicia sp.	10	N	FAC
5.			
6.			
7.			
8.			
9.			
10.			
	110 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 5

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

Hydrophytic vegetation is not present.

SOIL

Sampling Point: Up1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-12	7.5YR3/1	100	---	---	---	---	CL	Clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

Hydric soil is not present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology is not present.

March 5, 2024 Project Number: 050097.00

Threatened and Endangered Species Assessment
New Braunfels National Airport
Proposed Air Traffic Control Tower 1
Guadalupe County, Texas

Prepared for:
KSA Engineers, Inc.
4833 Spicewood Springs Rd
Suite 204
Austin, TX 78759

Prepared by:
Sphere 3 Environmental, Inc.
1501 Bill Owens Parkway
Longview, Texas 75604
903-297-4673

TABLE OF CONTENTS

LIST OF ATTACHMENTS

INTRODUCTION

Sphere 3 Environmental, Inc. (Sphere 3) was retained by KSA Engineers, Inc. (KSA) to conduct an assessment of the proposed New Braunfels National Airport air traffic control tower (ATCT) 1 project in Guadalupe County, Texas to determine if suitable habitat for federally listed threatened and endangered species is present within the project area.

The proposed project area consists of an approximately 1-acre area west of the runway. The proposed project is located in a maintained herbaceous community with a marked sewer line bisecting the 1-acre area.

A topographic map and aerial photographs of the project area are provided in Attachment A. Site photographs of the project area are provided in Attachment B.

PURPOSE

Sphere 3 conducted a habitat assessment to determine if suitable habitat for federally listed threatened or endangered species is present within the proposed project area. Impacts to threatened and endangered species are regulated under the Endangered Species Act of 1973.

METHODOLOGY

Sphere 3 began this investigation by obtaining and reviewing the United States Fish and Wildlife Service's (USFWS) threatened and endangered species list for the specific project area located within Guadalupe County, Texas. The list of state threatened and endangered species with potential to occur in Guadalupe County was also reviewed prior to surveys; however, these species are only addressed in this report if encountered during the field surveys.

Current, 2023 species occurrence data from the Texas Parks and Wildlife Department (TPWD) in Austin, Texas along with species descriptions from the TPWD and the USFWS were reviewed prior to the field investigation. According to the USFWS web-based Information, Planning, and Conservation System (IPaC) species list, the piping plover (*Charadrius melodus*), the red knot (*Calidris canutus rufa*), and the whooping crane (*Grus americana*) are listed as threatened or endangered and have ranges that include the project area in Guadalupe County. No proposed or designated critical habitat exists within the project location.

The tricolored bat (*Perimyotis subflavus*), the false spike (*Fusconaia mitchelli*), and the Guadalupe orb (*Cyclonaias necki*) are proposed for listing as endangered species. The monarch butterfly (*Danaus plexippus*) is listed as a candidate for listing as a threatened or endangered species in Guadalupe County. Species listed as proposed endangered, proposed threatened, and candidate are not protected by the take prohibitions of section 9 of the Endangered Species Act (ESA). However, under section 7(a)(4) of the ESA, federal agencies must confer with the USFWS if their action will jeopardize the continued existence of a proposed species.

The USFWS IPaC report states that potential impacts to the piping plover and the red knot should only be considered for wind related projects that occur within the migratory route of those species (Attachment C). The proposed project is not a wind related project; therefore, these two avian species are not addressed further in this report.

John Quine, Sphere 3 Biologist, and Sydney Moore, Sphere 3 Environmental Scientist, conducted a pedestrian survey of the project area on February 20, 2024, to document habitat types present within the project area. The proposed project area was photographed, mapped, and visually investigated for suitable habitat or signs of federally protected threatened or endangered species.

EXISTING CONDITIONS

Maintained Herbaceous Community

The majority of the proposed project area is located within a maintained herbaceous community west of the airport runway. Species common to this community include Bermudagrass (*Cynodon dactylon)*, wild geranium (*Geranium* sp.), white clover (*Trifolium repens),* and vetch (*Vicia* sp.). Vegetation ranges from approximately 2 inches to 5 inches in height. Coverage within the herbaceous community ranges from approximately 90 to 95 percent.

SPECIES DESCRIPTIONS AND HABITAT REQUIREMENTS

Whooping Crane

The whooping crane is easily identifiable by its snowy white body feathers, jet-black wingtips, and red and black head. The whooping crane stands almost 5 feet in height with a wingspan of 7 to 8 feet making it the largest bird in North America. This species was federally listed as endangered in 1970 (TPWD 2021).

From late April until their autumn migration around mid-September, whooping cranes are found in the marsh areas of Canada's Wood Buffalo National Park (TPWD 2021). Nests are typically large mounds of bulrushes about four feet wide with the flat-topped central mound up to 5 inches

above the water. They prefer areas deep within dense stands of bulrushes, cattails, and sedges that offer food as well as protection from predators.

The whooping cranes arrive in their principal wintering grounds in the Aransas National Wildlife Refuge (NWR) along the Texas coast between late October and mid-November. A variety of habitats are used during the whooping crane's 2400-mile migration. Typically, whooping cranes will roost standing in the shallow waters of marshes, flooded crop fields, artificial ponds, reservoirs, and rivers during their annual migration. Typical habitat used in the NWR wintering grounds includes salt flats and marshes, with some foraging occurring in adjacent gently rolling, sandy grasslands (USFWS 2007b).

Whooping cranes are diet generalists with a wide range of prey items. Preferred foods of the whooping crane can include insects, minnows, crabs, clams, crayfish, frogs, rodents, small birds, and berries (USFWS 2007b).

Tricolored Bat

The tricolored bat is currently proposed for listing as an endangered species under the Endangered Species Act. It is one of the smallest bats in eastern North America and is distinguished by its unique tricolored fur that appears dark at the base, lighter in the middle, and dark at the tip (Barbour and Davis 1969, p. 115). Tricolored bats (TCB) often appear yellowish (varying from pale yellow to nearly orange), but may also appear silvery-gray, chocolate brown, or black (Barbour and Davis 1969, p. 115). Males and females are colored alike, but females are consistently heavier than males (LaVal and LaVal 1980, p. 44).

During the spring, summer, and fall (i.e., non-hibernating seasons), TCB primarily roost among live and dead leaf clusters of live or recently dead deciduous hardwood trees (Veilleux et al. 2003, p. 1071; Perry and Thill 2007, pp. 976–977; Thames 2020, p. 32). In the southern and northern portions of the range, TCB will also roost in Spanish moss (*Tillandsia usneoides*) and *Usnea trichodea* lichen, respectively (Davis and Mumford 1962, p. 395; Poissant 2009, p. 36; Poissant et al. 2010, p. 374). In addition, TCB have been observed roosting during summer among pine needles (Perry and Thill 2007, p. 977), eastern red cedar (*Juniperus virginiana*) (Thames 2020, p. 32), within artificial roosts (e.g., barns, beneath porch roofs, bridges, concrete bunkers) (Jones and Pagels 1968, entire; Barbour and Davis 1969, p. 116; Jones and Suttkus 1973, entire; Hamilton and Whitaker 1979, p. 87; Mumford and Whitaker 1982, p. 169; Whitaker 1998, p. 652; Feldhamer et al. 2003, p. 109; Ferrara and Leberg 2005, p. 731), and rarely within caves (Humphrey et al. 1976, p. 367; Briggler and Prather 2003 p. 408; Damm and Geluso 2008, p. 384). Female TCB exhibit high site fidelity, returning year after year to the same summer roosting locations (Allen 1921, p. 54; Veilleux and Veilleux 2004, p. 197). Female TCB form maternity colonies and switch roost trees regularly (e.g., between 1.2 days and 7 days at roost trees in Indiana) (Veilleux and Veilleux 2004, p.197; Quinn and Broders 2007, p. 19; Poissant et al. 2010, p. 374). Males roost singly (Perry and Thill 2007, p. 977; Poissant et al. 2010, p. 374).

During the winter, TCB hibernate (i.e., reduce their metabolic rates, body temperatures, and heart rate) in caves and mines, although in the southern U.S., where caves are sparse, TCB often hibernate in road-associated culverts (Sandel et al. 2001, p. 174; Katzenmeyer 2016, p. 32; Limon et al. 2018, entire; Bernard et al. 2019, p. 5; Lutsch 2019, p. 23; Meierhofer et al. 2019, p. 1276)

and sometimes tree cavities (Newman 2020, p. 14) and abandoned water wells (Sasse et al. 2011, p. 126). TCB exhibit high site fidelity with many individuals returning year after year to the same hibernaculum (Davis 1966, p. 385; Jones and Pagels 1968, p. 137; Jones and Suttkus 1973, p. 964; Sandel et al. 2001, p. 175).

Hibernating TCB do not typically form large clusters; most commonly roost singly, but sometimes in pairs, or in small clusters of both sexes away from other bats (Hall 1962, p. 29; Barbour and Davis 1969, p. 117; Mumford and Whitaker 1982, p. 169; Raesly and Gates 1987, p. 19; Briggler and Prather 2003, p. 408; Vincent and Whitaker 2007, p. 62). TCB roost on cave walls (more often) and ceilings and are rarely found in cave crevices (Mumford and Whitaker 1982, p. 169). TCB will shift roosts from one to another during the winter but arouse less frequently than other cave-hibernating bat species (Barbour and Davis 1969, p. 119; Mumford and Whitaker 1982, p. 169). In road-associated culverts in the southern U.S., however, TCB exhibit shorter torpor bouts and move within and between culverts throughout the winter (Anderson et al. undated).

TCB are opportunistic feeders and consume small insects including caddisflies (Trichoptera), flying moths (Lepidoptera), small beetles (Coleoptera), small wasps and flying ants (Hymenoptera), true bugs (Homoptera), and flies (Diptera) (Whitaker 1972, p. 879; LaVal and LaVal 1980, p. 24; Griffith and Gates 1985, p. 453; Hanttula and Valdez 2021, p. 132). TCB emerge early in the evening and forage at treetop level or above (Davis and Mumford 1962, p. 397; Barbour and Davis 1969, p. 116) but may forage closer to ground later in the evening (Mumford and Whitaker 1982, p. 170). TCB forage most commonly over waterways and forest edges (Barbour and Davis 1969, p. 116; Mumford and Whitaker 1982, pp. 170–171; Hein et al. 2009, p. 1204).

Male and female TCB converge at cave and mine entrances between mid- August and mid-October to swarm and mate. Adult females store sperm in their uterus during the winter and fertilization occurs soon after spring emergence from hibernation (Guthrie 1933, p. 209). Females typically give birth to two young, rarely one or three between May and July (Allen 1921, p. 55; Barbour and Davis 1969, p. 117; Cope and Humphrey 1972, p. 9). Young grow rapidly and begin to fly at 3 weeks of age and achieve adult-like flight and foraging ability at 4 weeks (Lane 1946, p. 59; Whitaker 1998, pp. 653–655). Adults often abandon maternity roosts soon after weaning, but young remain longer (Whitaker 1998, p. 653).

Perry and Thill 2007 (p. 977) observed an average of 6.9 adult females and pups per colony in Arkansas (range 3 to 13). Maternity colonies include up to 18 females in trees in Nova Scotia (Poissant et al. 2010, p. 374). Whitaker (1998, p. 652) found colonies in buildings averaged 15 adult females (range 7 to 29 adult females). Hoying and Kunz 1998 (p. 19) reported the largest colony on record in a Massachusetts barn (19 adult females and 37 young).

Texas and Louisiana fall into the southern representative unit (RPU) of the TCB. Southern TCB exhibit shorter hibernation lengths and some remain active and feed year round (Grider et al. 2016, p. 8; Newman 2020, pp. 13–17). The Southern RPU is predominantly marked by subtropical climate conditions, high humidity (especially in summer), and the absence of harsh cold winters. Southern TCB may benefit from reduced physiological pressures associated with maintaining torpor during long harsh winters and in turn have higher survival rate (Fraser et al.

2012, p. 6). Southern TCB are also unique in their frequent exploitation of road-associated culverts as winter hibernacula in the southern U.S. As discussed in *Individual-level Ecology and Needs*, culverts account for most hibernacula documented in Mississippi, Georgia, and Louisiana (Limon et al. 2018, entire; NABat 2021). Researchers have hypothesized that utilizing culverts coupled with sub-tropical climate conditions will lead to TCB exhibiting frequent arousal and foraging events during winter (Castleberry et al. 2019, p. 2). If TCB utilizing culverts are exhibiting increased winter activity related to foraging or otherwise, these euthermic bouts could significantly reduce their susceptibility to WNS (Cornelison et al. 2019, p. 3).

During the summer, Southern TCB predominantly roost in foliage of live or recently dead deciduous hardwood trees (see *Individual-level Ecology and Needs*); however, TCB will also roost in Spanish moss (Davis and Mumford 1962, p. 395).

False Spike

The false spike is currently proposed as endangered under the Endangered Species Act. The false spike is a medium sized freshwater mussel that typically grows up to 5 inches in length, although individuals greater than this length have been collected.

The colors of the shell range from brown, black and yellow green. The nacre (shell surface) is typically white. The muscle has an elongated oval to sub-rhomboidal shell. The beak of the shell is located above the hinge line and the umbo is composed of double-loop sculpturing. The disc of the shell is composed of parallel dorsal-to-ventral grooves, pustules, and slight flutes on the posterior.

A suitable habitat for the false spike is composed of slowly flowing water with heterogenous mixtures of gravel, cobble, or sand. Adequate dissolved minerals, mainly calcium, and a salinity of less than two parts per thousand is required to support shell growth.

To breed, male false spike release their sperm into the water column, which is then taken in by the female, fertilizing her eggs. The female holds developing larvae until they become mature. Once ready for release, the glochidia (mature larvae) are released within proximity to a fish host. There are two fish species that have been identified as hosts. The red shiner (*Cyprinella lutrensis*) and blacktail shiner (*Cyprinella venusta*). It is likely there are other species of fish that act as hosts. The glochidia attach to the gills or fins of the host fish; failure to attach to a host or an attachment in the wrong location results in death. Glochidia that successfully attach to a host, will implant into the host and over a period of weeks or months, develop into juvenile mussels. The juveniles, once fully developed, break from the host (leaving the host relatively unharmed) and settle on the bottom of the stream (USFWS 2021).

False spikes are filter feeders, like all other freshwater muscles species. They feed on algae, particle matter, and bacteria that are filtered through the water column. Juvenile mussels live in sediment and rather than feeding from the water column, feed interstitially. To do this, a relatively

large muscular foot is used to sweep both inorganic and organic particles from the substrate into the opening of the shell.

Guadalupe Orb

Found exclusively in the Guadalupe River Basin, the Guadalupe orb is a unique and rare species first identified in 2018 (Burlakova 2018). The Guadalupe orb was initially thought to be a variation of the Texas pimpleback, found in the Colorado River. In September 2021, the Guadalupe orb was proposed for listing as endangered under the Endangered Species Act by the United States Fish and Wildlife Service. Both the San Marcos and Guadalupe Rivers have been designated as critical habitat. This mussel, along with five others, are facing declines in population due to habitat destruction and declining water quality.

A medium sized freshwater mussel, the Guadalupe orb has an offset hinge, rounded edges and is most commonly black or yellow to brown in color, often with green lines running from the hinge to the edge of the shell. Uniquely sculptured distortions are frequently found on this species (Howells 2014).

Spawning for the Guadalupe orb occurs between March and June (Dudding 2020). Shortly before spawning begins, the mussels begin to hold mature glochidia (larval stage mussels). Shortly after the glochidia mature, they are released by the Guadalupe orb, attach to the gills and fins of a variety of catfish fish hosts (Dudding 2018). Failure to attach to a host will result in death. After about a month, the glochidia that have attached become juvenile and fall onto the waterbody substrate where they burrow, for protection and continue to develop into adult mussels where they will have a lifespan of at least 15 years (Howells 2010d).

Adult Guadalupe orbs, like other freshwater mussels, are filter feeders. To feed, they filter small organisms, plankton, and organic matter. Juvenile glochidia receive nutrients from the gills of the fish host they inhabit.

Adult mussels have specific habitat requirements. They are found in the runs and riffles of moderately sized rivers in a water depth of .5 to 1 meter, with substrates of cobble, silt and mud. The mussel requires a dissolved oxygen concentration of at least 2 milligrams per liter (mg/L), water temperatures of no more than 79 degrees Fahrenheit, and a total ammonia concentration of .5 mg/L or less.

Monarch Butterfly

The monarch butterfly was listed as a candidate for federal status as a threatened or endangered species on December 17, 2020. The monarch, *Danaus plexippus*, is a species of butterfly in the order Lepidoptera (family Nymphalidae) that occurs in North, Central, and South America; Australia; New Zealand; islands of the Pacific and Caribbean, and elsewhere (Malcolm and Zalucki 1993). Adult monarch butterflies are large and conspicuous, with bright orange wings

surrounded by a black border and covered with black veins. The black border has a double row of white spots, present on the upper side and lower side of forewings and hindwings (Bouseman and Sternburg 2001). Adult monarchs are sexually dimorphic, with males having narrower wing venation and scent patches (CEC 2008). The bright coloring of a monarch is aposematic, as it serves as a warning to predators that eating them can be toxic (USFWS 2020).

During the breeding season, monarchs lay their eggs on their obligate milkweed host plant (primarily *Asclepias* spp.), and larvae emerge after two to five days (Zalucki 1982; CEC 2008). Larvae develop through five larval instars (intervals between molts) over a period of 9 to 18 days, feeding on milkweed and sequestering toxic cardenolides as a defense against predators (Parsons 1965). The larva then pupate into chrysalis before emerging 6 to 14 days later as an adult butterfly. There are multiple generations of monarchs produced during the breeding season, with most adult butterflies living approximately two to five weeks; overwintering adults enter into reproductive diapause (suspended reproduction) and live six to nine months (Cockrell et al. 1993; Herman and Tatar 2001).

In many regions where monarchs are present, monarchs breed year-round, repeatedly following the above-referenced life cycle throughout the year (USFWS 2020). Individual monarchs in temperate climates, such as eastern and western North America, undergo long-distance migration, where the migratory generation of adults is in reproductive diapause and lives for an extended period of time (Herman and Tatar 2001). In the fall, in both eastern and western North America, monarchs begin migrating to their respective overwintering sites. This migration can take monarchs distances of over 3,000 km (Urquhart and Urquhart 1978) and last for over two months (Brower 1996). Migratory individuals in eastern North America predominantly fly south or southwest to mountainous overwintering grounds in central Mexico, and migratory individuals in western North America generally fly shorter distances south and west to overwintering groves along the California coast into northern Baja California (Solensky 2004).

Adult monarch butterflies during breeding and migration require a diversity of blooming nectar resources, which they feed on throughout their migration routes and breeding grounds (spring through fall). Monarchs also need milkweed (for both oviposition and larval feeding) embedded within this diverse nectaring habitat (USFWS 2020). The correct phenology, or timing, of both monarchs and nectar plants and milkweed is important for monarch survival. The position of these resources on the landscape is important as well. In western North America, nectar and milkweed resources are often associated with riparian corridors, and milkweed may function as the principal nectar source for monarchs in more arid regions (Dingle et al. 2005; Pelton et al. 2018; Waterbury and Potter 2018; Dilts et al. 2018). Individuals need nectar and milkweed resources year-round in nonmigratory populations. Additionally, many monarchs use a variety of roosting trees along the fall migration route (USFWS 2020).

POTENTIAL EFFECTS DETERMINATION

Whooping Crane

According to the USFWS IPaC report, critical habitat has been designated for this species. However, the project area does not overlap the critical habitat.

No whooping cranes were identified within the project area. If inundation occurs, the maintained community may provide marginal roosting or foraging habitat for this species. However, many areas of similar suitable habitat are present around the project area.

Due to the availability of larger sources of more suitable habitat in areas outside of the project area and the temporary use of migratory habitat, it is unlikely that this species would utilize the project area. It is Sphere 3's opinion that proposed construction activities will have no effect on this species.

Tricolored Bat

According to the USFWS IPaC report, no critical habitat has been designated for this species.

No trees or artificial roosts are present within the project area. Suitable habitat for this species is not present within the project area.

It is Sphere 3's opinion that no effects to the tricolored bat will result from the proposed construction.

False Spike

According to the USFWS IPaC report, critical habitat has been proposed for this species. However, the project area does not overlap the proposed critical habitat.

No aquatic environments are located within or near the proposed project area. There is no suitable habitat for this species located in the project area.

It is Sphere 3's opinion that any proposed construction within the project area will have no effect on this species.

Guadalupe Orb

According to the USFWS IPaC report, critical habitat has been proposed for this species. However, the project area does not overlap the proposed critical habitat.

No aquatic environments are located within or near the proposed project area. There is no suitable habitat for this species located in the project area.

It is Sphere 3's opinion that any proposed construction within the project area will have no effect on this species.

Monarch Butterfly

Since the monarch butterfly is a candidate for listing, no critical habitat has been designated for this species within the project area.

Monarch butterflies require a diversity of blooming nectar resources, which they feed on throughout their migration routes and breeding grounds, along with embedded milkweeds for both oviposition and larval feeding. No milkweeds, which are necessary for the reproduction of this species, were identified within the project area.

It is Sphere 3's opinion that any proposed construction within the project area will have no effect on this species.

SUMMARY

Sphere 3 investigated the New Braunfels National Airport ATCT 1 project area for suitable habitat and potential presence of federally protected threatened or endangered species.

Based on the results of the field investigation and our interpretation of the best available data for the listed species, Sphere 3 concludes that construction activities associated with the New Braunfels National Airport ATCT 1 project will have no effect on the whooping crane, tricolored bat, false spike, Guadalupe orb, or the monarch butterfly.

LITERATURE CITED

Bonner, T.H., E.L. Oborny, B.M. Littrell, J.A. Stoeckel, B.S. Helms, K.G. Ostrand, P.L. Duncan, and J. Conway. 2018. Multiple freshwater mussel species of the Brazos River, Colorado River, and Guadalupe River basins. CMD 1 - 6233CS. Final Report to Texas Comptroller of Public Accounts. February 28, 2018. 306 pp.

Bouseman JK, Sternburg JG. 2001. Field guide to butterflies of Illinois. Illinois Natural History Survey. Champaign, IL.

Brower LP. 1996. Monarch butterfly orientation: Missing pieces of a magnificent puzzle. Journal of Experimental Biology 199:93-103.

Burlakova, L., Karatayev, A., Froufe, E., Bogan, A.E., and Lopes-Lima, M. "The Nautilus 132(2)." 2018. 45-50. 23 February 2024.

[CEC] Secretariat of the Commission for Environmental Cooperation. 2008. North American monarch conservation plan. Communications Department of the Center for Environmental Cooperation Secretariat.

Cockrell BJ, Malcolm SB, Brower LP. 1993. Time, temperature, and latitudinal constraints on the annual recolonization of eastern North America by the monarch butterfly. Pp. 233-251 in Malcolm SB, Zalucki MP, eds. Biology and Conservation of the Monarch Butterfly. Natural History Museum of Los Angeles County, Science Series 38.

Cummings, Kevin and Dan Graf. *The MUSSEL Project*. 2013. 22 February 2024.

Dilts TE, Steele M, Black S, Craver D, Cruz E, Engler J, Jepsen S, Jones A, McKnight S, Pelton E, Taylor A, and Forister M. 2018. Western Monarch and Milkweed Habitat Suitability Modeling Project Version 2 – Maxent Model Outputs. Xerces Society/US Fish and Wildlife Service/University of Nevada Reno. Retrieved from: www.monarchmilkweedmapper.org/

Dingle H, Zalucki MP, Rochester WA, Armijo-Prewitt T. 2005. Distribution of the monarch butterfly, Danaus plexippus (L.) (Lepidoptera: Nymphalidae), in western North America. Biological Journal of the Linnean Society 85:491-500.

Dudding, J. Hart, M., Khan, J.M., Robertson, C.R., Lopez, R., and Randklev, C.R. "Reproductive life history of 2 imperiled and 1 widely distributed freshwater mussel species from the southwestern United States." *Freshwater Science* 39.1 (n.d.). 23 February 2024.

Dudding, J., Hart, M., Morton, J., Robertson, C., Conway, K., Lopez, R., and Randklev, C. "Host fish association for two highly imperiled mussel species from the southwestern United States: Fusconaia mitchelli (false spike) and Cyclonaias petrina (Texas Pimpleback)." 2018. 23 February 2024.

Guadalupe-Blanco River Authority. *Guadalupe Orb*. 30 March 2022. 24 February 2024.

Herman WS, Tatar M. 2001. Juvenile hormone regulation of longevity in the migratory monarch butterfly. Proceedings of the Royal Society B-Biological Sciences 268:2509-2514.

Howells, R.G. "False spike (Quadrula mitchelli): Summary of Selected Biological and Ecological Data for Texas." *BioStudies* 16 (2010d). 23 February 2024.

Howells, R.G. *Field Guide to Texas Freshwater Mussels, 2nd edition*. 2014. 23 February 2024.

Howells, R.G., Neck, R.W.. and Murray, H.D. *Freshwater Mussels of Texas*. Austin: Texas Parks and Wildlife Department Inland Fisheries Division, 1996. 23 February 2024.

Malcolm SB, Zalucki MP. 1993. The monarch butterfly: Research and conservation. Pp. 3-8 in Malcolm SB, Zalucki MP, eds. Biology and Conservation of the Monarch Butterfly. Natural History Museum of Los Angeles County, Science Series 38.

Parsons JA. 1965. A digitalis-like toxin in monarch butterfly Danaus plexippus L. Journal of Physiology-London 178:290-304.

Pelton E, McKnight S, Fallon C, Code A, Hopwood J, Hoyle S, Jepsen S, Black SH. 2018. Managing for monarchs in the West: Best management practices for conserving the monarch butterfly and its habitat. Portland, OR: The Xerces Society for Invertebrate Conservation. vi + 106 pp.

Randklev, C. R., Johnson, N.A., Miller, T., Morton, J.M., Dudding, J., Skow, J., Boseman, B., Hart, M., Tsakiris. E.T., Inoue, K. and Lopez. R. R. *Freshwater Mussels (Unionidae): Central and West Texas Final Report*. 2017c. 23 February 2024.

Service, U.S. Fish & Wildlife. *False Spike*. 2013. 22 February 2024.

Solensky MJ. 2004. Overview of monarch migration. Pp. 79-83 in Oberhauser KS, Solensky MJ, eds. The Monarch Butterfly: Biology and Conservation. Ithaca, NY: Cornell University Press.

Texas Parks and Wildlife (TPWD). 2021. Whooping Crane (*Grus americana*) at; https://tpwd.texas.gov/huntwild/wild/species/whooper/. Texas Parks and Wildlife Department. Accessed April 08, 2021.

Texas Parks and Wildlife Department. 2021. Golden-cheeked Warbler (Dendroica chrysoparia) Fact Sheet; Available at https://tpwd.texas.gov/huntwild/wild/species/ Accessed on 04-13-2021. TPWD, 4200 Smith School Road, Austin, Texas, USA.

Texas Parks and Wildlife Department. Undated. Golden-cheeked Warbler (Dendroica chrysoparia) Fact Sheet; Private collection. TPWD, 4200 Smith School Road, Austin, Texas, USA.

Texas Parks and Wildlife. *Fountain Darter (Etheostoma fonticola)*. Undated. 26 February 2024.

Turgeon, D. D., A. E. Bogan, E. V. Coan, W. K. Emerson, W. G. Lyons, W. Pratt, et al. "Common and Scientific Names of Aquatic Invertebrates from the United States and Canada: Mollusks." *American Fisheries Society Special Publication* (1988): vii + 277. 22 February 2024.

Turgeon, D. D., J. F. Quinn, Jr., A. E. Bogan, E. V. Coan, F. G. Hochberg, W. G. Lyons, et al. "Common and scientific names of aquatic invertebrates from the United States and Canada: Mollusks, 2nd ed." *American Fisheries Society Special Publication 26* (1998): 526. 22 February 2024.

U.S. Fish and Wildlife Service (USFWS). "1 Draft Recovery Plan Revisions for 25 Species in 15 States Across the United States." *Federal Register* (2019): 38288-38291. 26 February 2024.

U.S. Fish and Wildlife Service (USFWS). "5-Year Reviews of 28 Southwestern Species." *Federal Register* (2008): 14995-14997. 26 February 2024.

U.S. Fish and Wildlife Service (USFWS). "Appendix D - United States List of Endangered Native Fish and Wildlife." *Federal Register* 35.199 (1970): 16048. 26 February 2024.

U.S. Fish and Wildlife Service (USFWS). "ETWP; Proposal of Critical Habitat for Four Species in Texas." *Federal Register* 45.55 (1980): 16047. 24 February 2024.

U.S. Fish and Wildlife Service (USFWS). "Initiation of 5- Year Status Reviews of 10 Species in Arizona, Arkansas, Kansas, Missouri, New Mexico, Oklahoma, Texas, and Mexico." *Federal Register* (2020). 26 February 2024.

U.S. Fish and Wildlife Service (USFWS). "Notice of Proposed Rule Making (Conservation of Endangered Species and Other Fish or Wildlife)." 35.165 (1970): 13519. 26 February 2024.

U.S. Fish and Wildlife Service (USFWS). 2023. IPaC – Information for Planning and Consultation. http://ecos.fws.gov/ipac/ Accessed March 5, 2024.

U.S. Fish and Wildlife Service (USFWS). *Species Status Assessment Report for the Central Texas Mussels: False Spike (Fusconaia mitchelli), Texas Fatmucket (Lampsilis bracteata), Texas Fawnsfoot (Truncilla macrodon), Texas Pimpleback (Cyclonaias petrina), Guadalupe Fatmucket (Lampsilis sp. Cf. b*. Alburquerque, 2018. 23 February 2024.

U.S. Fish and Wildlife Service (USFWS). 2007b. International recovery plan for the whooping crane (*Grus americana*). Ottawa: Recovery of Nationally Endangered Wildlife (RENEW), and U.S. Fish and Wildlife Service, Albuquerque, New Mexico. 162 pp.

U.S. Fish and Wildlife Service (USFWS). 2019. Species status assessment report for the Central Texas Mussels, Version 1.5. December 2019. Albuquerque, NM.

U.S. Fish and Wildlife Service (USFWS). 2020. Monarch (Danaus plexippus) Species Status Assessment Report. V2.1 96 pp + appendices.

Urquhart FA, Urquhart NR. 1978. Autumnal migration routes of the eastern population of monarch butterfly (Danaus p. plexippus L.; Danaidae; Lepidoptera) in North America to the overwintering site in the Neovolcanic Plateau of Mexico. Canadian Journal of Zoology 56:1759- 1764.

Waterbury B, Potter A. 2018. Integrating strategic conservation approaches for the monarch butterfly in the State Wildlife Action Plans of Idaho and Washington. Final report prepared for the U.S. Fish & Wildlife Service. 79 pp.

Zalucki MP. 1982. Temperature and rate of development in Danaus-plexippus L and D. chrysippus L (Lepidoptera, Nymphalidae). Journal of the Australian Entomological Society 21:241-246.

Attachment A:

Figures

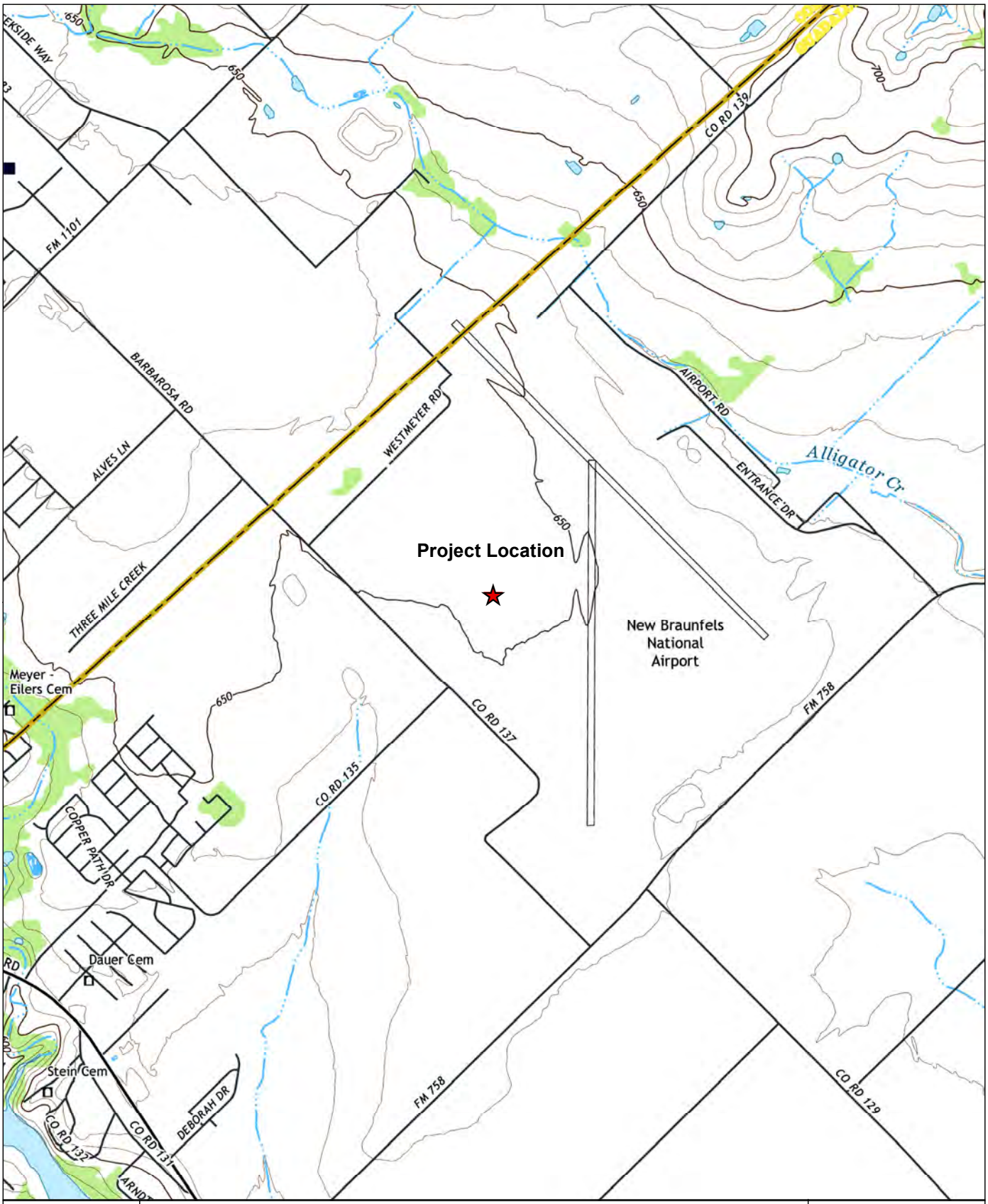


Figure 1
Topographic Features of the Proposed ATCT 1
in Guadalupe County, TX

N
W E
S

Feet
0 1,000 2,000 4,000 6,000 8,000

KSA Engineers, Inc.
Project Number: 050097.00

Date: 02/20/2024

Base Map: USGS 7.5 Minute Topographic
Quadrangle: New Braunfels East, TX (Published 2022)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

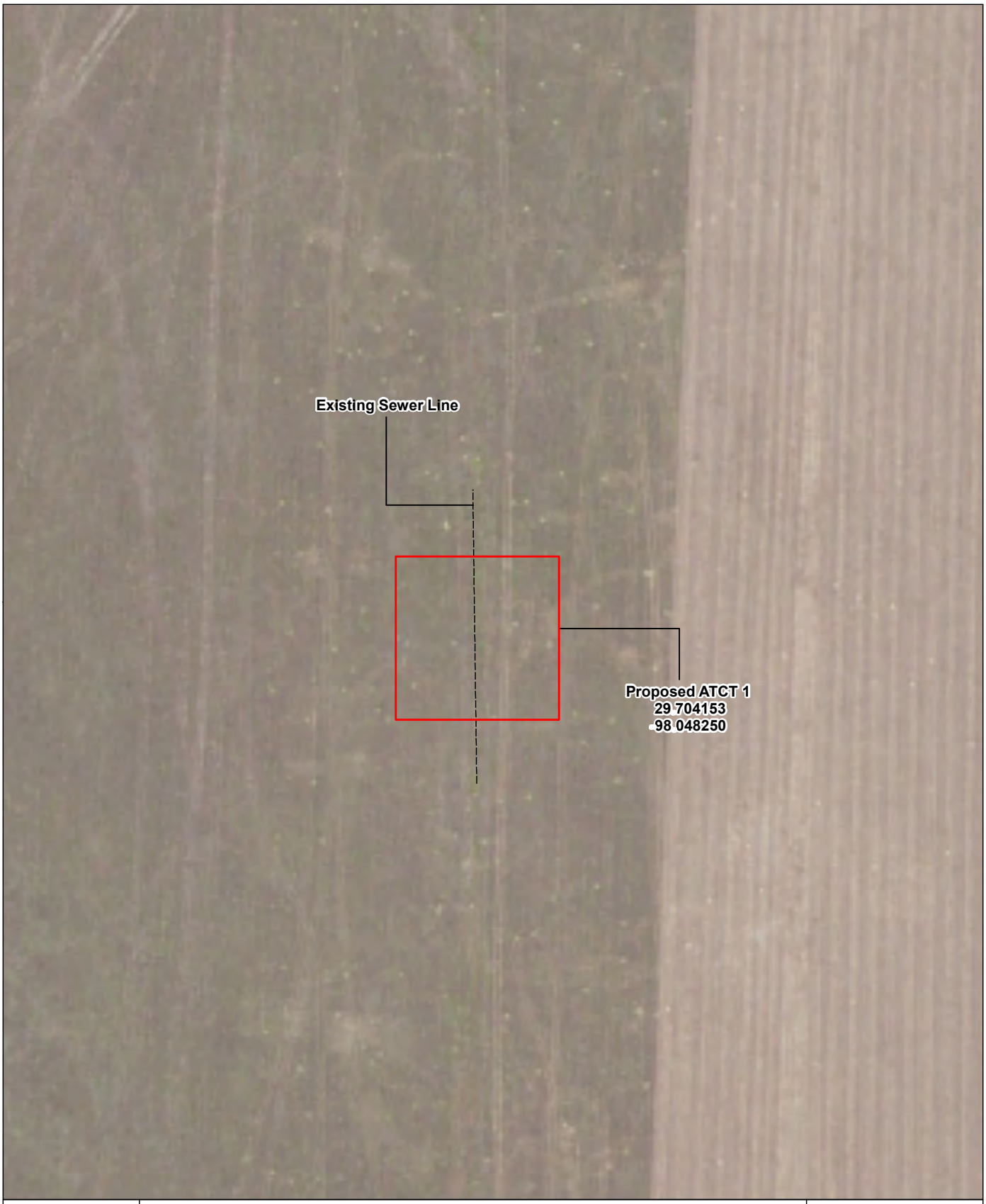


Figure 2
Aerial Photograph of the Proposed ATCT 1
in Guadalupe County, TX

N
W E
S

0 100 200 400 600 Feet

KSA Engineers Project Number: 050097.00	Date: 02/20/2024	Base Map: NRCS Geospatial Data Gateway 2022 NAIP Aerial Imagery (Guadalupe County,TX)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

Attachment B:

Project Photographs

Photograph: 1 **Date:** February 20, 2024 **County Name:** Guadalupe County, Texas **Description:** Photograph showing the herbaceous layer of the proposed project area with the airport in the background.	

Photograph: 2 **Date:** February 20, 2024 **County Name:** Guadalupe County, Texas **Description:** Photograph showing the herbaceous layer within the proposed project area.	

Attachment C:

USFWS IPaC Official T&E List

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Austin Ecological Services Field Office
1505 Ferguson Lane
Austin, TX 78754-4501
Phone: (512) 937-7371

In Reply Refer To: March 05, 2024
Project Code: 2024-0058048
Project Name: New Braunfels National Airport - Proposed Air Traffic Control Towers 1, 2, & 3

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through IPaC by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see Migratory Bird Permit | What We Do | U.S. Fish & Wildlife Service (fws.gov).

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Austin Ecological Services Field Office
1505 Ferguson Lane
Austin, TX 78754-4501
(512) 937-7371

PROJECT SUMMARY

Project Code: 2024-0058048

Project Name: New Braunfels National Airport - Proposed Air Traffic Control Towers 1, 2, & 3

Project Type: Airport - Maintenance/Modification

Project Description: Client proposes to construct a new air traffic control tower on one of three potential sites within the footprint of the existing New Braunfels National Airport.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@29.7027961,-98.04182683220827,14z

Counties: Guadalupe County, Texas

ENDANGERED SPECIES ACT SPECIES

There is a total of 7 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 2 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

BIRDS

NAME	STATUS
Piping Plover *Charadrius melodus* Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is **final** critical habitat for this species. Your location does not overlap the critical habitat. This species only needs to be considered under the following conditions: ▪ Wind Energy Projects Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Rufa Red Knot *Calidris canutus rufa* There is **proposed** critical habitat for this species. This species only needs to be considered under the following conditions: ▪ Wind Energy Projects Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened
Whooping Crane *Grus americana* Population: Wherever found, except where listed as an experimental population There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/758	Endangered

CLAMS

NAME	STATUS
False Spike *Fusconaia mitchelli* There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3963	Proposed Endangered
Guadalupe Orb *Cyclonaias necki* Population: There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/10781	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: John Quine
Address: 1501 Bill Owens Parkway
City: Longview
State: TX
Zip: 75604
Email quine@sphere3env.com
Phone: 9032974673

CULTURAL RESOURCES INVESTIGATION REPORT OF THE PROPOSED NEW BRAUNFELS NATIONAL AIRPORT PROPOSED ATCT 1 LOCATION GUADALUPE COUNTY, TEXAS

Texas Antiquities Permit Number 31616

Prepared for:
KSA Engineers, Inc.
4833 Spicewood Springs Road
Suite 204
Austin, Texas 78759
512.342.6868

Prepared by:
Sphere 3 Environmental, Inc.
1501 Bill Owens Parkway
Longview, Texas 75604
903.297.4673

Principal Investigator:
James S. Belew, RPA

Authored by:
James S. Belew, RPA and Michael Ryan

March 2024

ABSTRACT

Sphere 3 Environmental, Inc. (Sphere 3) conducted an intensive pedestrian cultural resources survey of approximately 0.37 hectare (0.91 acre) of land designated as the Area of Potential Effects (APE) in response to the proposed undertaking to construct a new control tower location at the New Braunfels National Airport in Guadalupe County, Texas. KSA Engineers, Inc. retained Sphere 3 to conduct a cultural resources survey of the proposed ATCT 1 potential tower location. The project area is situated wholly within the City of New Braunfels, Texas. The Texas Historical Commission issued Texas Antiquities Permit Number 31616 on behalf of the airport. Sphere 3's field crew, led by James S. Belew, RPA, Principal Investigator, conducted field investigations on February 20, 2024.

The cultural resources survey was conducted to identify properties eligible for inclusion in the National Register of Historic Places or listing as a State Antiquities Landmark. A total of 2 shovel tests were excavated across the project area. No archaeological sites or isolated finds were identified by the survey. All documents associated with this investigation were curated at the Texas Archeological Research Laboratory in Austin, Texas. Sphere 3 therefore recommends that construction of the proposed New Braunfels National Airport Control Tower ATCT 1 Location proceed as planned without further cultural resource investigations.

TABLE OF CONTENTS

FIGURES

APPENDICES

INTRODUCTION

The New Braunfels National Airport is currently conducting a siting study to determine the location for a new air traffic control tower (ATCT). The ATCT 1 potential tower location, designated as the project area or area of potential effect, is approximately 0.37 hectare (ha) (0.91 acre [ac]) of land on airport property in the City of New Braunfels, Guadalupe County, Texas (Figures 1 and 2). Sphere 3 Environmental, Inc. (Sphere 3) was retained by KSA Engineers, Inc. (KSA) to determine whether any cultural resources eligible for inclusion in the National Register of Historic Places (NHRP) and/or eligible for designation as a State Antiquities Landmark (SAL) will be adversely impacted by proposed construction activities at the ATCT 1 location. Federal involvement in the project was triggered by compliance with Federal Aviation Administration requirements. A Texas Antiquities Permit was required because the New Braunfels National Airport is owned by the City of New Braunfels, Texas, which is considered a political subdivision of the State of Texas and therefore falls within the regulatory authority of the Texas Historical Commission (THC). The project is designed to comply with the Texas Antiquities Code, the National Historic Preservation Act of 1966 (Public Law [PL] 89-665), as amended in 1974 (PL 97-442), 1976 and 1980, and the National Environmental Policy Act of 1969 (PL 81-190, 83 Stat. 915, 42 USC 4321, 1970). These investigations are also designed to comply with the Council of Texas Archeologists (CTA) standards and guidelines.

Proposed construction includes a control tower no more than 43.59 meters (m) (143 feet [ft]) high, a small parking lot, fencing, utilities, and drainage improvements within a 60.96 by 60.96 m (200 by 200 ft) area. The maximum depth of proposed soil disturbance is 30.48 meters (m) (100 feet [ft]) for geotechnical borings. To identify any historic and/or archaeological properties existing within the project area, Sphere 3 developed a scope of work for a Phase I intensive cultural resources survey. The THC accepted this proposed scope and issued Texas Antiquities Permit Number 31616 on behalf of the New Braunfels National Airport. Sphere 3 conducted the fieldwork on February 20, 2024. No inclement weather was encountered during the project. The work was carried out by a two-person crew consisting of Jay Belew, Principal Investigator, and Michael Ryan, Field Director. The field documents and report will be permanently curated at the Texas Archeological Research Laboratory (TARL), University of Texas at Austin, located in Austin, Texas.

The project area was visually inspected by pedestrian survey at a maximum of 30 m (98.4 ft) transect intervals. A total of 2 shovel tests were excavated across the project area. No archaeological sites or isolated finds were identified by the survey. Sphere 3 therefore recommends that construction of the proposed New Braunfels National Airport Control Tower ATCT 1 Location proceed as planned without further cultural resource investigations.

DEFINITION OF STUDY AREA

The project area consists of a square 0.37 ha (0.91 ac) area on nearly level uplands very gently sloping to the south and the east toward Alligator Creek (Figure 2), approximately 1.2 kilometers (0.7 mile) to the northeast. The project area lies within an open field to the west of the airport runway (Appendix B: Photographs 1 and 2). The project area is bound on all sides by the open field continuing in all directions. The project area is in New Braunfels, Texas and is owned solely by the New Braunfels National Airport.

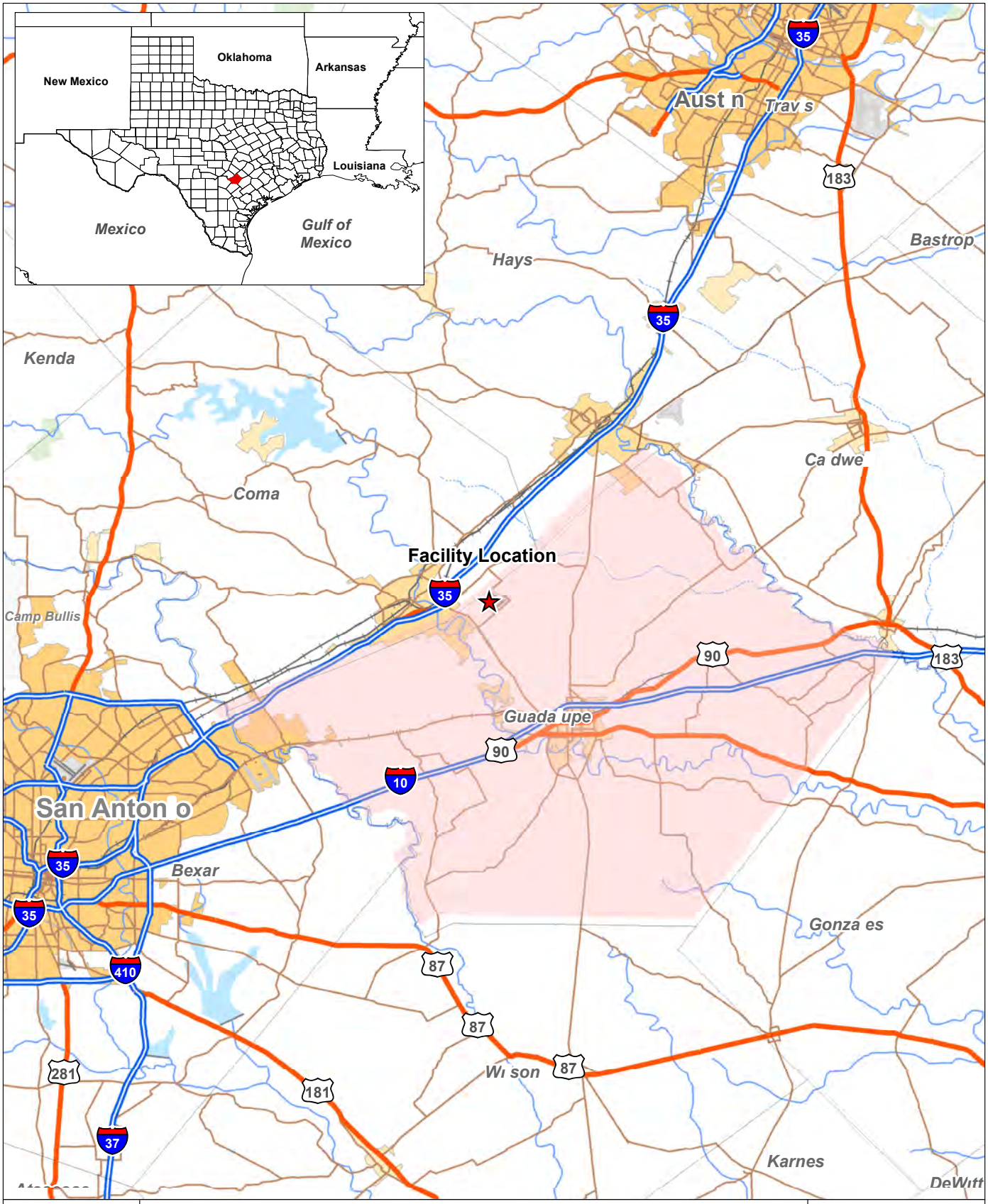


Figure 1
Vicinity Map of the New Braunfels National Airport
Proposed ATCT 1 Location in Guadalupe County, TX

Kilometers
0 10 20 40 60

Miles
0 5 10 20 30 40

KSA Engineers, Inc.
Project Number: 050097.00

Date: 02/20/2024

Coordinate System: NAD 1983
UTM Zone 14 North

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

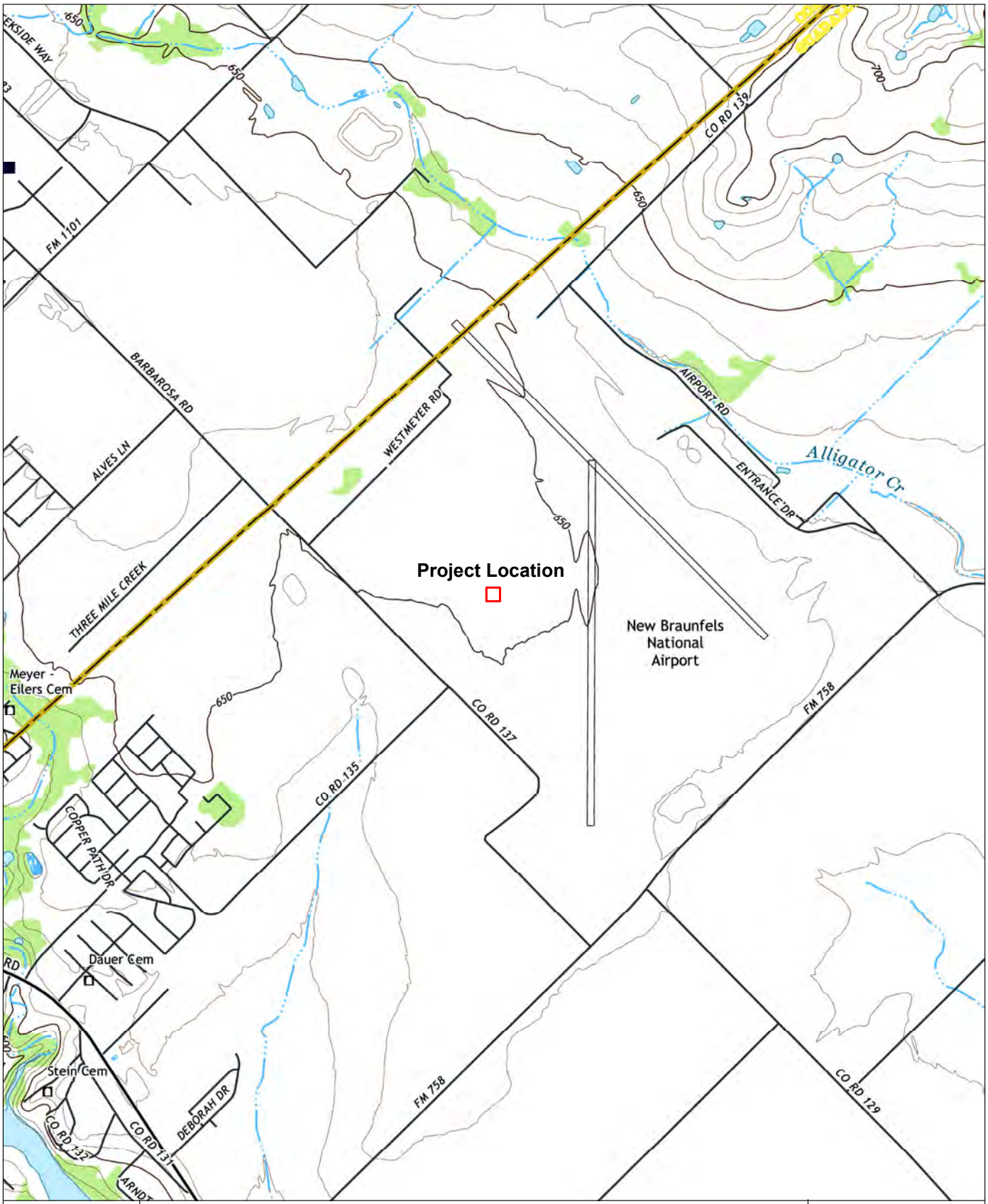


Figure 2
Topographic Features of the New Braunfels National Airport
Proposed ATCT 1 Location in Guadalupe County, TX

N
W E
S

Meters
0 300 600 1,200 1,800 2,400

Feet
0 1,000 2,000 4,000 6,000 8,000

KSA Engineers, Inc. Project Number: 050097.00	Date: 02/20/2024	Base Map: USGS 7.5 Minute Topographic Quadrangle: New Braunfels East, TX (Published 2022)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

The project area lies within the Texan biotic province, one of seven recognized by Blair (1950) and Dice (1943) for the state of Texas based on ecological associations of a relatively stable assemblage of plants and animals. This ecotone describes a region characterized by tall grass prairies supported by clay soils or sandy soils and oak hickory forests; the dominating species being post and blackjack oaks, and hickory. Vegetation within the project area consisted of mowed grass and a few patches of longer grass and brush around manhole covers providing access to a buried sewer line running north/south through the project area (Appendix B: Photographs 3 and 4).

According to the Natural Resources Conservation Service's Web Soil Survey, the project is located on Branyon clay, 0 to 1 percent slopes. This soil is moderately well drained and formed in calcareous clayey alluvium derived from mudstone of Pleistocene age. The typical soil profile consists of clay from 0 to 203 centimeters. (USDA 2024).

PREVIOUS INVESTIGATIONS

Based on a site file search of the Texas Archaeological Sites Atlas database and literature search and records review, the proposed project area will not impact any previously recorded archaeological sites or other recorded cultural resources. One previously recorded archaeological site, 41GU236, was found to be mapped within one kilometer of the project area (Figure 3). Site 41GU236 is a historic farmstead site that has been determined to be ineligible for the NRHP. The site is approximately 0.8 kilometer (0.5 mile) northwest of the project area. There are no previously conducted cultural resources surveys or historic properties listed on the NRHP within one kilometer of the project area.

RESEARCH DESIGN

Sphere 3 performed all necessary cultural resources investigations in connection with the New Braunfels National Airport Proposed Control Tower ATCT 1 Location construction undertaking. These investigations were conducted to locate prehistoric and historic cultural resources sites within the property, delineate the vertical and horizontal extent of each site, and make preliminary evaluations of each site's integrity and potential for SAL designation and/or NRHP eligibility.

Prior to initiating the fieldwork, Sphere 3 acquired a Texas Antiquities Permit. Sphere 3 conducted a records search for SALs, Historic Markers, properties listed on or eligible for inclusion in the NRHP, previously recorded sites documented at TARL, as officially managed by THC, previous survey reports available online through the Texas Archeological Site Atlas. Topographic maps, aerial images, and Google Earth imagery from the past 99 years were analyzed for modern and historic impacts to the property.

The pedestrian cultural resources survey relied on both visual examination and shovel testing. The visual examination focused on areas with exposed soil surfaces (e.g., tire tracks, animal disturbances, etc.). Per the THC's standards, a project area measuring 0.37 ha (0.91 ac) requires a minimum of 2 shovel tests. One shovel test was excavated in the northeast corner and the other in the southwest corner.

Shovel tests measuring 30 cm by 30 cm were excavated in 10 cm levels down to the clay substrate with the deepest test at 20 cm (7.9 in) below surface. The excavated matrix was screened through a 0.635 cm (0.25 in) wire mesh screen. Shovel test locations were recorded

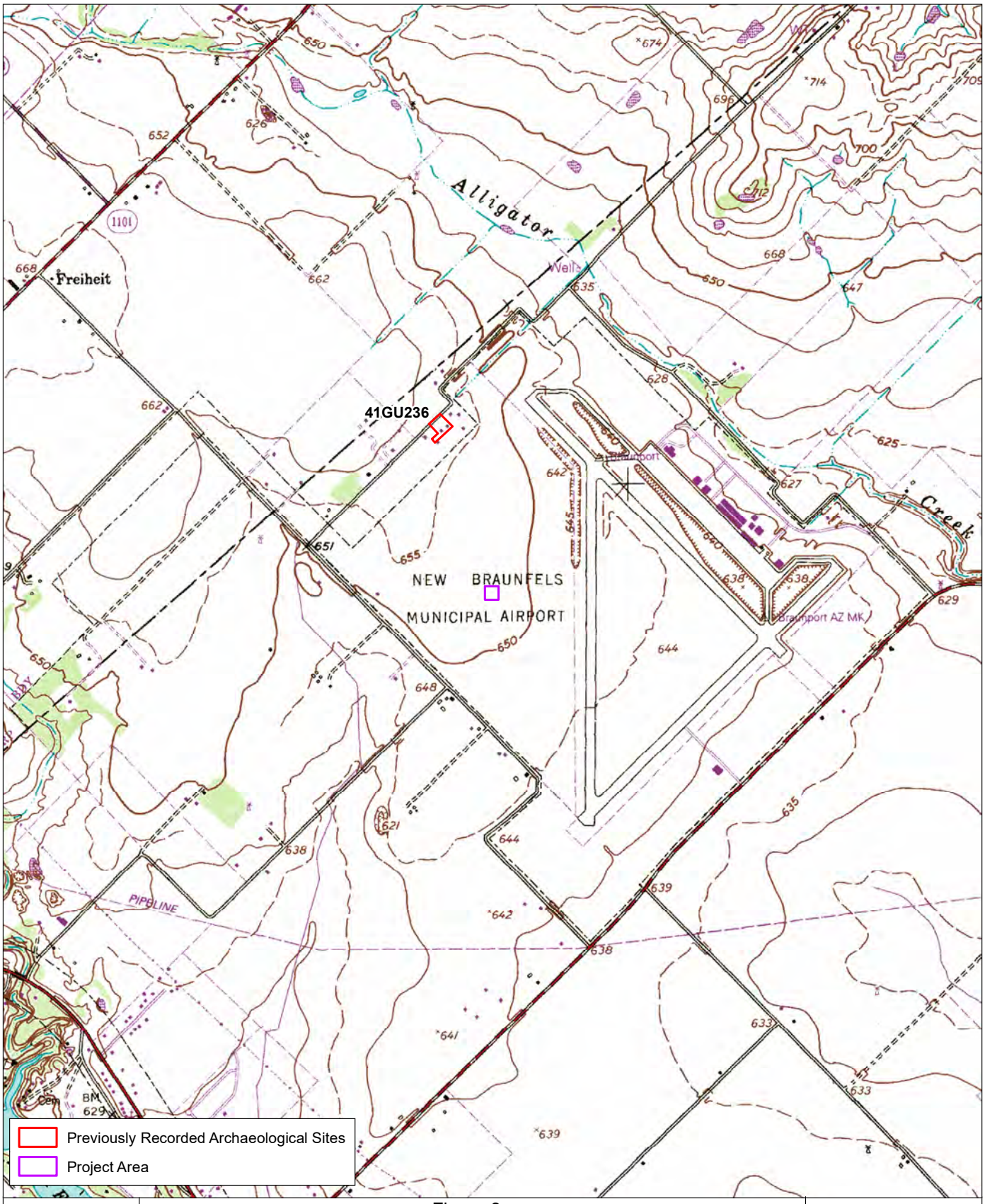


Figure 3
Previously Recorded Archaeological Sites Within
One Kilometer of the Project Area

N
W E
S

Meters
0 300 600 1,200 1,800 2,400

Feet
0 1,000 2,000 4,000 6,000 8,000

KSA Engineers, Inc.
Project Number: 050097.00

Date: 02/20/2024

Base Map: USGS 7.5 Minute Topographic Quadrangle:
New Braunfels East, TX (Published 1958, Revised 1994)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

with a GPS capable of one meter (3.28 ft) accuracy. For each shovel test unit, notes were made in the shovel test form of soil color, texture, and extent of soil layers and of the maximum depth.

Upon finding an artifact, shovel tests were to be excavated solely within the project area boundaries at a maximum of 15 m (49.2 ft) intervals until the site limits could be delineated using surface features/artifacts or two consecutive negative shovel tests. Exceptions are: (1) If the project area boundary shall be reached before the second (or any) negative STs have been excavated, or (2) If a stream or other clearly recognized landform boundary forms a topographic limit to the site. Surface features were to be mapped with a GPS. Photos were to be taken of the site area. A soil profile was to be described from a positive shovel test on the site, and a State of Texas Archeological Site Data Form would be completed for each new site discovered. Sub-surface artifacts were to be collected by shovel test number and 10 cm (3.9 in) level. Shovel tests containing cultural materials were considered isolated finds, as long as: (1) no subsequent positive shovel tests were discovered during delineations, and (2) the original shovel test contained 3 or less artifacts from relatively undisturbed soils, and/or from an extremely disturbed soil from which no spatial or temporal context could be inferred (no matter how many cultural objects older than 50 years might be documented).

In the case of a historic site for which an unusual abundance of certain classes of non-diagnostic fragments of bottle glass, iron, brick, or other common material are found on the surface, only representative samples shall be required to be collected and curated in accordance with State Antiquities Permit guidelines. All diagnostic historic and other historic cultural objects recovered during investigations that do not meet these criteria, as well as all prehistoric cultural objects, were collected.

Following completion of the field survey, all collected artifacts were to be washed, cataloged, and analyzed to determine cultural affiliation. Site forms, artifacts, maps and photographs, along with documents containing other field data shall be curated at TARL in Austin, Texas.

RESULTS

This cultural resources investigation included an analysis of topographic maps and aerial imagery from the past 99 years followed by an intensive pedestrian survey. A total of 2 shovel tests were excavated within the project area. Soil profiles of all excavated shovel tests are found in Appendix A: Table 1. No archaeological sites or isolated finds were identified during the survey. Shovel test forms and other archival materials containing documentation comprising the Texas Antiquities Permit No. 31616 project shall be curated at TARL.

IMAGERY AND TOPOGRAPHIC ANALYSIS

Google Earth aerial imagery; historic aerial imagery from 1958 (Figure 4) and 1986 (Figure 5); and topographic maps from 1925 (Figure 6) and 1958 Photorevised 1994 (Figure 7) illustrate the modern use of the project area and its immediate surroundings. The topographic maps indicate the project area appears to have been largely used for agricultural purposes or was otherwise undeveloped from 1925 until acquisition by the airport. Two structures, likely representing a farmstead, are mapped approximately 62 m (203.4 ft) southeast of the project area on the 1925 topographic map. By 1958, both the topographic map and the aerial reveal the farmstead is gone and the airport runways/taxiways have been constructed. No buildings have yet been constructed at the airport. By 1986 numerous buildings have been constructed along the northwestern side of

Figure 4
Historic 1958 Aerial Photograph of the Project Area

N
W E
S

Meters
0 200 400 800 1,200 1,600
Feet
0 500 1,000 2,000 3,000 4,000 5,000

KSA Engineers Project Number: 050097.00	Date: 02/20/2024	Base Map: USGS Earth Expolorer 1958 Aerial Imagery (Guadalupe County, TX)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

Figure 5
Historic 1986 Aerial Photograph of the Project Area

N
W E
S

Meters
0 200 400 800 1,200 1,600
Feet
0 1,000 2,000 4,000 6,000

KSA Engineers
Project Number: 050097.00

Date: 02/20/2024

Base Map: USGS Earth Expolorer
1986 Aerial Imagery (Guadalupe County, TX)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

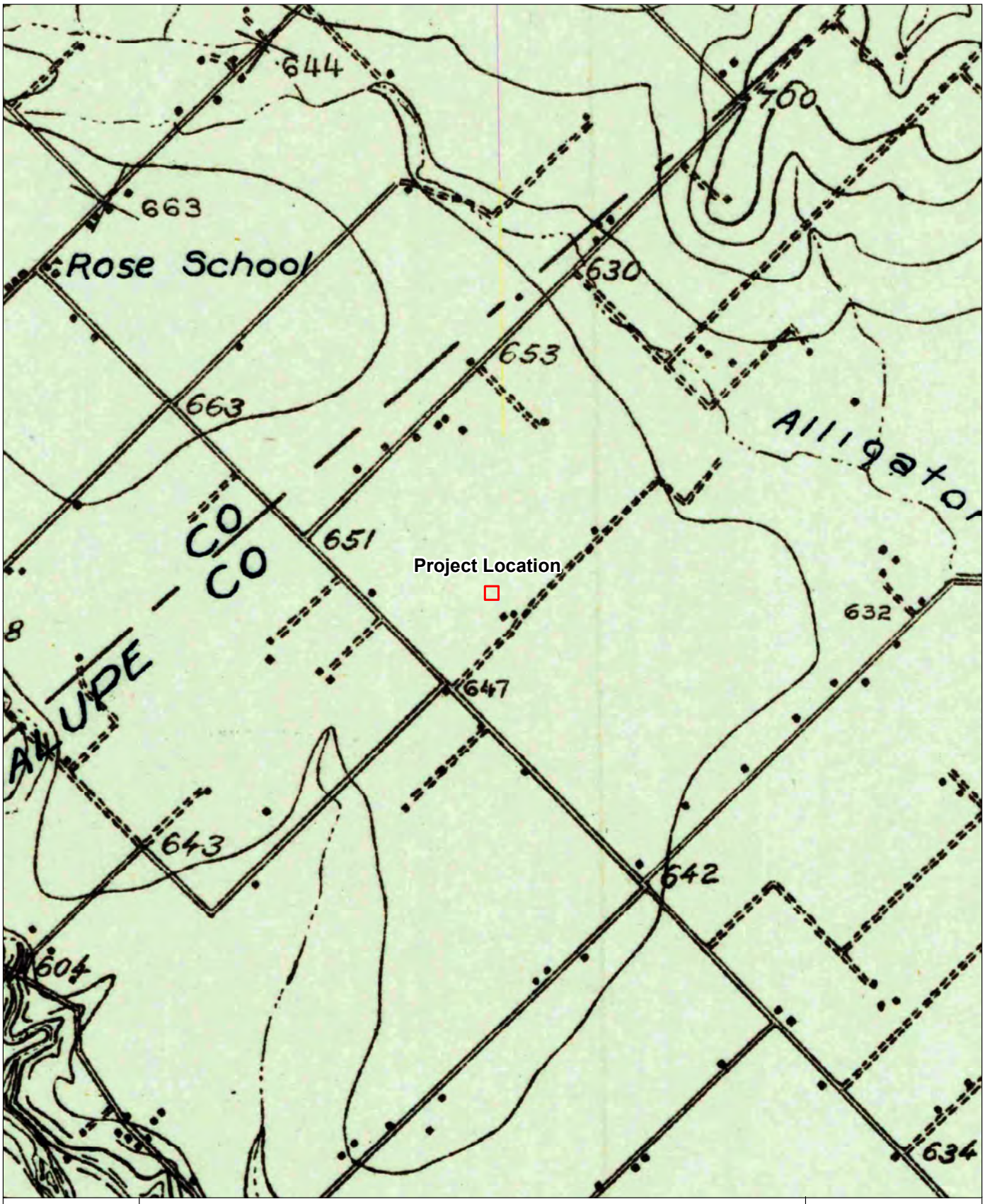


Figure 6
Historic Topographic Map of the Project Area - Published 1925

Meters
0 300 600 1,200 1,800 2,400
Feet
0 1,000 2,000 4,000 6,000 8,000

KSA Engineers, Inc.
Project Number: 050097.00

Date: 02/20/2024

Base Map: USGS 7.5 Minute Topographic
Quadrangle: New Braunfels, TX (Published 1925)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

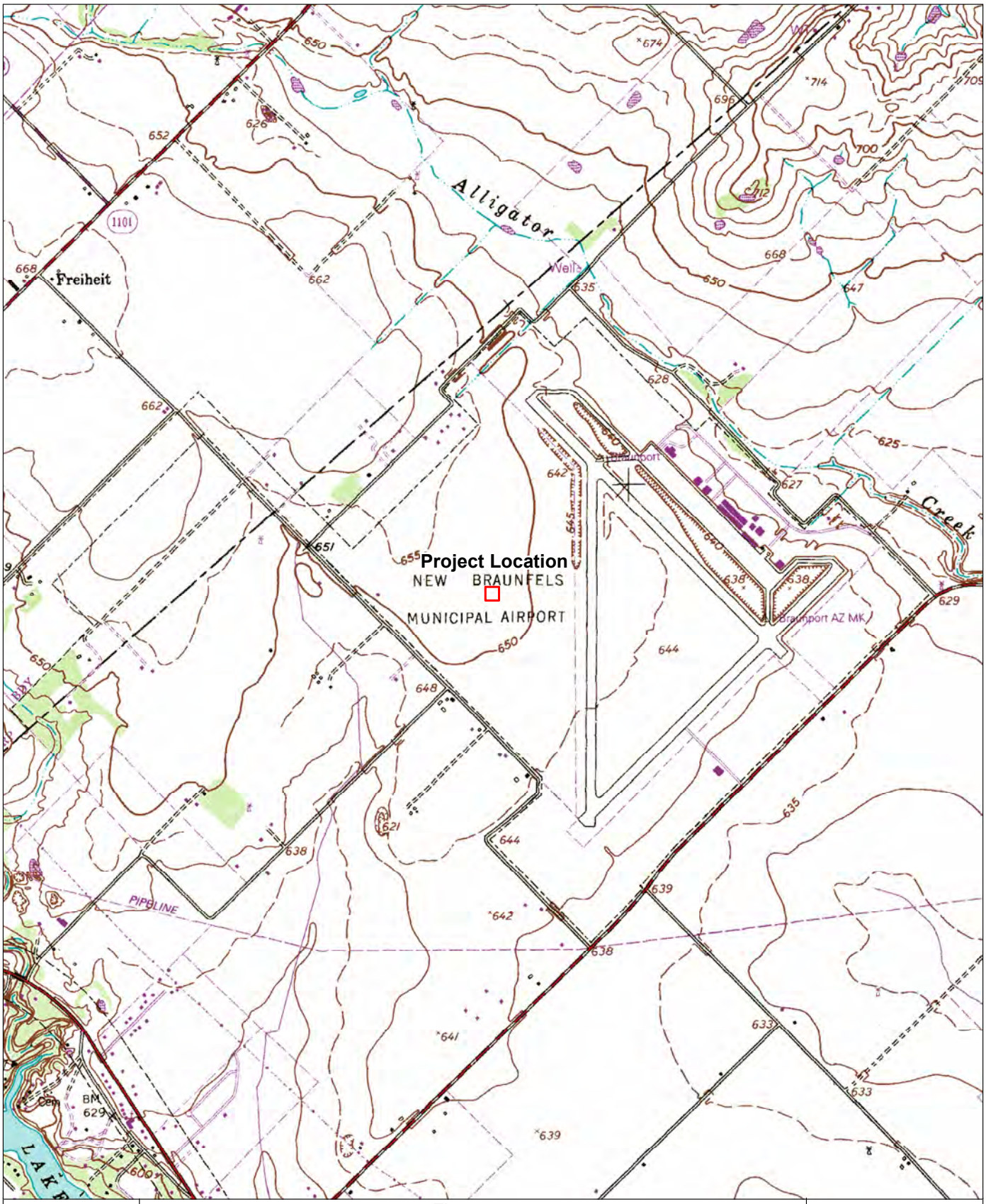


Figure 7
Historic Topographic Map of the Project Area - Published 1958
(Photorevised 1994)

N
W E
S

Meters
0 300 600 1,200 1,800 2,400

Feet
0 1,000 2,000 4,000 6,000 8,000

KSA Engineers, Inc. Project Number: 050097.00	Date: 02/20/2024	Base Map: USGS 7.5 Minute Topographic Quadrangle: New Braunfels East, TX (Published 1958, Revised 1994)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

the runway/taxiways. The 1994 topographic map confirms this as well as indicating the construction of a building on the southeast side of the airport. Neither map indicates that the present-day airport terminal building or current control tower have yet been constructed. Google Earth aerial imagery from 1995 to present continues to illustrate the airport's growth over time. The airport's main terminal building appears to have been constructed between 1995 and 2005. The current control tower appears between 2006 and 2008.

INTENSIVE PEDESTRIAN SURVEY SUPPORTED BY SHOVEL TESTING

Visual inspection was supported by two judgmentally placed shovel tests, in accordance with CTA guidelines. The project area lies within a grassy, nearly level upland field (Figure 8). The thick grass cover within the field reduced ground surface visibility to between 0 and 5 percent. A buried sewer line runs north/south through the project area. Longer grass and brush has grown up around two nearby manhole covers associated with the sewer line. Limestone or caliche cobbles were observed on the surface above the sewer line likely deposited as fill at the time of construction.

A total of 2 shovel tests were excavated within the project area. Both shovel tests contained shallow clayey soils consisting of very dark grey or black loamy clay underlain by black or very dark grey clay with only a few quartzite pebbles (Appendix A: Table 1) (Appendix B: Photograph 5).

SUMMARY AND RECOMMENDATIONS

In summary, approximately 0.37 ha (0.91 ac) was surveyed to assess for existing cultural resources in the proposed New Braunfels National Airport Proposed ATCT 1 Location in the City of New Braunfels, Guadelupe County, Texas. The goal of the survey was to identify cultural resources and to make a preliminary evaluation of the documented cultural resources as to their eligibility for inclusion in the NRHP and their worthiness for being listed as a SAL.

The investigations conducted by Sphere 3 included an examination of previous archaeological and other cultural resources investigations within one kilometer of the project area, an analysis of aerial imagery and topographic maps over the past 99 years, and an intensive pedestrian archaeological survey supported by judgmental shovel testing of the project area. A total of two shovel tests were excavated.

No archaeological sites or isolated finds were identified during the survey. Accordingly, Sphere 3 recommends that the proposed work be permitted to proceed without further cultural resources requirements.

Figure 8
Shovel Test Locations of the New Braunfels National Airport
Proposed ATCT 1 Location

N
W E
S

Meters
0 25 50 100

Feet
0 50 100 200 300

KSA Engineers
Project Number: 050097.00

Date: 02/20/2024

Base Map: NRCS Geospatial Data Gateway
2022 NAIP Aerial Imagery (Guadalupe County,TX)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

REFERENCES

Blair, W. Frank

1950 "The Biotic Provinces of Texas." *The Texas Journal of Science* 11(1):93-117.

Council of Texas Archeologists (CTA)

2020 *Guidelines (Performance, Curation, and Reports).* Volume, and summary sheet entitled, "Archeological Survey Standards for Texas." Council of Texas Archeologists and Texas Historical Commission, Archeology Division, Austin.

Dice, L. R.

1943 *The Biotic Provinces of North America.* University of Michigan Press, Ann Arbor.

United States Department of Agriculture

2024 Natural Resources Conservation Service (NRCS) Web soil survey. Data downloaded from http://www.ftw.nrcs.usda.gov/ssur_data.html. Accessed online on February 1, 2024.

United States Department of the Interior, National Park Service, National Register of Historic Places (US-NRHP)

1997 National Register Bulletin: How to Apply the National Register Criteria for Evaluation. Revised for Internet 1995. Washington, D.C.

APPENDIX A:

TABLES

Appendix A: Table 1: New Braunfels National Airport Proposed ATCT 1 Location Shovel Test Log

Shovel Test Number	Landform	Depth of Soil Horizon (cm below surface)	Horizon Soil Type	Munsell Color	Presence of Cultural Resources ("positive"-one or more artifacts)
1	Terrace	0-11	Loamy Clay	10YR3/1	Negative
		11-20	Clay	10YR3/1	
2	Terrace	0-12	Loamy Clay	10YR2/1	Negative
		12-20	Clay	10YR3/1	

APPENDIX B

PHOTOGRAPH LOG

Photograph #1 *Photo by Michael Ryan* Date: 2-20-2024 Subject: General environmental photo of grassy field making up the project area. Taken from ST 1 facing northeast.	
Photograph #2 *Photo by Michael Ryan* Date: 2-20-2024 Subject: General environmental photo of grassy field making up the project area. Taken from ST 2 facing southwest.	
Photograph #3 *Photo by Michael Ryan* Date: 2-20-2024 Subject: Photo taken along the buried sewer line running north/south through the project area. Taken from manhole north of project area facing south.	

Photograph #4 *Photo by Michael Ryan* Date: 2-20-2024 Subject: Manhole cover providing access to the buried sewer line that runs north/south through project area.	

Photograph #5 *Photo by Jay Belew* Date: 2-20-2024 Subject: Shovel Test 1 north profile. Very dark grey loamy clay underlain by very dark grey clay.	

March 11, 2024 Project Number: 050097.00

Wetlands and Other Waters of the United States Assessment
New Braunfels National Airport
Proposed Air Traffic Control Tower 2
Guadalupe County, Texas

Prepared for:
KSA Engineers, Inc.
4833 Spicewood Springs Rd, Suite 204
Austin, TX 78759

Prepared by:
Sphere 3 Environmental, Inc.
1501 Bill Owens Parkway
Longview, Texas 75604
903-297-4673

INTRODUCTION

Sphere 3 Environmental, Inc. (Sphere 3) was retained by KSA Engineers, Inc. (KSA) to conduct an assessment of the New Braunfels National Airport proposed Air Traffic Control Tower (ATCT) 2 in Guadalupe County, Texas. John Quine, Sphere 3 Biologist, and Sydney Moore, Sphere 3 Environmental Scientist, conducted a field survey to delineate wetlands and other waters of the United States on February 20, 2024. The proposed project area consists of a 200-foot by 200-foot area located to the west of the runways (Figures 1 and 2).

No wetlands or other waters of the United States are present within the proposed ATCT 2 project area. No United States Army Corps of Engineers (USACE) permit is required for the construction of the project.

SURVEY METHODS

Wetland delineation was conducted in accordance with the three-parameter approach outlined in Technical Report 10-20, the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region* (Version 2.0). The three-parameter approach was utilized to assess the site's vegetation, soils, and hydrology to determine the presence or absence of wetlands. Dominant species include flora that cumulatively total 50 percent of the areal coverage and any other single species accounting for at least 20 percent areal coverage within the plot. The wetland indicator status of each species was determined using the *Great Plains Region: 2020 Regional Wetland Plant List* (USFWS 2020) accessed online at the USACE's NWPL – National Wetland Plant List website. Munsell Soil Color Charts (2000 Revised Washable Edition) were used to identify the hue and chroma of soil samples.

Sphere 3 utilized Trimble's mapping grade GeoXT Global Positioning System (GPS) to map wetlands, streams, project boundaries, and other important features of the project. After field data collection was completed, the GPS data was exported into ESRI's ArcGIS Geographic Information System for impact analysis and map production.

EXISTING CONDITIONS

According to the Natural Resources Conservation Service's Web Soil Survey, the proposed project is located on Branyon clay, 0 to 1 percent slopes.

The project area has an herbaceous layer composed of Bermuda grass (*Cynodon dactylon*), geranium, (*Geranium sp.*), white clover (*Trifolium repens*), and vetch (*Vicia sp.*). No field indicators of wetland hydrology or hydric soil are present within this community.

FLOODPLAIN

The project is not located within the 100-year floodplain (Zone A) (Figure 3).

SUMMARY

Sphere 3 has surveyed the proposed New Braunfels National Airport's proposed ATCT 2 project area for wetlands and other waters of the United States. The investigation revealed no wetlands or other waters of the United States within the project area. No USACE permit is required to construct the project.

LITERATURE CITED

National Wetland Plant List, version 3.5 http://wetland-plants.usace.army.mil; U.S. Army Corps of Engineers Research and Development Center. Cold Regions Research and Engineering Laboratory, Hanover, NH.

Munsell Color X-Rite. 2000 Revised Washable Edition. *Munsell Soil Color Charts*. New Windsor, NY.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey Version 3.4.0. Available online at http://websoilsurvey.nrcs.usda.gov/. Date Last Modified July 31, 2019. Accessed February 21, 2024.

United States Army Corps of Engineers. 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0),* ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-10-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

United States Fish and Wildlife Service. 2021. National Wetlands Inventory website. United States Department of the Interior, Fish and Wildlife Service, Washington, D.C. https://www.fws.gov/program/national-wetlands-inventory/wetlands-mapper Date Last Modified May 1, 2021. Accessed February 21, 2024.

Attachment A:

Figures

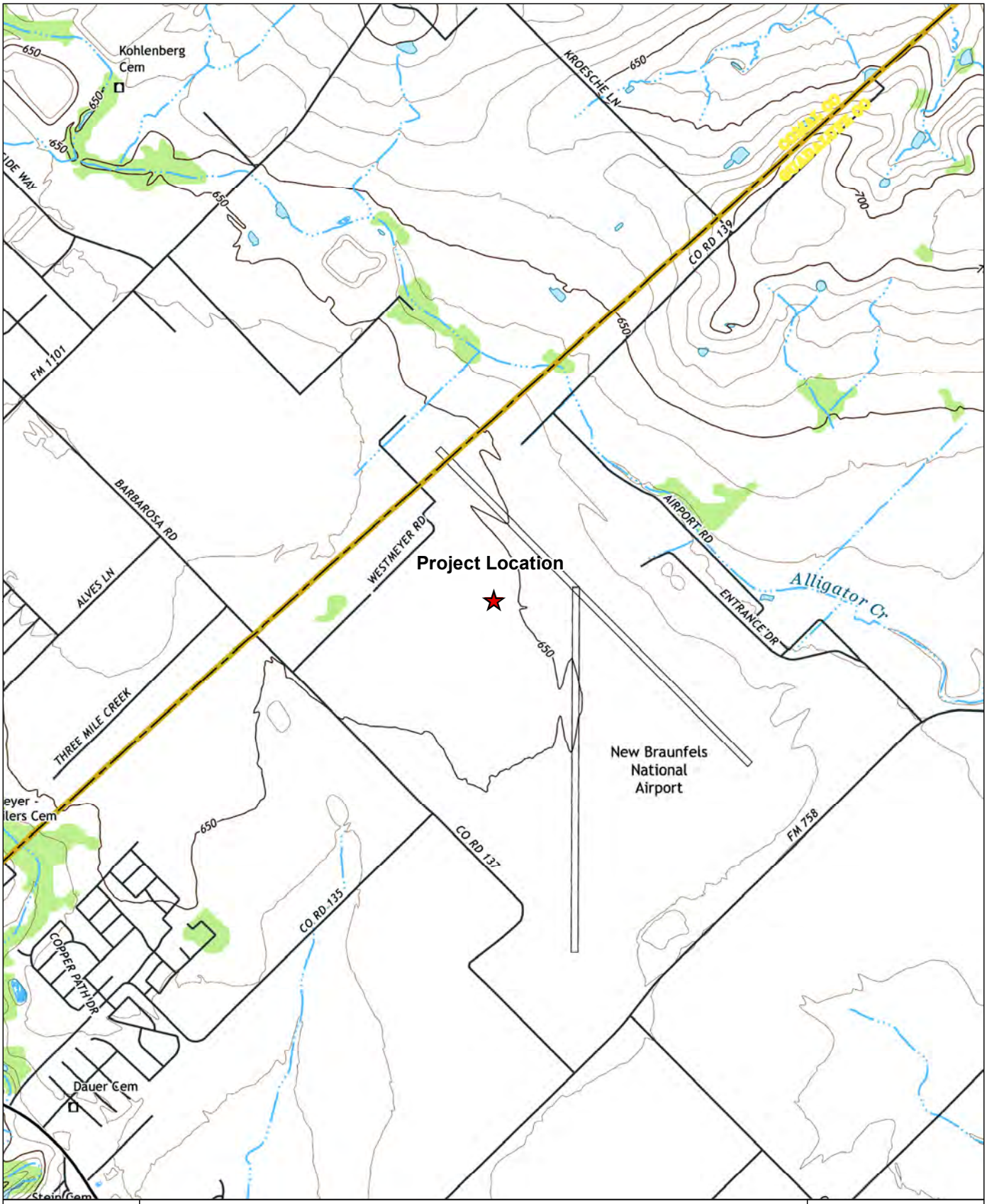


Figure 1
Topographic Features of the Proposed ATCT 2
in Guadalupe County, TX

N
W E
S

0 1,000 2,000 4,000 6,000 8,000 Feet

KSA Engineers, Inc. Project Number: 050097.00	Date: 02/20/2024	Base Map: USGS 7.5 Minute Topographic Quadrangle: New Braunfels East, TX (Published 2022)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

Figure 2
Aerial Photograph of the Proposed ATCT 2
in Guadalupe County, TX

N
W E
S

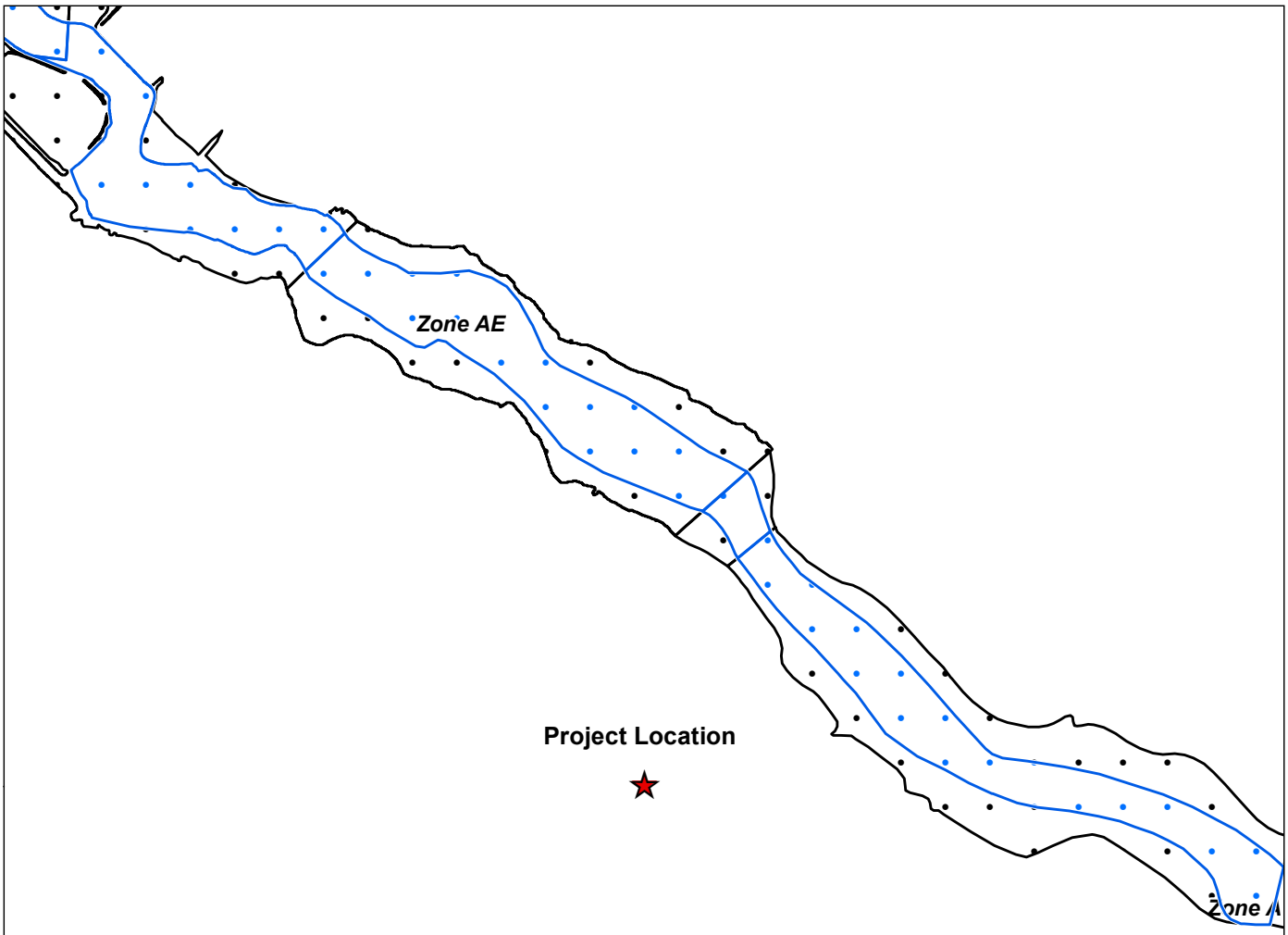
Feet
0 100 200 400 600

KSA Engineers, Inc.
Project Number: 050097.00

Date: 02/20/2024

Base Map: NRCS Geospatial Data Gateway
2022 NAIP Aerial Imagery (Guadalupe County,TX)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com



***Project Located in Area of Minimal Flood Hazard (Zone X)**

Figure 3
Floodplain Data of the Proposed ATCT 2
in Guadalupe County, TX

N
W E
S

0 1,000 2,000 4,000 6,000 8,000 Feet

KSA Engineers, Inc. Project Number: 050097.00	Date: 02/20/2024	Base Map: Flood Insurance Rate Map Panel No. 48091C0460F Guadalupe County, TX

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

Attachment B:

Site Photos

Photograph: 1

Date:
February 20, 2024

County Name:
Guadalupe County, Texas

Description:
Photograph showing the existing two track road within the maintained herbaceous community to the north of the proposed project area.

Photograph: 2

Date:
February 20, 2024

County Name:
Guadalupe County, Texas

Description:
Photograph showing the herbaceous layer within the proposed project area.

Attachment C:

Data Sheets

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: New Braunfels National Airport City/County: Guadalupe, County Sampling Date: 02/20/24

Applicant/Owner: KSA Engineers State: TX Sampling Point: Up1

Investigator(s): John Quine/Sydney Moore Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): None Slope (%): 0-1

Subregion (LRR): LRR-J Lat: 29.70898500 Long: -98.04743168 Datum: WGS1984

Soil Map Unit Name: Branyon clay, 0-1 percent slopes NWI classification: Not mapped as wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

None of the three required criteria are present. The sample area is not located within a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 30' x 30')			
1. Trifolium repens	60	Y	FACU
2. Vicia sp.	10	N	FAC
3. Geranium sp.	10	N	FAC
4. Cynodon dactylon	50	Y	FACU
5.			
6.			
7.			
8.			
9.			
10.			
	130 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

Hydrophytic vegetation is not present.

SOIL

Sampling Point: Up1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5YR3/1	70	7.5YR5/8	30	D	M	CL	Clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Hydric soil is not present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology is not present.

March 5, 2024 Project Number: 050097.00

Threatened and Endangered Species Assessment
New Braunfels National Airport
Proposed Air Traffic Control Tower 2
Guadalupe County, Texas

Prepared for:
KSA Engineers, Inc.
4833 Spicewood Springs Rd
Suite 204
Austin, TX 78759

Prepared by:
Sphere 3 Environmental, Inc.
1501 Bill Owens Parkway
Longview, Texas 75604
903-297-4673

TABLE OF CONTENTS

LIST OF ATTACHMENTS

INTRODUCTION

Sphere 3 Environmental, Inc. (Sphere 3) was retained by KSA Engineers, Inc. (KSA) to conduct an assessment of the proposed New Braunfels National Airport air traffic control tower (ATCT) 2 project area in Guadalupe County, Texas to determine if suitable habitat for federally listed threatened and endangered species is present within the project area.

The proposed project area consists of an approximately 1-acre area west of the runway located in a maintained herbaceous community.

A topographic map and aerial photographs of the project area are provided in Attachment A. Site photographs of the project area are provided in Attachment B.

PURPOSE

Sphere 3 conducted a habitat assessment to determine if suitable habitat for federally listed threatened or endangered species is present within the proposed project area. Impacts to threatened and endangered species are regulated under the Endangered Species Act of 1973.

METHODOLOGY

Sphere 3 began this investigation by obtaining and reviewing the United States Fish and Wildlife Service's (USFWS) threatened and endangered species list for the specific project area located within Guadalupe County, Texas. The list of state threatened and endangered species with potential to occur in Guadalupe County was also reviewed prior to surveys; however, these species are only addressed in this report if encountered during the field surveys.

Current, 2023 species occurrence data from the Texas Parks and Wildlife Department (TPWD) in Austin, Texas along with species descriptions from the TPWD and the USFWS were reviewed prior to the field investigation. According to the USFWS web-based Information, Planning, and Conservation System (IPaC) species list, the piping plover (*Charadrius melodus*), the red knot (*Calidris canutus rufa*), and the whooping crane (*Grus americana*) are listed as threatened or endangered and have ranges that include the project area in Guadalupe County. No proposed or designated critical habitat exists within the project location.

The tricolored bat (*Perimyotis subflavus*), the false spike (*Fusconaia mitchelli*), and the Guadalupe orb (*Cyclonaias necki*) are proposed for listing as endangered species. The monarch butterfly

(*Danaus plexippus*) is listed as a candidate for listing as a threatened or endangered species in Guadalupe County. Species listed as proposed endangered, proposed threatened, and candidate are not protected by the take prohibitions of section 9 of the Endangered Species Act (ESA). However, under section 7(a)(4) of the ESA, federal agencies must confer with the USFWS if their action will jeopardize the continued existence of a proposed species.

The USFWS IPaC report states that potential impacts to the piping plover and the red knot should only be considered for wind related projects that occur within the migratory route of those species (Attachment C). The proposed project is not a wind related project; therefore, these two avian species are not addressed further in this report.

John Quine, Sphere 3 Biologist, and Sydney Moore, Sphere 3 Environmental Scientist, conducted a pedestrian survey of the project area on February 20, 2024, to document habitat types present within the project area. The proposed project area was photographed, mapped, and visually investigated for suitable habitat or signs of federally protected threatened or endangered species.

EXISTING CONDITIONS

Maintained Herbaceous Community

The majority of the proposed project area is located within a maintained herbaceous community west of the airport runway. Species common to this community include Bermudagrass (*Cynodon dactylon)*, wild geranium (*Geranium* sp.), white clover (*Trifolium repens),* and vetch (*Vicia* sp.). Vegetation ranges from approximately 2 inches to 5 inches in height. Coverage within the herbaceous community ranges from approximately 90 to 95 percent.

SPECIES DESCRIPTIONS AND HABITAT REQUIREMENTS

Whooping Crane

The whooping crane is easily identifiable by its snowy white body feathers, jet-black wingtips, and red and black head. The whooping crane stands almost 5 feet in height with a wingspan of 7 to 8 feet making it the largest bird in North America. This species was federally listed as endangered in 1970 (TPWD 2021).

From late April until their autumn migration around mid-September, whooping cranes are found in the marsh areas of Canada's Wood Buffalo National Park (TPWD 2021). Nests are typically large mounds of bulrushes about four feet wide with the flat-topped central mound up to 5 inches above the water. They prefer areas deep within dense stands of bulrushes, cattails, and sedges that offer food as well as protection from predators.

The whooping cranes arrive in their principal wintering grounds in the Aransas National Wildlife Refuge (NWR) along the Texas coast between late October and mid-November. A variety of habitats are used during the whooping crane's 2400-mile migration. Typically, whooping cranes will roost standing in the shallow waters of marshes, flooded crop fields, artificial ponds, reservoirs, and rivers during their annual migration. Typical habitat used in the NWR wintering grounds includes salt flats and marshes, with some foraging occurring in adjacent gently rolling, sandy grasslands (USFWS 2007b).

Whooping cranes are diet generalists with a wide range of prey items. Preferred foods of the whooping crane can include insects, minnows, crabs, clams, crayfish, frogs, rodents, small birds, and berries (USFWS 2007b).

Tricolored Bat

The tricolored bat is currently proposed for listing as an endangered species under the Endangered Species Act. It is one of the smallest bats in eastern North America and is distinguished by its unique tricolored fur that appears dark at the base, lighter in the middle, and dark at the tip (Barbour and Davis 1969, p. 115). Tricolored bats (TCB) often appear yellowish (varying from pale yellow to nearly orange), but may also appear silvery-gray, chocolate brown, or black (Barbour and Davis 1969, p. 115). Males and females are colored alike, but females are consistently heavier than males (LaVal and LaVal 1980, p. 44).

During the spring, summer, and fall (i.e., non-hibernating seasons), TCB primarily roost among live and dead leaf clusters of live or recently dead deciduous hardwood trees (Veilleux et al. 2003, p. 1071; Perry and Thill 2007, pp. 976–977; Thames 2020, p. 32). In the southern and northern portions of the range, TCB will also roost in Spanish moss (*Tillandsia usneoides*) and *Usnea trichodea* lichen, respectively (Davis and Mumford 1962, p. 395; Poissant 2009, p. 36; Poissant et al. 2010, p. 374). In addition, TCB have been observed roosting during summer among pine needles (Perry and Thill 2007, p. 977), eastern red cedar (*Juniperus virginiana*) (Thames 2020, p. 32), within artificial roosts (e.g., barns, beneath porch roofs, bridges, concrete bunkers) (Jones and Pagels 1968, entire; Barbour and Davis 1969, p. 116; Jones and Suttkus 1973, entire; Hamilton and Whitaker 1979, p. 87; Mumford and Whitaker 1982, p. 169; Whitaker 1998, p. 652; Feldhamer et al. 2003, p. 109; Ferrara and Leberg 2005, p. 731), and rarely within caves (Humphrey et al. 1976, p. 367; Briggler and Prather 2003 p. 408; Damm and Geluso 2008, p. 384). Female TCB exhibit high site fidelity, returning year after year to the same summer roosting locations (Allen 1921, p. 54; Veilleux and Veilleux 2004, p. 197). Female TCB form maternity colonies and switch roost trees regularly (e.g., between 1.2 days and 7 days at roost trees in Indiana) (Veilleux and Veilleux 2004, p.197; Quinn and Broders 2007, p. 19; Poissant et al. 2010, p. 374). Males roost singly (Perry and Thill 2007, p. 977; Poissant et al. 2010, p. 374).

During the winter, TCB hibernate (i.e., reduce their metabolic rates, body temperatures, and heart rate) in caves and mines, although in the southern U.S., where caves are sparse, TCB often hibernate in road-associated culverts (Sandel et al. 2001, p. 174; Katzenmeyer 2016, p. 32; Limon et al. 2018, entire; Bernard et al. 2019, p. 5; Lutsch 2019, p. 23; Meierhofer et al. 2019, p. 1276) and sometimes tree cavities (Newman 2020, p. 14) and abandoned water wells (Sasse et al. 2011, p. 126). TCB exhibit high site fidelity with many individuals returning year after year to the same

hibernaculum (Davis 1966, p. 385; Jones and Pagels 1968, p. 137; Jones and Suttkus 1973, p. 964; Sandel et al. 2001, p. 175).

Hibernating TCB do not typically form large clusters; most commonly roost singly, but sometimes in pairs, or in small clusters of both sexes away from other bats (Hall 1962, p. 29; Barbour and Davis 1969, p. 117; Mumford and Whitaker 1982, p. 169; Raesly and Gates 1987, p. 19; Briggler and Prather 2003, p. 408; Vincent and Whitaker 2007, p. 62). TCB roost on cave walls (more often) and ceilings and are rarely found in cave crevices (Mumford and Whitaker 1982, p. 169). TCB will shift roosts from one to another during the winter but arouse less frequently than other cave-hibernating bat species (Barbour and Davis 1969, p. 119; Mumford and Whitaker 1982, p. 169). In road-associated culverts in the southern U.S., however, TCB exhibit shorter torpor bouts and move within and between culverts throughout the winter (Anderson et al. undated).

TCB are opportunistic feeders and consume small insects including caddisflies (Trichoptera), flying moths (Lepidoptera), small beetles (Coleoptera), small wasps and flying ants (Hymenoptera), true bugs (Homoptera), and flies (Diptera) (Whitaker 1972, p. 879; LaVal and LaVal 1980, p. 24; Griffith and Gates 1985, p. 453; Hanttula and Valdez 2021, p. 132). TCB emerge early in the evening and forage at treetop level or above (Davis and Mumford 1962, p. 397; Barbour and Davis 1969, p. 116) but may forage closer to ground later in the evening (Mumford and Whitaker 1982, p. 170). TCB forage most commonly over waterways and forest edges (Barbour and Davis 1969, p. 116; Mumford and Whitaker 1982, pp. 170–171; Hein et al. 2009, p. 1204).

Male and female TCB converge at cave and mine entrances between mid- August and mid-October to swarm and mate. Adult females store sperm in their uterus during the winter and fertilization occurs soon after spring emergence from hibernation (Guthrie 1933, p. 209). Females typically give birth to two young, rarely one or three between May and July (Allen 1921, p. 55; Barbour and Davis 1969, p. 117; Cope and Humphrey 1972, p. 9). Young grow rapidly and begin to fly at 3 weeks of age and achieve adult-like flight and foraging ability at 4 weeks (Lane 1946, p. 59; Whitaker 1998, pp. 653–655). Adults often abandon maternity roosts soon after weaning, but young remain longer (Whitaker 1998, p. 653).

Perry and Thill 2007 (p. 977) observed an average of 6.9 adult females and pups per colony in Arkansas (range 3 to 13). Maternity colonies include up to 18 females in trees in Nova Scotia (Poissant et al. 2010, p. 374). Whitaker (1998, p. 652) found colonies in buildings averaged 15 adult females (range 7 to 29 adult females). Hoying and Kunz 1998 (p. 19) reported the largest colony on record in a Massachusetts barn (19 adult females and 37 young).

Texas and Louisiana fall into the southern representative unit (RPU) of the TCB. Southern TCB exhibit shorter hibernation lengths and some remain active and feed year round (Grider et al. 2016, p. 8; Newman 2020, pp. 13–17). The Southern RPU is predominantly marked by subtropical climate conditions, high humidity (especially in summer), and the absence of harsh cold winters. Southern TCB may benefit from reduced physiological pressures associated with maintaining torpor during long harsh winters and in turn have higher survival rate (Fraser et al. 2012, p. 6). Southern TCB are also unique in their frequent exploitation of road-associated culverts as winter hibernacula in the southern U.S. As discussed in *Individual-level Ecology and*

Needs, culverts account for most hibernacula documented in Mississippi, Georgia, and Louisiana (Limon et al. 2018, entire; NABat 2021). Researchers have hypothesized that utilizing culverts coupled with sub-tropical climate conditions will lead to TCB exhibiting frequent arousal and foraging events during winter (Castleberry et al. 2019, p. 2). If TCB utilizing culverts are exhibiting increased winter activity related to foraging or otherwise, these euthermic bouts could significantly reduce their susceptibility to WNS (Cornelison et al. 2019, p. 3).

During the summer, Southern TCB predominantly roost in foliage of live or recently dead deciduous hardwood trees (see *Individual-level Ecology and Needs*); however, TCB will also roost in Spanish moss (Davis and Mumford 1962, p. 395).

False Spike

The false spike is currently proposed as endangered under the Endangered Species Act. The false spike is a medium sized freshwater mussel that typically grows up to 5 inches in length, although individuals greater than this length have been collected.

The colors of the shell range from brown, black and yellow green. The nacre (shell surface) is typically white. The muscle has an elongated oval to sub-rhomboidal shell. The beak of the shell is located above the hinge line and the umbo is composed of double-loop sculpturing. The disc of the shell is composed of parallel dorsal-to-ventral grooves, pustules, and slight flutes on the posterior.

A suitable habitat for the false spike is composed of slowly flowing water with heterogenous mixtures of gravel, cobble, or sand. Adequate dissolved minerals, mainly calcium, and a salinity of less than two parts per thousand is required to support shell growth.

To breed, male false spike release their sperm into the water column, which is then taken in by the female, fertilizing her eggs. The female holds developing larvae until they become mature. Once ready for release, the glochidia (mature larvae) are released within proximity to a fish host. There are two fish species that have been identified as hosts. The red shiner (*Cyprinella lutrensis*) and blacktail shiner (*Cyprinella venusta*). It is likely there are other species of fish that act as hosts. The glochidia attach to the gills or fins of the host fish; failure to attach to a host or an attachment in the wrong location results in death. Glochidia that successfully attach to a host, will implant into the host and over a period of weeks or months, develop into juvenile mussels. The juveniles, once fully developed, break from the host (leaving the host relatively unharmed) and settle on the bottom of the stream (USFWS 2021).

False spikes are filter feeders, like all other freshwater muscles species. They feed on algae, particle matter, and bacteria that are filtered through the water column. Juvenile mussels live in sediment and rather than feeding from the water column, feed interstitially. To do this, a relatively large muscular foot is used to sweep both inorganic and organic particles from the substrate into the opening of the shell.

Guadalupe Orb

Found exclusively in the Guadalupe River Basin, the Guadalupe orb is a unique and rare species first identified in 2018 (Burlakova 2018). The Guadalupe orb was initially thought to be a variation of the Texas pimpleback, found in the Colorado River. In September 2021, the Guadalupe orb was proposed for listing as endangered under the Endangered Species Act by the United States Fish and Wildlife Service. Both the San Marcos and Guadalupe Rivers have been designated as critical habitat. This mussel, along with five others, are facing declines in population due to habitat destruction and declining water quality.

A medium sized freshwater mussel, the Guadalupe orb has an offset hinge, rounded edges and is most commonly black or yellow to brown in color, often with green lines running from the hinge to the edge of the shell. Uniquely sculptured distortions are frequently found on this species (Howells 2014).

Spawning for the Guadalupe orb occurs between March and June (Dudding 2020). Shortly before spawning begins, the mussels begin to hold mature glochidia (larval stage mussels). Shortly after the glochidia mature, they are released by the Guadalupe orb, attach to the gills and fins of a variety of catfish fish hosts (Dudding 2018). Failure to attach to a host will result in death. After about a month, the glochidia that have attached become juvenile and fall onto the waterbody substrate where they burrow, for protection and continue to develop into adult mussels where they will have a lifespan of at least 15 years (Howells 2010d).

Adult Guadalupe orbs, like other freshwater mussels, are filter feeders. To feed, they filter small organisms, plankton, and organic matter. Juvenile glochidia receive nutrients from the gills of the fish host they inhabit.

Adult mussels have specific habitat requirements. They are found in the runs and riffles of moderately sized rivers in a water depth of .5 to 1 meter, with substrates of cobble, silt and mud. The mussel requires a dissolved oxygen concentration of at least 2 milligrams per liter (mg/L), water temperatures of no more than 79 degrees Fahrenheit, and a total ammonia concentration of .5 mg/L or less.

Monarch Butterfly

The monarch butterfly was listed as a candidate for federal status as a threatened or endangered species on December 17, 2020. The monarch, *Danaus plexippus*, is a species of butterfly in the order Lepidoptera (family Nymphalidae) that occurs in North, Central, and South America; Australia; New Zealand; islands of the Pacific and Caribbean, and elsewhere (Malcolm and Zalucki 1993). Adult monarch butterflies are large and conspicuous, with bright orange wings surrounded by a black border and covered with black veins. The black border has a double row of white spots, present on the upper side and lower side of forewings and hindwings (Bouseman and Sternburg 2001). Adult monarchs are sexually dimorphic, with males having narrower wing

venation and scent patches (CEC 2008). The bright coloring of a monarch is aposematic, as it serves as a warning to predators that eating them can be toxic (USFWS 2020).

During the breeding season, monarchs lay their eggs on their obligate milkweed host plant (primarily *Asclepias* spp.), and larvae emerge after two to five days (Zalucki 1982; CEC 2008). Larvae develop through five larval instars (intervals between molts) over a period of 9 to 18 days, feeding on milkweed and sequestering toxic cardenolides as a defense against predators (Parsons 1965). The larva then pupate into chrysalis before emerging 6 to 14 days later as an adult butterfly. There are multiple generations of monarchs produced during the breeding season, with most adult butterflies living approximately two to five weeks; overwintering adults enter into reproductive diapause (suspended reproduction) and live six to nine months (Cockrell et al. 1993; Herman and Tatar 2001).

In many regions where monarchs are present, monarchs breed year-round, repeatedly following the above-referenced life cycle throughout the year (USFWS 2020). Individual monarchs in temperate climates, such as eastern and western North America, undergo long-distance migration, where the migratory generation of adults is in reproductive diapause and lives for an extended period of time (Herman and Tatar 2001). In the fall, in both eastern and western North America, monarchs begin migrating to their respective overwintering sites. This migration can take monarchs distances of over 3,000 km (Urquhart and Urquhart 1978) and last for over two months (Brower 1996). Migratory individuals in eastern North America predominantly fly south or southwest to mountainous overwintering grounds in central Mexico, and migratory individuals in western North America generally fly shorter distances south and west to overwintering groves along the California coast into northern Baja California (Solensky 2004).

Adult monarch butterflies during breeding and migration require a diversity of blooming nectar resources, which they feed on throughout their migration routes and breeding grounds (spring through fall). Monarchs also need milkweed (for both oviposition and larval feeding) embedded within this diverse nectaring habitat (USFWS 2020). The correct phenology, or timing, of both monarchs and nectar plants and milkweed is important for monarch survival. The position of these resources on the landscape is important as well. In western North America, nectar and milkweed resources are often associated with riparian corridors, and milkweed may function as the principal nectar source for monarchs in more arid regions (Dingle et al. 2005; Pelton et al. 2018; Waterbury and Potter 2018; Dilts et al. 2018). Individuals need nectar and milkweed resources year-round in nonmigratory populations. Additionally, many monarchs use a variety of roosting trees along the fall migration route (USFWS 2020).

POTENTIAL EFFECTS DETERMINATION

Whooping Crane

According to the USFWS IPaC report, critical habitat has been designated for this species. However, the project area does not overlap the critical habitat.

No whooping cranes were identified within the project area. If inundation occurs, the maintained community may provide marginal roosting or foraging habitat for this species. However, many areas of similar suitable habitat are present around the project area.

Due to the availability of larger sources of more suitable habitat in areas outside of the project area and the temporary use of migratory habitat, it is unlikely that this species would utilize the project area. It is Sphere 3's opinion that proposed construction activities will have no effect on this species.

Tricolored Bat

According to the USFWS IPaC report, no critical habitat has been designated for this species.

No trees or artificial roosts are present within the project area. Suitable habitat for this species is not present within the project area.

It is Sphere 3's opinion that no effects to the tricolored bat will result from the proposed construction.

False Spike

According to the USFWS IPaC report, critical habitat has been proposed for this species. However, the project area does not overlap the proposed critical habitat.

No aquatic environments are located within or near the proposed project area. There is no suitable habitat for this species located in the project area.

It is Sphere 3's opinion that any proposed construction within the project area will have no effect on this species.

Guadalupe Orb

According to the USFWS IPaC report, critical habitat has been proposed for this species. However, the project area does not overlap the proposed critical habitat.

No aquatic environments are located within or near the proposed project area. There is no suitable habitat for this species located in the project area.

It is Sphere 3's opinion that any proposed construction within the project area will have no effect on this species.

Monarch Butterfly

Since the monarch butterfly is a candidate for listing, no critical habitat has been designated for this species within the project area.

Monarch butterflies require a diversity of blooming nectar resources, which they feed on throughout their migration routes and breeding grounds, along with embedded milkweeds for both oviposition and larval feeding. No milkweeds, which are necessary for the reproduction of this species, were identified within the project area.

It is Sphere 3's opinion that any proposed construction within the project area will have no effect on this species.

SUMMARY

Sphere 3 investigated the New Braunfels National Airport ATCT 2 project area for suitable habitat and potential presence of federally protected threatened or endangered species.

Based on the results of the field investigation and our interpretation of the best available data for the listed species, Sphere 3 concludes that construction activities associated with the New Braunfels National Airport ATCT 2 project will have no effect on the whooping crane, tricolored bat, false spike, Guadalupe orb, or the monarch butterfly.

LITERATURE CITED

Bonner, T.H., E.L. Oborny, B.M. Littrell, J.A. Stoeckel, B.S. Helms, K.G. Ostrand, P.L. Duncan, and J. Conway. 2018. Multiple freshwater mussel species of the Brazos River, Colorado River, and Guadalupe River basins. CMD 1 - 6233CS. Final Report to Texas Comptroller of Public Accounts. February 28, 2018. 306 pp.

Bouseman JK, Sternburg JG. 2001. Field guide to butterflies of Illinois. Illinois Natural History Survey. Champaign, IL.

Brower LP. 1996. Monarch butterfly orientation: Missing pieces of a magnificent puzzle. Journal of Experimental Biology 199:93-103.

Burlakova, L., Karatayev, A., Froufe, E., Bogan, A.E., and Lopes-Lima, M. "The Nautilus 132(2)." 2018. 45-50. 23 February 2024.

[CEC] Secretariat of the Commission for Environmental Cooperation. 2008. North American monarch conservation plan. Communications Department of the Center for Environmental Cooperation Secretariat.

Cockrell BJ, Malcolm SB, Brower LP. 1993. Time, temperature, and latitudinal constraints on the annual recolonization of eastern North America by the monarch butterfly. Pp. 233-251 in Malcolm SB, Zalucki MP, eds. Biology and Conservation of the Monarch Butterfly. Natural History Museum of Los Angeles County, Science Series 38.

Cummings, Kevin and Dan Graf. *The MUSSEL Project*. 2013. 22 February 2024.

Dilts TE, Steele M, Black S, Craver D, Cruz E, Engler J, Jepsen S, Jones A, McKnight S, Pelton E, Taylor A, and Forister M. 2018. Western Monarch and Milkweed Habitat Suitability Modeling Project Version 2 – Maxent Model Outputs. Xerces Society/US Fish and Wildlife Service/University of Nevada Reno. Retrieved from: www.monarchmilkweedmapper.org/

Dingle H, Zalucki MP, Rochester WA, Armijo-Prewitt T. 2005. Distribution of the monarch butterfly, Danaus plexippus (L.) (Lepidoptera: Nymphalidae), in western North America. Biological Journal of the Linnean Society 85:491-500.

Dudding, J. Hart, M., Khan, J.M., Robertson, C.R., Lopez, R., and Randklev, C.R. "Reproductive life history of 2 imperiled and 1 widely distributed freshwater mussel species from the southwestern United States." *Freshwater Science* 39.1 (n.d.). 23 February 2024.

Dudding, J., Hart, M., Morton, J., Robertson, C., Conway, K., Lopez, R., and Randklev, C. "Host fish association for two highly imperiled mussel species from the southwestern United States: Fusconaia mitchelli (false spike) and Cyclonaias petrina (Texas Pimpleback)." 2018. 23 February 2024.

Guadalupe-Blanco River Authority. *Guadalupe Orb*. 30 March 2022. 24 February 2024.

Herman WS, Tatar M. 2001. Juvenile hormone regulation of longevity in the migratory monarch butterfly. Proceedings of the Royal Society B-Biological Sciences 268:2509-2514.

Howells, R.G. "False spike (Quadrula mitchelli): Summary of Selected Biological and Ecological Data for Texas." *BioStudies* 16 (2010d). 23 February 2024.

Howells, R.G. *Field Guide to Texas Freshwater Mussels, 2nd edition*. 2014. 23 February 2024.

Howells, R.G., Neck, R.W.. and Murray, H.D. *Freshwater Mussels of Texas*. Austin: Texas Parks and Wildlife Department Inland Fisheries Division, 1996. 23 February 2024.

Malcolm SB, Zalucki MP. 1993. The monarch butterfly: Research and conservation. Pp. 3-8 in Malcolm SB, Zalucki MP, eds. Biology and Conservation of the Monarch Butterfly. Natural History Museum of Los Angeles County, Science Series 38.

Parsons JA. 1965. A digitalis-like toxin in monarch butterfly Danaus plexippus L. Journal of Physiology-London 178:290-304.

Pelton E, McKnight S, Fallon C, Code A, Hopwood J, Hoyle S, Jepsen S, Black SH. 2018. Managing for monarchs in the West: Best management practices for conserving the monarch butterfly and its habitat. Portland, OR: The Xerces Society for Invertebrate Conservation. vi + 106 pp.

Randklev, C. R., Johnson, N.A., Miller, T., Morton, J.M., Dudding, J., Skow, J., Boseman, B., Hart, M., Tsakiris. E.T., Inoue, K. and Lopez. R. R. *Freshwater Mussels (Unionidae): Central and West Texas Final Report*. 2017c. 23 February 2024.

Service, U.S. Fish & Wildlife. *False Spike*. 2013. 22 February 2024.

Solensky MJ. 2004. Overview of monarch migration. Pp. 79-83 in Oberhauser KS, Solensky MJ, eds. The Monarch Butterfly: Biology and Conservation. Ithaca, NY: Cornell University Press.

Texas Parks and Wildlife (TPWD). 2021. Whooping Crane (*Grus americana*) at; https://tpwd.texas.gov/huntwild/wild/species/whooper/. Texas Parks and Wildlife Department. Accessed April 08, 2021.

Texas Parks and Wildlife Department. 2021. Golden-cheeked Warbler (Dendroica chrysoparia) Fact Sheet; Available at https://tpwd.texas.gov/huntwild/wild/species/ Accessed on 04-13-2021. TPWD, 4200 Smith School Road, Austin, Texas, USA.

Texas Parks and Wildlife Department. Undated. Golden-cheeked Warbler (Dendroica chrysoparia) Fact Sheet; Private collection. TPWD, 4200 Smith School Road, Austin, Texas, USA.

Texas Parks and Wildlife. *Fountain Darter (Etheostoma fonticola)*. Undated. 26 February 2024.

Turgeon, D. D., A. E. Bogan, E. V. Coan, W. K. Emerson, W. G. Lyons, W. Pratt, et al. "Common and Scientific Names of Aquatic Invertebrates from the United States and Canada: Mollusks." *American Fisheries Society Special Publication* (1988): vii + 277. 22 February 2024.

Turgeon, D. D., J. F. Quinn, Jr., A. E. Bogan, E. V. Coan, F. G. Hochberg, W. G. Lyons, et al. "Common and scientific names of aquatic invertebrates from the United States and Canada: Mollusks, 2nd ed." *American Fisheries Society Special Publication 26* (1998): 526. 22 February 2024.

U.S. Fish and Wildlife Service (USFWS). "1 Draft Recovery Plan Revisions for 25 Species in 15 States Across the United States." *Federal Register* (2019): 38288-38291. 26 February 2024.

U.S. Fish and Wildlife Service (USFWS). "5-Year Reviews of 28 Southwestern Species." *Federal Register* (2008): 14995-14997. 26 February 2024.

U.S. Fish and Wildlife Service (USFWS). "Appendix D - United States List of Endangered Native Fish and Wildlife." *Federal Register* 35.199 (1970): 16048. 26 February 2024.

U.S. Fish and Wildlife Service (USFWS). "ETWP; Proposal of Critical Habitat for Four Species in Texas." *Federal Register* 45.55 (1980): 16047. 24 February 2024.

U.S. Fish and Wildlife Service (USFWS). "Initiation of 5- Year Status Reviews of 10 Species in Arizona, Arkansas, Kansas, Missouri, New Mexico, Oklahoma, Texas, and Mexico." *Federal Register* (2020). 26 February 2024.

U.S. Fish and Wildlife Service (USFWS). "Notice of Proposed Rule Making (Conservation of Endangered Species and Other Fish or Wildlife)." 35.165 (1970): 13519. 26 February 2024.

U.S. Fish and Wildlife Service (USFWS). 2023. IPaC – Information for Planning and Consultation. http://ecos.fws.gov/ipac/ Accessed March 5, 2024.

U.S. Fish and Wildlife Service (USFWS). *Species Status Assessment Report for the Central Texas Mussels: False Spike (Fusconaia mitchelli), Texas Fatmucket (Lampsilis bracteata), Texas Fawnsfoot (Truncilla macrodon), Texas Pimpleback (Cyclonaias petrina), Guadalupe Fatmucket (Lampsilis sp. Cf. b*. Alburquerque, 2018. 23 February 2024.

U.S. Fish and Wildlife Service (USFWS). 2007b. International recovery plan for the whooping crane (*Grus americana*). Ottawa: Recovery of Nationally Endangered Wildlife (RENEW), and U.S. Fish and Wildlife Service, Albuquerque, New Mexico. 162 pp.

U.S. Fish and Wildlife Service (USFWS). 2019. Species status assessment report for the Central Texas Mussels, Version 1.5. December 2019. Albuquerque, NM.

U.S. Fish and Wildlife Service (USFWS). 2020. Monarch (Danaus plexippus) Species Status Assessment Report. V2.1 96 pp + appendices.

Urquhart FA, Urquhart NR. 1978. Autumnal migration routes of the eastern population of monarch butterfly (Danaus p. plexippus L.; Danaidae; Lepidoptera) in North America to the overwintering site in the Neovolcanic Plateau of Mexico. Canadian Journal of Zoology 56:1759- 1764.

Waterbury B, Potter A. 2018. Integrating strategic conservation approaches for the monarch butterfly in the State Wildlife Action Plans of Idaho and Washington. Final report prepared for the U.S. Fish & Wildlife Service. 79 pp.

Zalucki MP. 1982. Temperature and rate of development in Danaus-plexippus L and D. chrysippus L (Lepidoptera, Nymphalidae). Journal of the Australian Entomological Society 21:241-246.

Attachment A:

Figures

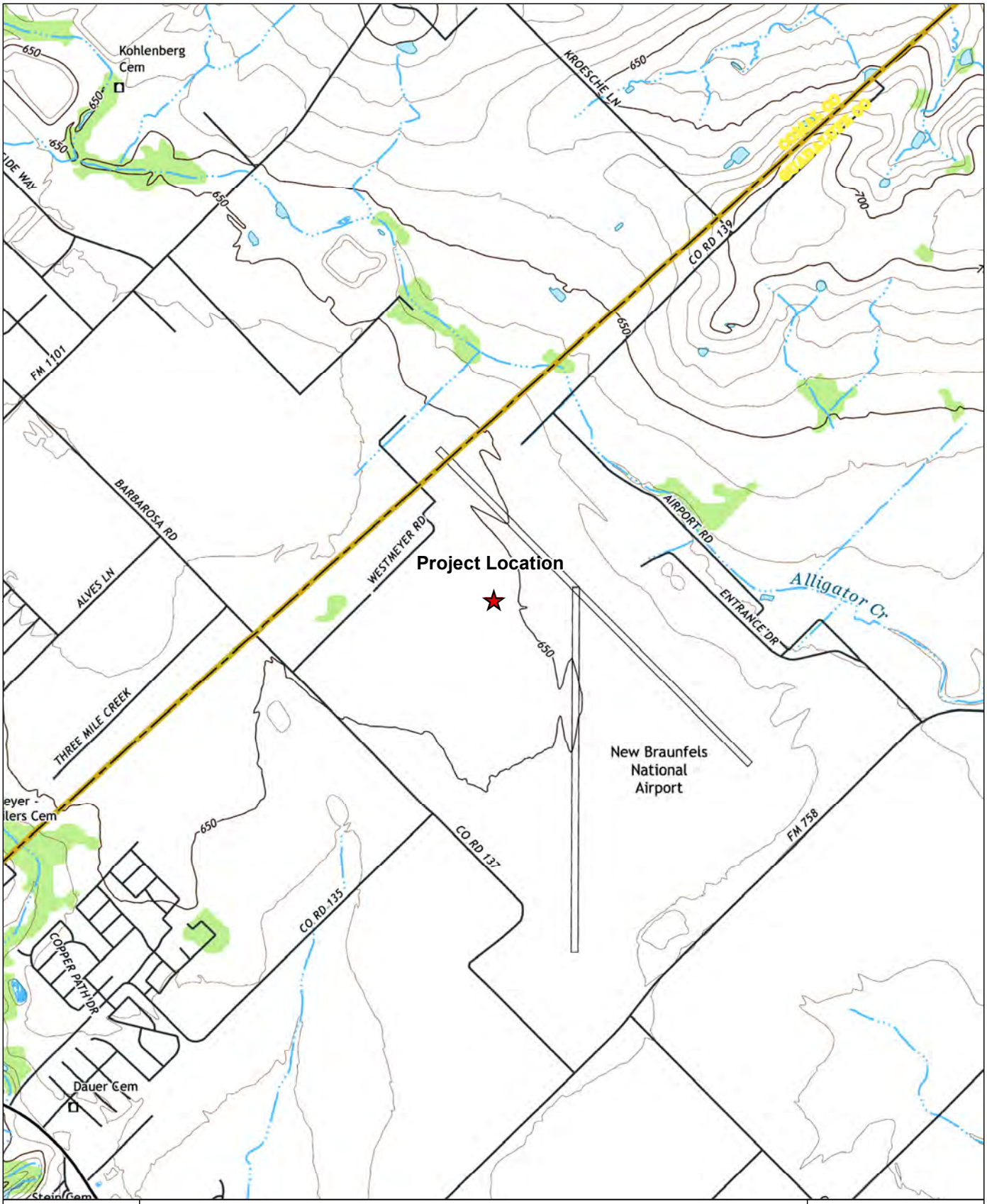


Figure 1
Topographic Features of the Proposed ATCT 2
in Guadalupe County, TX

N
W E
S

0 1,000 2,000 4,000 6,000 8,000 Feet

KSA Engineers, Inc. Project Number: 050097.00	Date: 02/20/2024	Base Map: USGS 7.5 Minute Topographic Quadrangle: New Braunfels East, TX (Published 2022)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

Figure 2
Aerial Photograph of the Proposed ATCT 2
in Guadalupe County, TX

N
W E
S

Feet
0 100 200 400 600

KSA Engineers, Inc.
Project Number: 050097.00

Date: 02/20/2024

Base Map: NRCS Geospatial Data Gateway
2022 NAIP Aerial Imagery (Guadalupe County,TX)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

Attachment B:

Project Photographs

Photograph: 1

Date:
February 20, 2024

County Name:
Guadalupe County, Texas

Description:
Photograph showing the existing two track road within the maintained herbaceous community to the north of the proposed project area.

Photograph: 2

Date:
February 20, 2024

County Name:
Guadalupe County, Texas

Description:
Photograph showing the herbaceous layer within the proposed project area.

Attachment C:

USFWS IPaC Official T&E List

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Austin Ecological Services Field Office
1505 Ferguson Lane
Austin, TX 78754-4501
Phone: (512) 937-7371

In Reply Refer To: March 05, 2024
Project Code: 2024-0058048
Project Name: New Braunfels National Airport - Proposed Air Traffic Control Towers 1, 2, & 3

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through IPaC by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see Migratory Bird Permit | What We Do | U.S. Fish & Wildlife Service (fws.gov).

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Austin Ecological Services Field Office
1505 Ferguson Lane
Austin, TX 78754-4501
(512) 937-7371

PROJECT SUMMARY

Project Code: 2024-0058048

Project Name: New Braunfels National Airport - Proposed Air Traffic Control Towers 1, 2, & 3

Project Type: Airport - Maintenance/Modification

Project Description: Client proposes to construct a new air traffic control tower on one of three potential sites within the footprint of the existing New Braunfels National Airport.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@29.7027961,-98.04182683220827,14z

Counties: Guadalupe County, Texas

ENDANGERED SPECIES ACT SPECIES

There is a total of 7 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 2 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

BIRDS

NAME	STATUS
Piping Plover *Charadrius melodus* Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is **final** critical habitat for this species. Your location does not overlap the critical habitat. This species only needs to be considered under the following conditions: ▪ Wind Energy Projects Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Rufa Red Knot *Calidris canutus rufa* There is **proposed** critical habitat for this species. This species only needs to be considered under the following conditions: ▪ Wind Energy Projects Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened
Whooping Crane *Grus americana* Population: Wherever found, except where listed as an experimental population There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/758	Endangered

CLAMS

NAME	STATUS
False Spike *Fusconaia mitchelli* There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3963	Proposed Endangered
Guadalupe Orb *Cyclonaias necki* Population: There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/10781	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: John Quine
Address: 1501 Bill Owens Parkway
City: Longview
State: TX
Zip: 75604
Email quine@sphere3env.com
Phone: 9032974673

CULTURAL RESOURCES INVESTIGATION REPORT OF THE PROPOSED NEW BRAUNFELS NATIONAL AIRPORT PROPOSED ATCT 2 LOCATION GUADALUPE COUNTY, TEXAS

Texas Antiquities Permit Number 31615

Prepared for:
KSA Engineers, Inc.
4833 Spicewood Springs Road
Suite 204
Austin, Texas 78759
512.342.6868

Prepared by:
Sphere 3 Environmental, Inc.
1501 Bill Owens Parkway
Longview, Texas 75604
903.297.4673

Principal Investigator:
James S. Belew, RPA

Authored by:
James S. Belew, RPA and Michael Ryan

March 2024

ABSTRACT

Sphere 3 Environmental, Inc. (Sphere 3) conducted an intensive pedestrian cultural resources survey of approximately 0.37 hectare (0.91 acre) of land designated as the Area of Potential Effects (APE) in response to the proposed undertaking to construct a new control tower location at the New Braunfels National Airport in Guadalupe County, Texas. KSA Engineers, Inc. retained Sphere 3 to conduct a cultural resources survey of the proposed ATCT 2 potential tower location. The project area is situated wholly within the City of New Braunfels, Texas. The Texas Historical Commission issued Texas Antiquities Permit Number 31615 on behalf of the airport. Sphere 3's field crew, led by James S. Belew, RPA, Principal Investigator, conducted field investigations on February 20, 2024.

The cultural resources survey was conducted to identify properties eligible for inclusion in the National Register of Historic Places or listing as a State Antiquities Landmark. A total of 2 shovel tests were excavated across the project area. No archaeological sites or isolated finds were identified by the survey. All documents associated with this investigation were curated at the Texas Archeological Research Laboratory in Austin, Texas. Sphere 3 therefore recommends that construction of the proposed New Braunfels National Airport Control Tower ATCT 2 Location proceed as planned without further cultural resource investigations.

TABLE OF CONTENTS

FIGURES

APPENDICES

INTRODUCTION

The New Braunfels National Airport is currently conducting a siting study to determine the location for a new air traffic control tower (ATCT). The ATCT 2 potential tower location, designated as the project area or area of potential effect, is approximately 0.37 hectare (ha) (0.91 acre [ac]) of land on airport property in the City of New Braunfels, Guadalupe County, Texas (Figures 1 and 2). Sphere 3 Environmental, Inc. (Sphere 3) was retained by KSA Engineers, Inc. (KSA) to determine whether any cultural resources eligible for inclusion in the National Register of Historic Places (NHRP) and/or eligible for designation as a State Antiquities Landmark (SAL) will be adversely impacted by proposed construction activities at the ATCT 2 location. Federal involvement in the project was triggered by compliance with Federal Aviation Administration requirements. A Texas Antiquities Permit was required because the New Braunfels National Airport is owned by the City of New Braunfels, Texas, which is considered a political subdivision of the State of Texas and therefore falls within the regulatory authority of the Texas Historical Commission (THC). The project is designed to comply with the Texas Antiquities Code, the National Historic Preservation Act of 1966 (Public Law [PL] 89-665), as amended in 1974 (PL 97-442), 1976 and 1980, and the National Environmental Policy Act of 1969 (PL 81-190, 83 Stat. 915, 42 USC 4321, 1970). These investigations are also designed to comply with the Council of Texas Archeologists (CTA) standards and guidelines.

Proposed construction includes a control tower no more than 43.59 meters (m) (143 feet [ft]) high, a small parking lot, fencing, utilities, and drainage improvements within a 60.96 by 60.96 m (200 by 200 ft) area. The maximum depth of proposed soil disturbance is 30.48 meters (m) (100 feet [ft]) for geotechnical borings. To identify any historic and/or archaeological properties existing within the project area, Sphere 3 developed a scope of work for a Phase I intensive cultural resources survey. The THC accepted this proposed scope and issued Texas Antiquities Permit Number 31615 on behalf of the New Braunfels National Airport. Sphere 3 conducted the fieldwork on February 20, 2024. No inclement weather was encountered during the project. The work was carried out by a two-person crew consisting of Jay Belew, Principal Investigator, and Michael Ryan, Field Director. The field documents and report will be permanently curated at the Texas Archeological Research Laboratory (TARL), University of Texas at Austin, located in Austin, Texas.

The project area was visually inspected by pedestrian survey at a maximum of 30 m (98.4 ft) transect intervals. A total of 2 shovel tests were excavated across the project area. No archaeological sites or isolated finds were identified by the survey. Sphere 3 therefore recommends that construction of the proposed New Braunfels National Airport Control Tower ATCT 2 Location proceed as planned without further cultural resource investigations.

DEFINITION OF STUDY AREA

The project area consists of a square 0.37 ha (0.91 ac) area on nearly level uplands very gently sloping to the south and the east toward Alligator Creek (Figure 2), approximately 0.78 kilometers (0.48 mile) to the northeast. The project area lies within an open field to the west of the airport runway (Appendix B: Photographs 1 and 2). The project area is bound on all sides by the open field continuing in all directions. The project area is in New Braunfels, Texas and is owned solely by the New Braunfels National Airport.

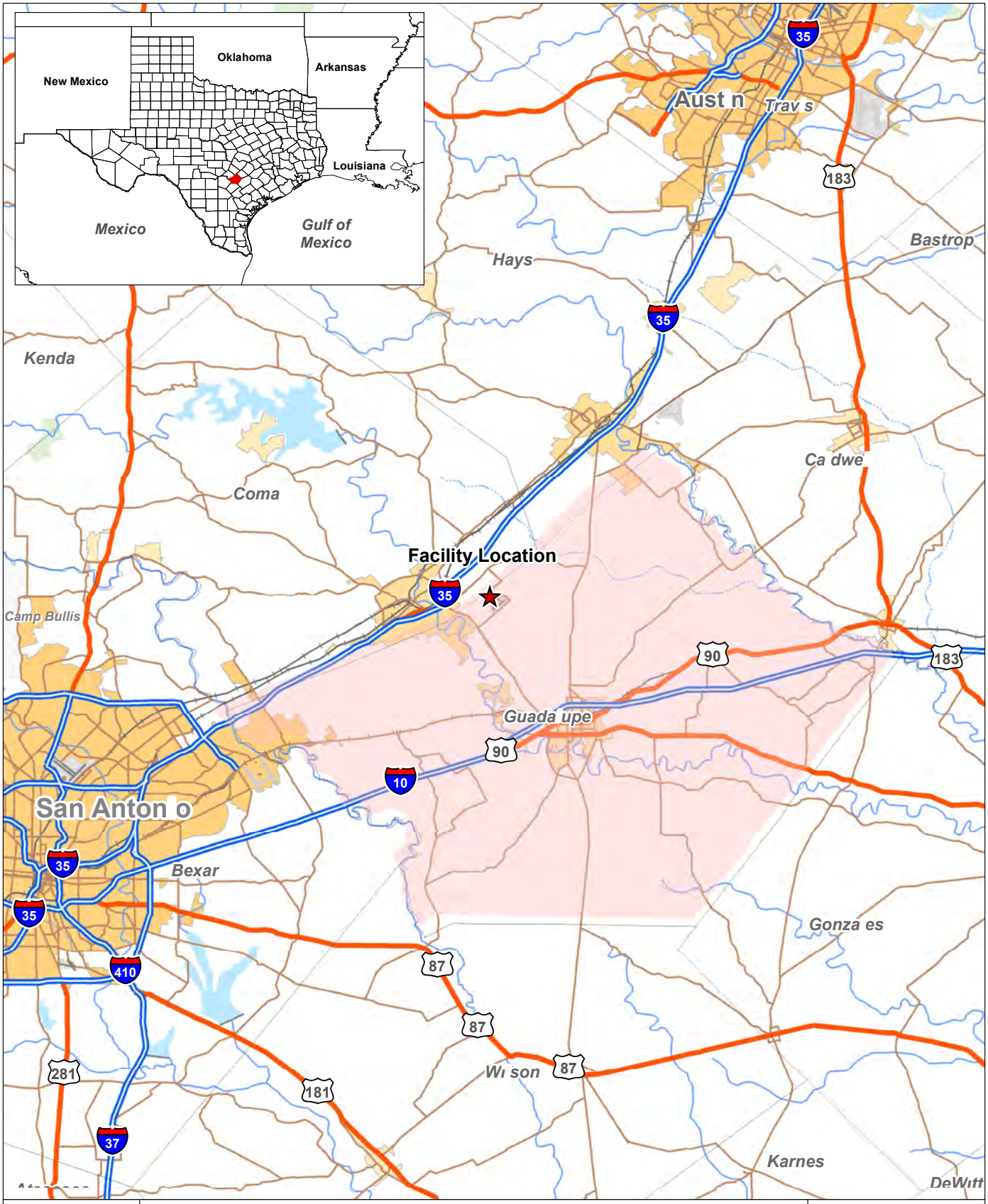


Figure 1
Vicinity Map of the New Braunfels National Airport
Proposed ATCT 2 Location in Guadalupe County, TX

Kilometers
0 10 20 40 60

Miles
0 5 10 20 30 40

KSA Engineers, Inc.
Project Number: 050097.00

Date: 02/20/2024

Coordinate System: NAD 1983
UTM Zone 14 North

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

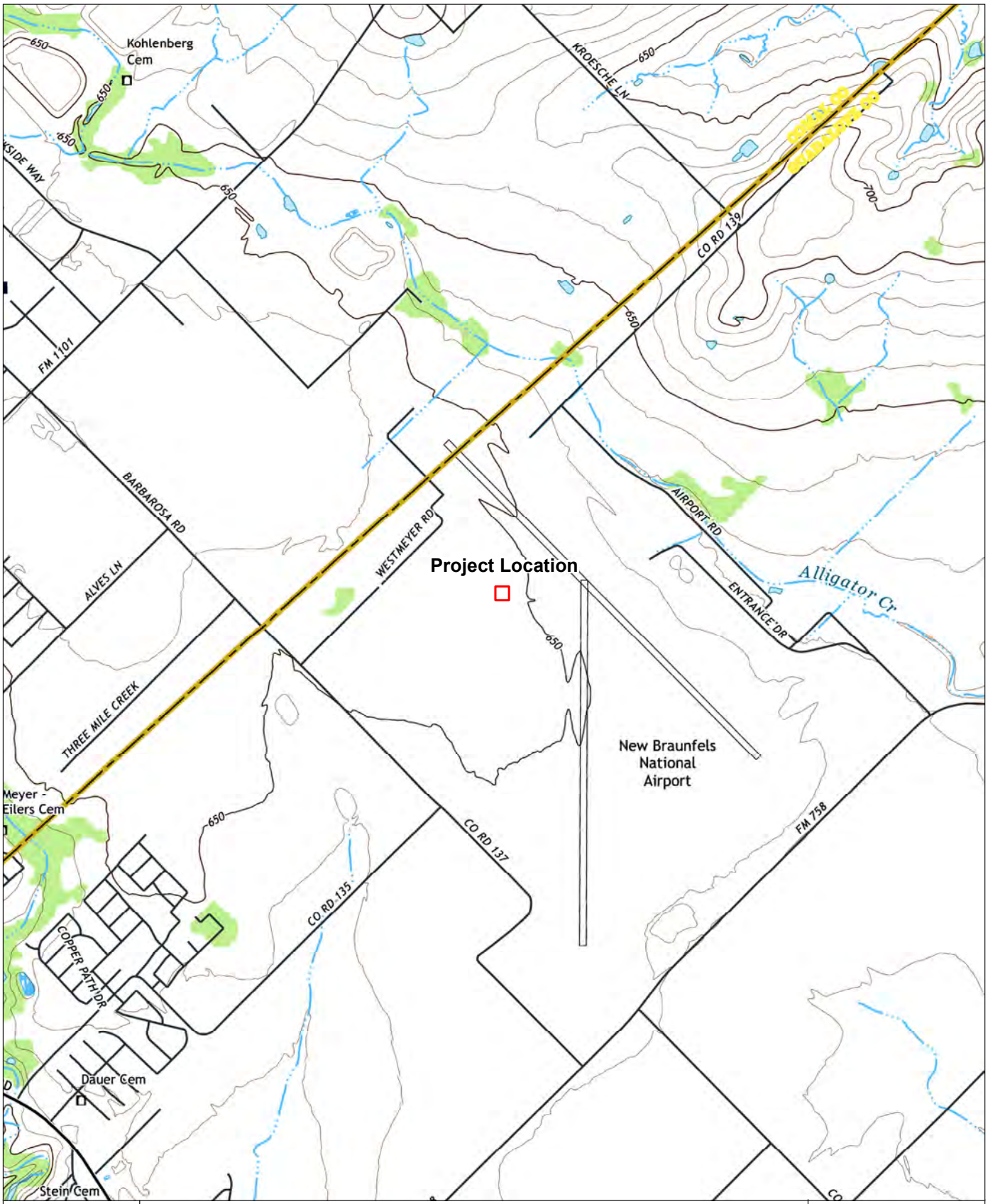


Figure 2
Topographic Features of the New Braunfels National Airport
Proposed ATCT 2 Location in Guadalupe County, TX

N
W E
S

Meters
0 300 600 1,200 1,800 2,400

Feet
0 1,000 2,000 4,000 6,000 8,000

KSA Engineers, Inc.
Project Number: 050097.00

Date: 02/20/2024

Base Map: USGS 7.5 Minute Topographic
Quadrangle: New Braunfels East, TX (Published 2022)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

The project area lies within the Texan biotic province, one of seven recognized by Blair (1950) and Dice (1943) for the state of Texas based on ecological associations of a relatively stable assemblage of plants and animals. This ecotone describes a region characterized by tall grass prairies supported by clay soils or sandy soils and oak hickory forests; the dominating species being post and blackjack oaks, and hickory. Vegetation within the project area consisted of mowed grass.

According to the Natural Resources Conservation Service's Web Soil Survey, the project is located on Branyon clay, 0 to 1 percent slopes. This soil is moderately well drained and formed in calcareous clayey alluvium derived from mudstone of Pleistocene age. The typical soil profile consists of clay from 0 to 203 centimeters. (USDA 2024).

PREVIOUS INVESTIGATIONS

Based on a site file search of the Texas Archaeological Sites Atlas database and literature search and records review, the proposed project area will not impact any previously recorded archaeological sites or other recorded cultural resources. One previously recorded archaeological site, 41GU236, was found to be mapped within one kilometer of the project area (Figure 3). Site 41GU236 is a historic farmstead site that has been determined to be ineligible for the NRHP. The site is approximately 259.08 meters (850 feet) northwest of the project area. There are no previously conducted cultural resources surveys or historic properties listed on the NRHP within one kilometer of the project area.

RESEARCH DESIGN

Sphere 3 performed all necessary cultural resources investigations in connection with the New Braunfels National Airport Proposed Control Tower ATCT 2 Location construction undertaking. These investigations were conducted to locate prehistoric and historic cultural resources sites within the property, delineate the vertical and horizontal extent of each site, and make preliminary evaluations of each site's integrity and potential for SAL designation and/or NRHP eligibility.

Prior to initiating the fieldwork, Sphere 3 acquired a Texas Antiquities Permit. Sphere 3 conducted a records search for SALs, Historic Markers, properties listed on or eligible for inclusion in the NRHP, previously recorded sites documented at TARL, as officially managed by THC, previous survey reports available online through the Texas Archeological Site Atlas. Topographic maps, aerial images, and Google Earth imagery from the past 99 years were analyzed for modern and historic impacts to the property.

The pedestrian cultural resources survey relied on both visual examination and shovel testing. The visual examination focused on areas with exposed soil surfaces (e.g., tire tracks, animal disturbances, etc.). Per the THC's standards, a project area measuring 0.37 ha (0.91 ac) requires a minimum of 2 shovel tests. One shovel test was excavated in the northeast corner and the other in the southwest corner.

Shovel tests measuring 30 cm by 30 cm were excavated in 10 cm levels down to the clay substrate with the deepest test at 20 cm (7.9 in) below surface. The excavated matrix was screened through a 0.635 cm (0.25 in) wire mesh screen. Shovel test locations were recorded with a GPS capable of one meter (3.28 ft) accuracy. For each shovel test unit, notes were made in the shovel test form of soil color, texture, and extent of soil layers and of the maximum depth.

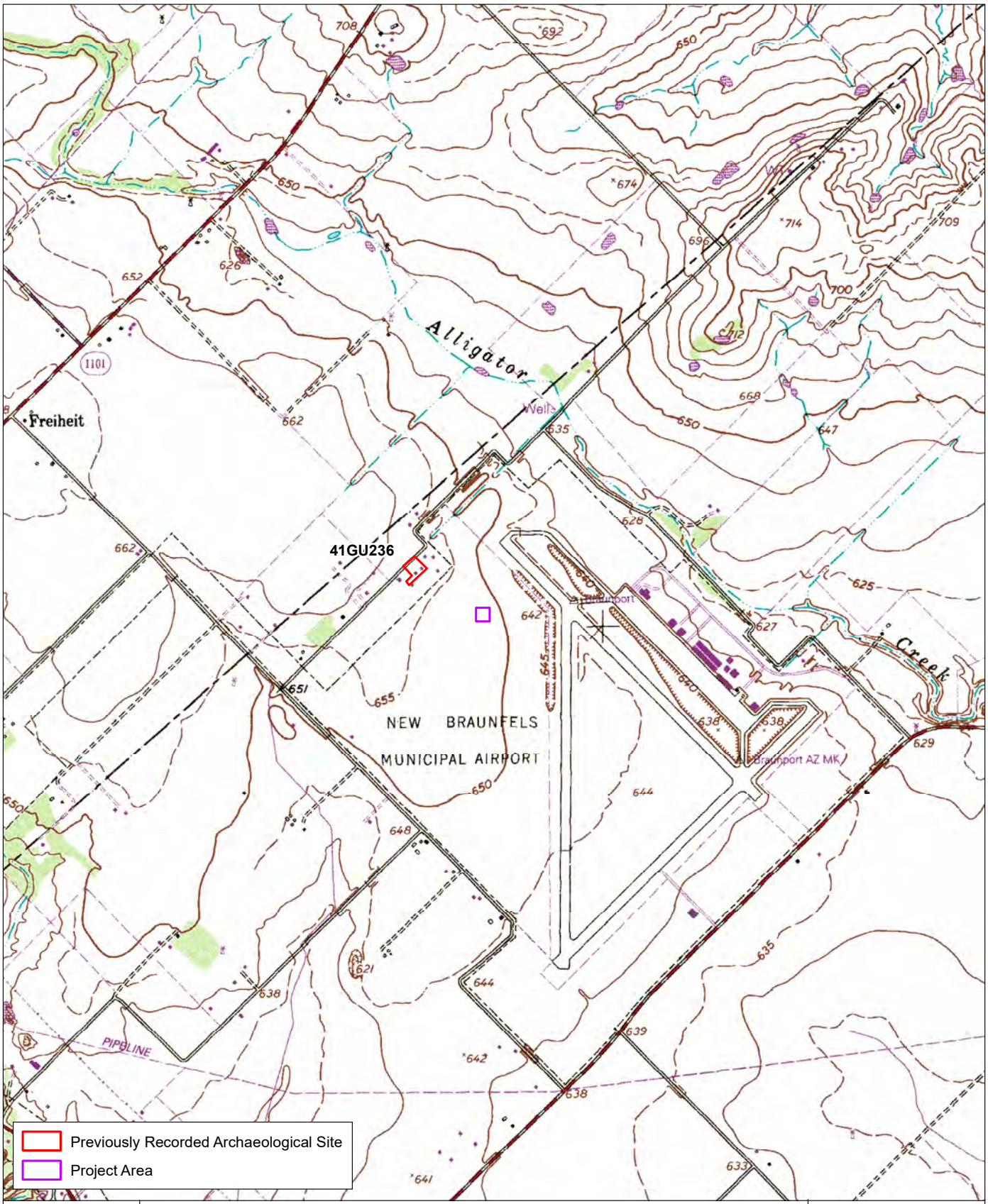


Figure 3
Previously Recorded Archaeological Sites Within
One Kilometer of the Project Area

N
W E
S

Meters
0 300 600 1,200 1,800 2,400
Feet
0 1,000 2,000 4,000 6,000 8,000

KSA Engineers, Inc.
Project Number: 050097.00

Date: 02/20/2024

Base Map: USGS 7.5 Minute Topographic Quadrangle:
New Braunfels East, TX (Published 1958, Revised 1994)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

Upon finding an artifact, shovel tests were to be excavated solely within the project area boundaries at a maximum of 15 m (49.2 ft) intervals until the site limits could be delineated using surface features/artifacts or two consecutive negative shovel tests. Exceptions are: (1) If the project area boundary shall be reached before the second (or any) negative STs have been excavated, or (2) If a stream or other clearly recognized landform boundary forms a topographic limit to the site. Surface features were to be mapped with a GPS. Photos were to be taken of the site area. A soil profile was to be described from a positive shovel test on the site, and a State of Texas Archeological Site Data Form would be completed for each new site discovered. Sub-surface artifacts were to be collected by shovel test number and 10 cm (3.9 in) level. Shovel tests containing cultural materials were considered isolated finds, as long as: (1) no subsequent positive shovel tests were discovered during delineations, and (2) the original shovel test contained 3 or less artifacts from relatively undisturbed soils, and/or from an extremely disturbed soil from which no spatial or temporal context could be inferred (no matter how many cultural objects older than 50 years might be documented).

In the case of a historic site for which an unusual abundance of certain classes of non-diagnostic fragments of bottle glass, iron, brick, or other common material are found on the surface, only representative samples shall be required to be collected and curated in accordance with State Antiquities Permit guidelines. All diagnostic historic and other historic cultural objects recovered during investigations that do not meet these criteria, as well as all prehistoric cultural objects, were collected.

Following completion of the field survey, all collected artifacts were to be washed, cataloged, and analyzed to determine cultural affiliation. Site forms, artifacts, maps and photographs, along with documents containing other field data shall be curated at TARL in Austin, Texas.

RESULTS

This cultural resources investigation included an analysis of topographic maps and aerial imagery from the past 99 years followed by an intensive pedestrian survey. A total of 2 shovel tests were excavated within the project area. Soil profiles of all excavated shovel tests are found in Appendix A: Table 1. No archaeological sites or isolated finds were identified during the survey. Shovel test forms and other archival materials containing documentation comprising the Texas Antiquities Permit No. 31615 project shall be curated at TARL.

IMAGERY AND TOPOGRAPHIC ANALYSIS

Google Earth aerial imagery; historic aerial imagery from 1958 (Figure 4) and 1986 (Figure 5); and topographic maps from 1925 (Figure 6) and 1958 Photorevised 1994 (Figure 7) illustrate the modern use of the project area and its immediate surroundings. The topographic maps indicate the project area appears to have been largely used for agricultural purposes or was otherwise undeveloped from 1925 until acquisition by the airport. By 1958, the airport runways/taxiways have been constructed but no buildings have yet been constructed at the airport. By 1986 numerous buildings have been constructed along the northwestern side of the runway/taxiways. The 1994 topographic map confirms this as well as indicating the construction of a building on the southeast side of the airport. Neither map indicates that the present-day airport terminal building or current control tower have yet been constructed. Google Earth aerial imagery from 1995 to present continues to illustrate the airport's growth over time. The airport's main terminal

N
W E
S

Figure 4
Historic 1958 Aerial Photograph of the Project Area

Meters
0 200 400 800 1,200 1,600
Feet
0 500 1,000 2,000 3,000 4,000 5,000

KSA Engineers, Inc.
Project Number: 050097.00

Date: 02/20/2024

Base Map: USGS Earth Expolorer
1958 Aerial Imagery (Guadalupe County, TX)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

Figure 5
Historic 1986 Aerial Photograph of the Project Area

N
W E
S

Meters
0 200 400 800 1,200 1,600

Feet
0 1,000 2,000 4,000 6,000

KSA Engineers, Inc. Project Number: 050097.00	Date: 02/20/2024	Base Map: USGS Earth Expolorer 1986 Aerial Imagery (Guadalupe County, TX)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

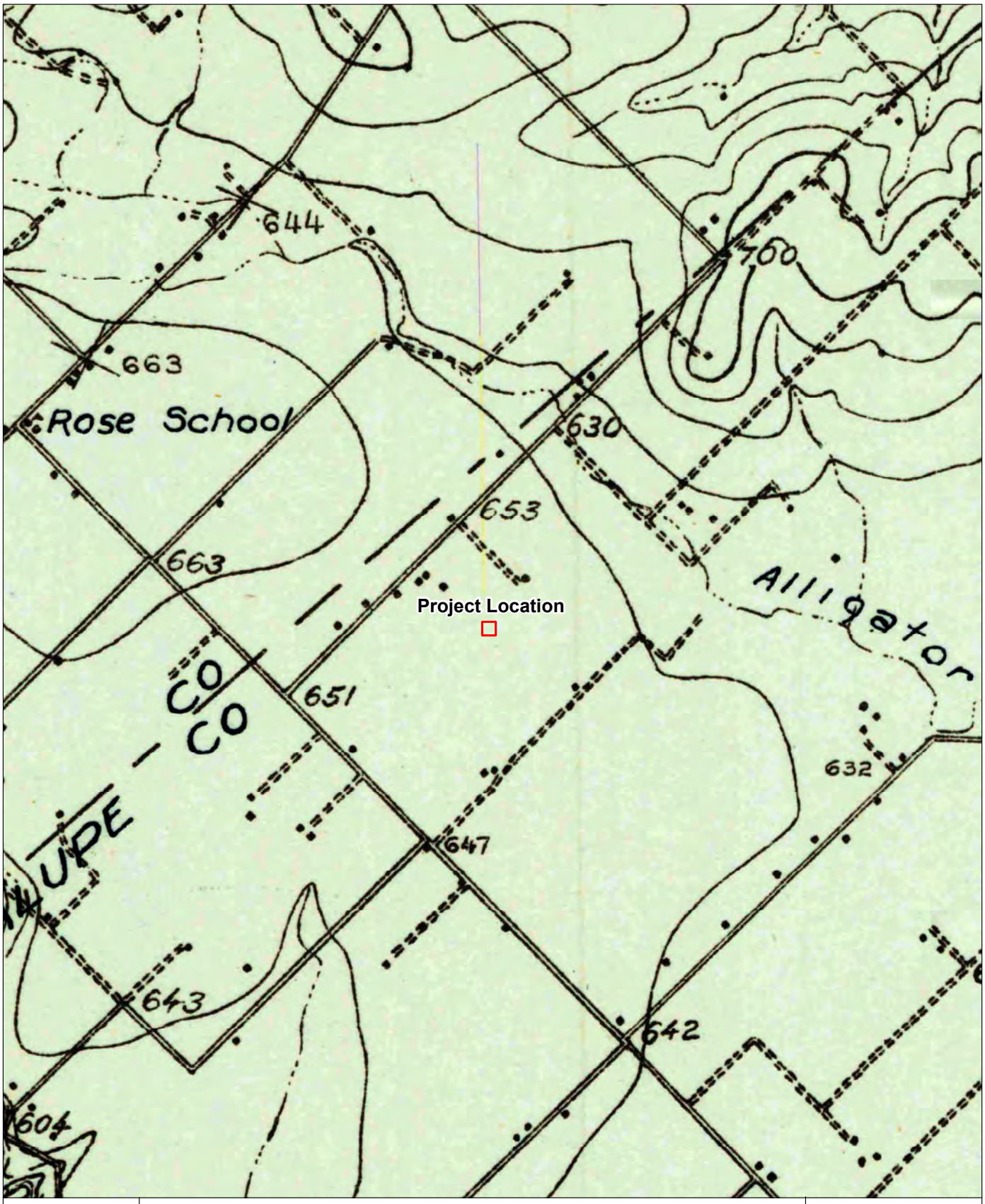


Figure 6
Historic Topographic Map of the Project Area - Published 1925

N
W E
S

Meters
0 300 600 1,200 1,800 2,400

Feet
0 1,000 2,000 4,000 6,000 8,000

KSA Engineers, Inc.
Project Number: 050097.00

Date: 02/20/2024

Base Map: USGS 7.5 Minute Topographic
Quadrangle: New Braunfels, TX (Published 1925)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

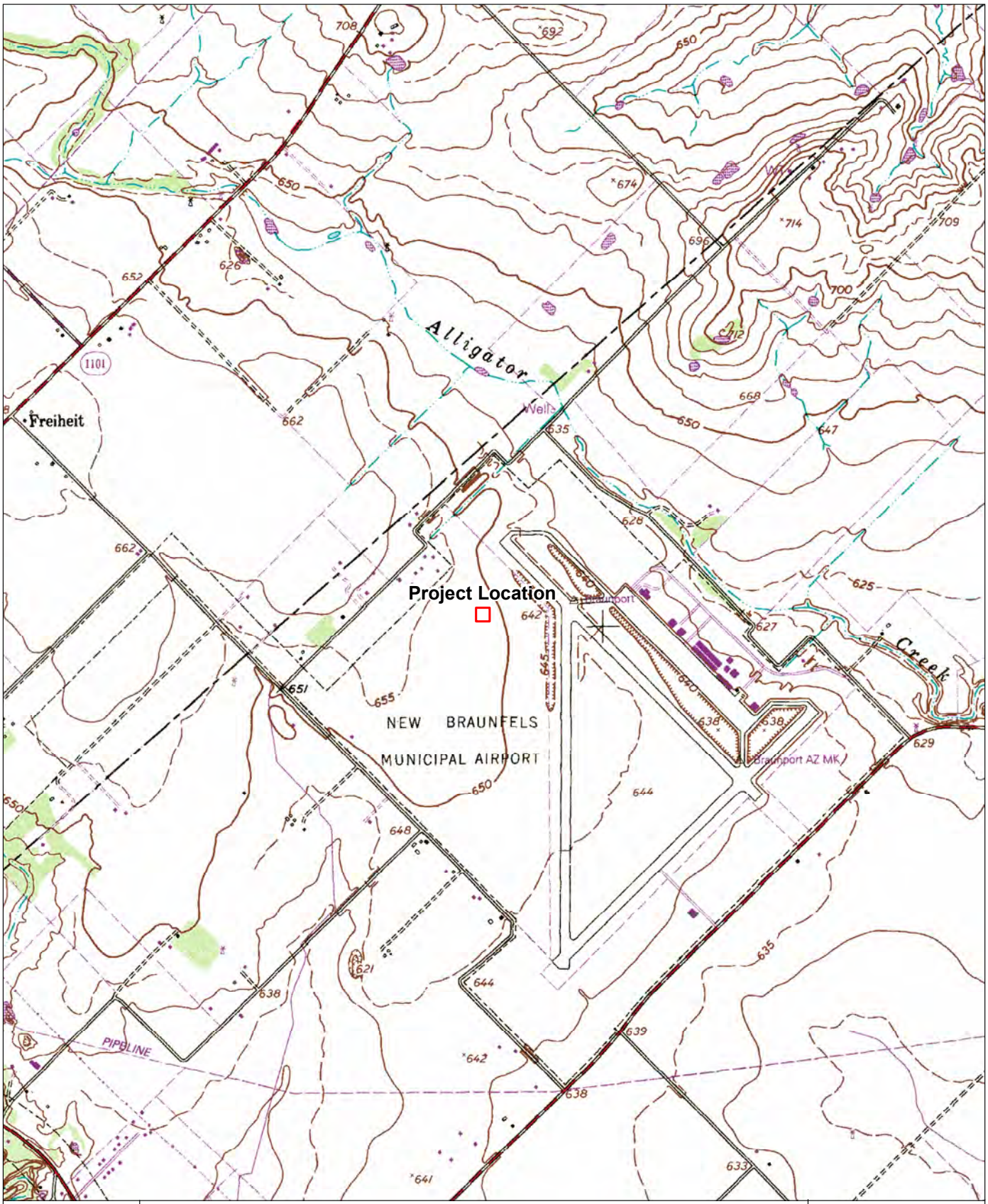


Figure 7
Historic Topographic Map of the Project Area - Published 1958
(Photorevised 1994)

N
W E
S

Meters
0 300 600 1,200 1,800 2,400

Feet
0 1,000 2,000 4,000 6,000 8,000

KSA Engineers, Inc. Project Number: 050097.00	Date: 02/20/2024	Base Map: USGS 7.5 Minute Topographic Quadrangle: New Braunfels East, TX (Published 1958, Revised 1994)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

building appears to have been constructed between 1995 and 2005. The current control tower appears between 2006 and 2008.

INTENSIVE PEDESTRIAN SURVEY SUPPORTED BY SHOVEL TESTING

Visual inspection was supported by two judgmentally placed shovel tests, in accordance with CTA guidelines. The project area lies within a grassy, nearly level upland field (Figure 8). The thick grass cover within the field reduced ground surface visibility to between 0 and 5 percent. A dirt and gravel road runs northwest/southeast approximately 20 m (65.6 ft) northeast of the project area (Appendix B: Photograph 3). A total of 2 shovel tests were excavated within the project area. Both shovel tests contained shallow clayey soils consisting of black loamy clay underlain by black or very dark grey clay with only a few quartzite pebbles (Appendix A: Table 1) (Appendix B: Photograph 4).

SUMMARY AND RECOMMENDATIONS

In summary, approximately 0.37 ha (0.91 ac) was surveyed to assess for existing cultural resources in the proposed New Braunfels National Airport Proposed ATCT 2 Location in the City of New Braunfels, Guadelupe County, Texas. The goal of the survey was to identify cultural resources and to make a preliminary evaluation of the documented cultural resources as to their eligibility for inclusion in the NRHP and their worthiness for being listed as a SAL.

The investigations conducted by Sphere 3 included an examination of previous archaeological and other cultural resources investigations within one kilometer of the project area, an analysis of aerial imagery and topographic maps over the past 99 years, and an intensive pedestrian archaeological survey supported by judgmental shovel testing of the project area. A total of two shovel tests were excavated.

No archaeological sites or isolated finds were identified during the survey. Accordingly, Sphere 3 recommends that the proposed work be permitted to proceed without further cultural resources requirements.

Figure 8
Shovel Test Locations of the New Braunfels National Airport
Proposed ATCT 2 Location

N
W E
S

Meters
0 25 50 100
Feet
0 50 100 200 300

KSA Engineers, Inc.
Project Number: 050097.00

Date: 02/20/2024

Base Map: NRCS Geospatial Data Gateway
2022 NAIP Aerial Imagery (Guadalupe County,TX)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

REFERENCES

Blair, W. Frank

1950 "The Biotic Provinces of Texas." *The Texas Journal of Science* 11(1):93-117.

Council of Texas Archeologists (CTA)

2020 *Guidelines (Performance, Curation, and Reports).* Volume, and summary sheet entitled, "Archeological Survey Standards for Texas." Council of Texas Archeologists and Texas Historical Commission, Archeology Division, Austin.

Dice, L. R.

1943 *The Biotic Provinces of North America.* University of Michigan Press, Ann Arbor.

United States Department of Agriculture

2024 Natural Resources Conservation Service (NRCS) Web soil survey. Data downloaded from http://www.ftw.nrcs.usda.gov/ssur_data.html. Accessed online on February 1, 2024

United States Department of the Interior, National Park Service, National Register of Historic Places (US-NRHP)

1997 National Register Bulletin: How to Apply the National Register Criteria for Evaluation. Revised for Internet 1995. Washington, D.C.

APPENDIX A:

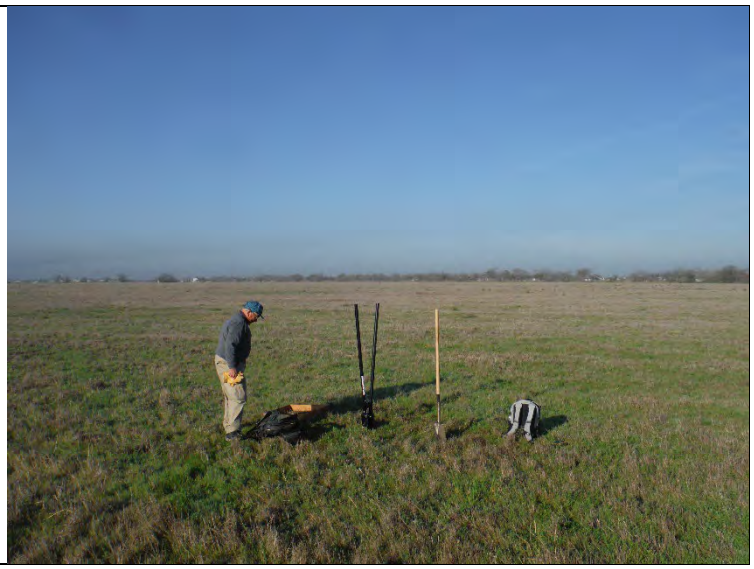
TABLES

Appendix A: Table 1: New Braunfels National Airport Proposed ATCT 2 Location Shovel Test Log

Shovel Test Number	Landform	Depth of Soil Horizon (cm below surface)	Horizon Soil Type	Munsell Color	Presence of Cultural Resources ("positive"-one or more artifacts)
1	Terrace	0-13	Loamy Clay	10YR2/1	Negative
		13-20	Clay	10YR2/1	
2	Terrace	0-12	Loamy Clay	10YR2/1	Negative
		12-20	Clay	10YR3/1	

APPENDIX B

PHOTOGRAPH LOG

Photograph #1 *Photo by Michael Ryan* Date: 2-20-2024 Subject: General environmental photo of grassy field making up the project area. Taken from ST 1 facing southwest.	

Photograph #2 *Photo by Michael Ryan* Date: 2-20-2024 Subject: General environmental photo of grassy field making up the project area. Taken from center facing north.	

Photograph #3 *Photo by Michael Ryan* Date: 2-20-2024 Subject: Photo taken along the northwest/southeast dirt road northeast of the project area. Facing northwest.	

Photograph #4 *Photo by Jay Belew* Date: 2-20-2024 Subject: Shovel Test 1 south profile. Black loamy clay underlain by black clay.	

March 8, 2024 Project Number: 050097.00

Wetlands and Other Waters of the United States Assessment
New Braunfels National Airport
Proposed Air Traffic Control Tower 3
Guadalupe County, Texas

Prepared for:
KSA Engineers, Inc.
4833 Spicewood Springs Rd, Suite 204
Austin, TX 78759

Prepared by:
Sphere 3 Environmental, Inc.
1501 Bill Owens Parkway
Longview, Texas 75604
903-297-4673

INTRODUCTION

Sphere 3 Environmental, Inc. (Sphere 3) was retained by KSA Engineers, Inc. (KSA) to conduct an assessment of the New Braunfels National Airport proposed Air Traffic Control Tower (ATCT) 3 in Guadalupe County, Texas. John Quine, Sphere 3 Biologist, and Sydney Moore, Sphere 3 Environmental Scientist, conducted a field survey to delineate wetlands and other waters of the United States on February 20, 2024. The proposed project area consists of a 200-foot by 200-foot area located to the east of the runways (Figures 1 and 2).

No wetlands or other waters of the United States are present within the proposed ATCT 3 project area. No United States Army Corps of Engineers (USACE) permit is required for the construction of the project.

SURVEY METHODS

Wetland delineation was conducted in accordance with the three-parameter approach outlined in Technical Report 10-20, the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region* (Version 2.0). The three-parameter approach was utilized to assess the site's vegetation, soils, and hydrology to determine the presence or absence of wetlands. Dominant species include flora that cumulatively total 50 percent of the areal coverage and any other single species accounting for at least 20 percent areal coverage within the plot. The wetland indicator status of each species was determined using the *Great Plains Region: 2020 Regional Wetland Plant List* (USFWS 2020) accessed online at the USACE's NWPL – National Wetland Plant List website. Munsell Soil Color Charts (2000 Revised Washable Edition) were used to identify the hue and chroma of soil samples.

Sphere 3 utilized Trimble's mapping grade GeoXT Global Positioning System (GPS) to map wetlands, streams, project boundaries, and other important features of the project. After field data collection was completed, the GPS data was exported into ESRI's ArcGIS Geographic Information System for impact analysis and map production.

EXISTING CONDITIONS

According to the Natural Resources Conservation Service's Web Soil Survey, the proposed project is located on Branyon clay, 0 to 1 percent slopes.

The project area has an herbaceous layer composed of Bermuda grass (*Cynodon dactylon*), field madder (*Sherardia arvensis*), burr clover (*Medicago polymorpha*), spiny sowthistle (*Sonchus asper*), and Virginia plantain (*Plantago virginica*). No field indicators of wetland hydrology or hydric soil are present within this community.

FLOODPLAIN

The project is not located within the 100-year floodplain (Zone A) (Figure 3).

SUMMARY

Sphere 3 has surveyed the proposed New Braunfels National Airport's Proposed ATCT 3 project area for wetlands and other waters of the United States. The investigation revealed no wetlands or other waters of the United States within the project area. No USACE permit is required to construct the project.

LITERATURE CITED

National Wetland Plant List, version 3.5 http://wetland-plants.usace.army.mil; U.S. Army Corps of Engineers Research and Development Center. Cold Regions Research and Engineering Laboratory, Hanover, NH.

Munsell Color X-Rite. 2000 Revised Washable Edition. *Munsell Soil Color Charts*. New Windsor, NY.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey Version 3.4.0. Available online at http://websoilsurvey.nrcs.usda.gov/. Date Last Modified July 31, 2019. Accessed February 21, 2024.

United States Army Corps of Engineers. 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0),* ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-10-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

United States Fish and Wildlife Service. 2021. National Wetlands Inventory website. United States Department of the Interior, Fish and Wildlife Service, Washington, D.C. https://www.fws.gov/program/national-wetlands-inventory/wetlands-mapper Date Last Modified May 1, 2021. Accessed February 21, 2024.

Attachment A:

Figures

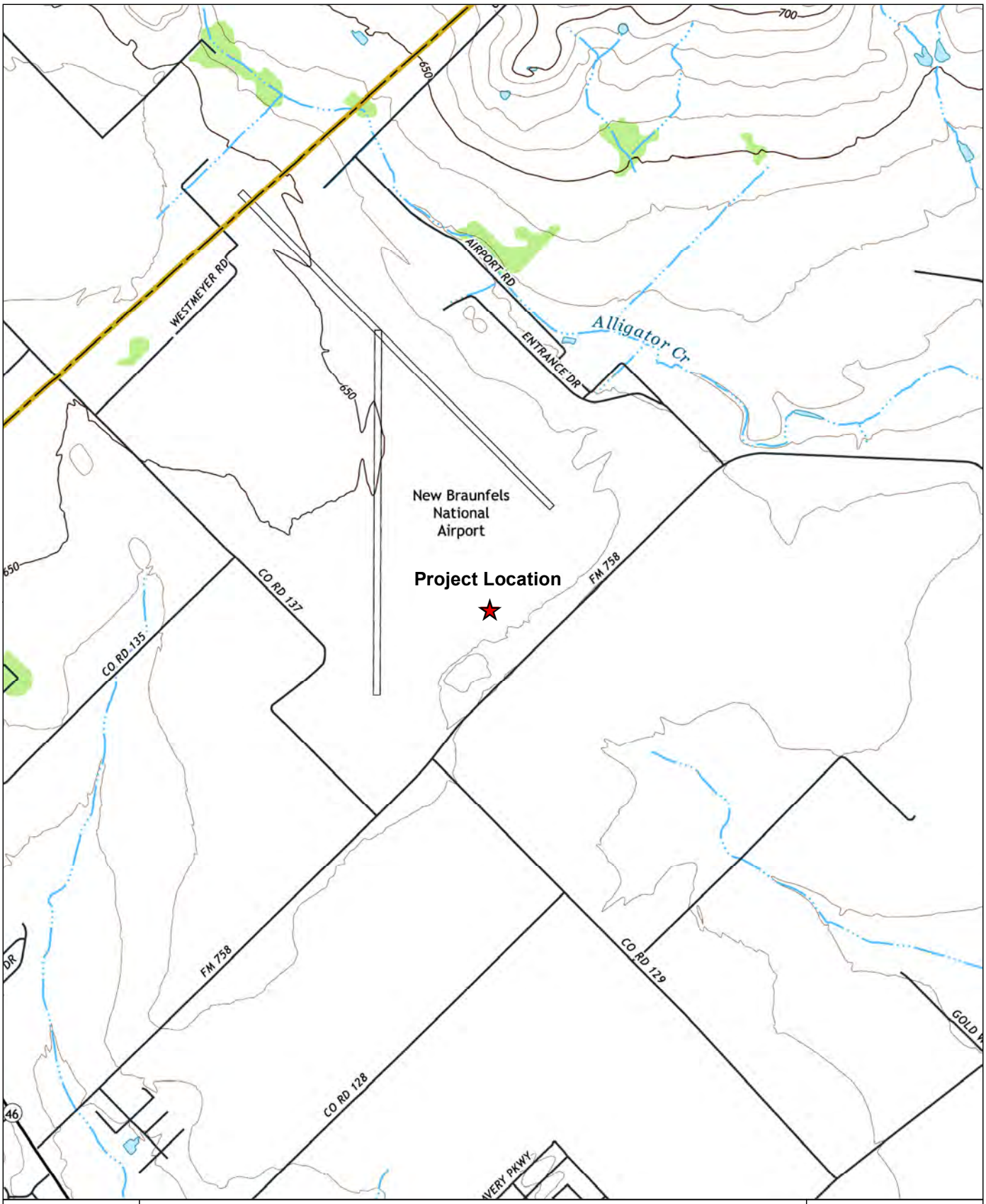


Figure 1
Topographic Features of the Proposed ATCT 3
in Guadalupe County, TX

N
W E
S

Feet
0 1,000 2,000 4,000 6,000 8,000

KSA Engineers, Inc. Project Number: 050097.00	Date: 02/20/2024	Base Map: USGS 7.5 Minute Topographic Quadrangle: New Braunfels East, TX (Published 2022)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

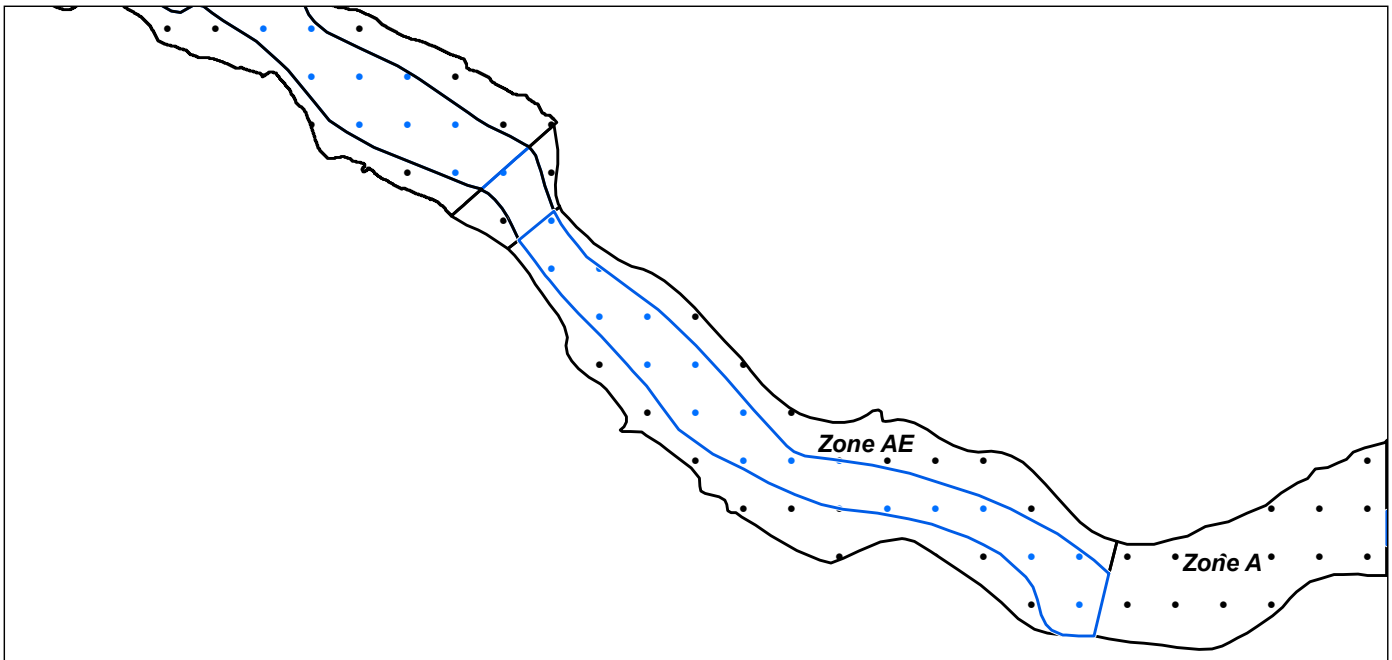
Figure 2
Aerial Photograph of the Proposed ATCT 3
in Guadalupe County, TX

N
W E
S

0 50 100 200 300 Feet

KSA Engineers, Inc. Project Number: 050097.00	Date: 02/20/2024	Base Map: NRCS Geospatial Data Gateway 2022 NAIP Aerial Imagery (Guadalupe County,TX)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com



Project Location

Zone X

***Project Located in Area of Minimal Flood Hazard (Zone X)**

Figure 3
Floodplain Data of the Proposed ATCT 3
in Guadalupe County, TX

Feet
0 1,000 2,000 4,000 6,000 8,000

KSA Engineers, Inc. Project Number: 050097.00	Date: 02/20/2024	Base Map: Flood Insurance Rate Map Panel No. 48091C0460F Guadalupe County, TX

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

Attachment B:

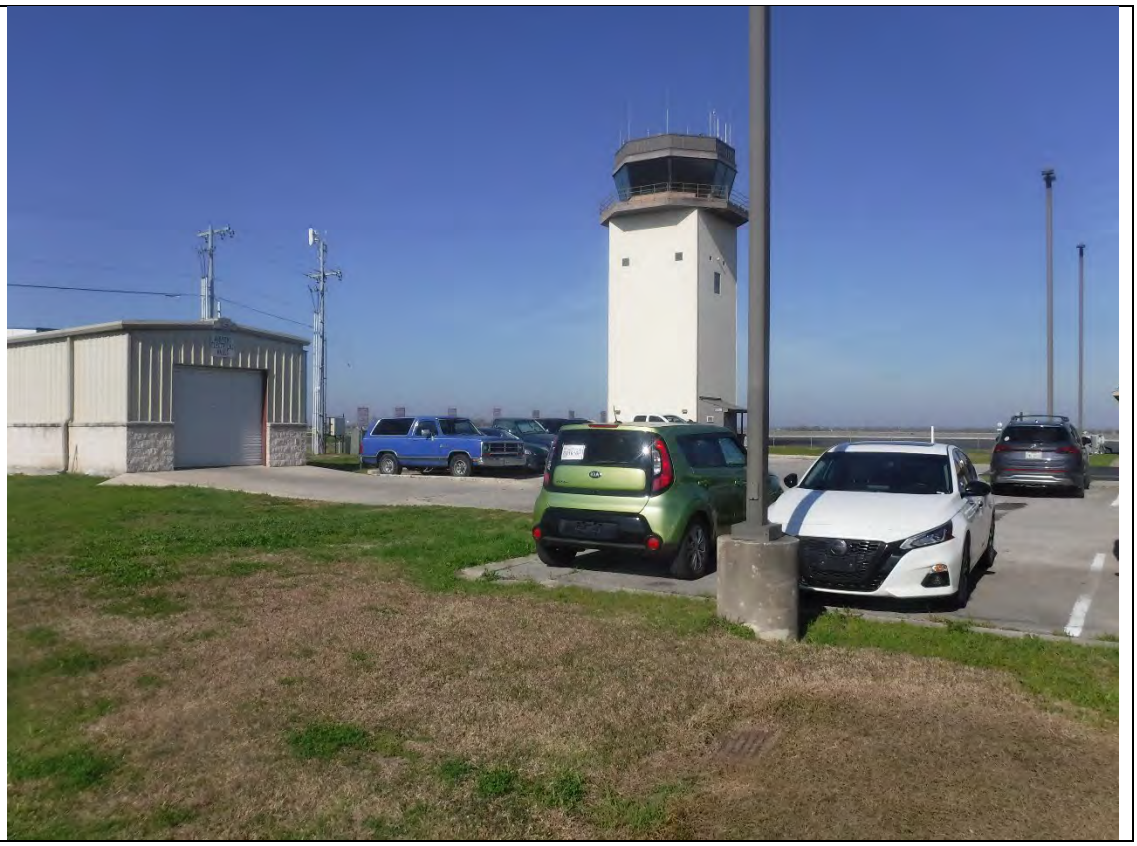
Site Photos

Photograph: 1

Date:
February 20, 2024

County Name:
Guadalupe County, Texas

Description:
Photograph showing portions of the proposed project area within the existing infrastructure near the airport terminal.



Photograph: 2

Date:
February 20, 2024

County Name:
Guadalupe County, Texas

Description:
Photograph showing the herbaceous layer within the proposed project area adjacent to the existing terminal parking lot.

Attachment C:

Data Sheets

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: New Braunfels National Airport City/County: Guadalupe, County Sampling Date: 02/20/24

Applicant/Owner: KSA Engineers State: TX Sampling Point: Up1

Investigator(s): John Quine/Sydney Moore Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): None Slope (%): 0-1

Subregion (LRR): LRR-J Lat: 29.69824627 Long: -98.03856305 Datum: WGS1984

Soil Map Unit Name: Branyon clay, 0-1 percent slopes NWI classification: Not mapped as wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

None of the three criteria are present. This sample point is not located within a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 30' x 30')			
1. Cynodon dactylon	70	Y	FACU
2. Sherardia arvensis	30	Y	FAC
3. Medicago polymorpha	30	Y	FACU
4. Sonchus asper	5	N	FAC
5. Plantago virginica	15	N	FACU
6.			
7.			
8.			
9.			
10.			
	150 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 50

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

Hydrophytic vegetation is not present.

SOIL

Sampling Point: Up1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5YR3/1	90	7.5YR6/8	10	D	M	CL	Clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Hydric soil is not present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology is not present.

March 5, 2024 Project Number: 050097.00

Threatened and Endangered Species Assessment
New Braunfels National Airport
Proposed Air Traffic Control Tower 3
Guadalupe County, Texas

Prepared for:
KSA Engineers, Inc.
4833 Spicewood Springs Rd
Suite 204
Austin, TX 78759

Prepared by:
Sphere 3 Environmental, Inc.
1501 Bill Owens Parkway
Longview, Texas 75604
903-297-4673

TABLE OF CONTENTS

LIST OF ATTACHMENTS

INTRODUCTION

Sphere 3 Environmental, Inc. (Sphere 3) was retained by KSA Engineers, Inc. (KSA) to conduct an assessment of the proposed New Braunfels National Airport air traffic control tower (ATCT) 3 project in Guadalupe County, Texas to determine if suitable habitat for federally listed threatened and endangered species is present within the project area.

The proposed project area consists of an approximately 1-acre area. The proposed project is located in a maintained herbaceous community and the existing terminal parking lot.

A topographic map and aerial photographs of the project area are provided in Attachment A. Site photographs of the ATCT 3 project area are provided in Attachment B.

PURPOSE

Sphere 3 conducted a habitat assessment to determine if suitable habitat for federally listed threatened or endangered species is present within the proposed project area. Impacts to threatened and endangered species are regulated under the Endangered Species Act of 1973.

METHODOLOGY

Sphere 3 began this investigation by obtaining and reviewing the United States Fish and Wildlife Service's (USFWS) threatened and endangered species list for the specific project area located within Guadalupe County, Texas. The list of state threatened and endangered species with potential to occur in Guadalupe County was also reviewed prior to surveys; however, these species are only addressed in this report if encountered during the field surveys.

Current, 2023 species occurrence data from the Texas Parks and Wildlife Department (TPWD) in Austin, Texas along with species descriptions from the TPWD and the USFWS were reviewed prior to the field investigation. According to the USFWS web-based Information, Planning, and Conservation System (IPaC) species list, the piping plover (*Charadrius melodus*), the red knot (*Calidris canutus rufa*), and the whooping crane (*Grus americana*) are listed as threatened or endangered and have ranges that include the project area in Guadalupe County. No proposed or designated critical habitat exists within the project location.

The tricolored bat (*Perimyotis subflavus*), the false spike (*Fusconaia mitchelli*), and the Guadalupe orb (*Cyclonaias necki*) are proposed for listing as endangered species. The monarch butterfly

(*Danaus plexippus*) is listed as a candidate for listing as a threatened or endangered species in Guadalupe County. Species listed as proposed endangered, proposed threatened, and candidate are not protected by the take prohibitions of section 9 of the Endangered Species Act (ESA). However, under section 7(a)(4) of the ESA, federal agencies must confer with the USFWS if their action will jeopardize the continued existence of a proposed species.

The USFWS IPaC report states that potential impacts to the piping plover and the red knot should only be considered for wind related projects that occur within the migratory route of those species (Attachment C). The proposed project is not a wind related project; therefore, these two avian species are not addressed further in this report.

John Quine, Sphere 3 Biologist, and Sydney Moore, Sphere 3 Environmental Scientist, conducted a pedestrian survey of the project area on February 20, 2024, to document habitat types present within the project area. The proposed project area was photographed, mapped, and visually investigated for suitable habitat or signs of federally protected threatened or endangered species.

EXISTING CONDITIONS

Maintained Herbaceous Community

The majority of the proposed project area is located within a maintained herbaceous community adjacent to the terminal parking lot and other existing infrastructure. Species common to this community include Bermudagrass (*Cynodon dactylon)*, field madder (*Sherardia arvensis*), burr medic (*Medicago polymorpha*), spiny sowthistle (*Sonchus asper*), and dwarf plantain (*Plantago virginica*). Vegetation ranges from approximately 2 inches to 5 inches in height. Coverage within the herbaceous community is approximately 50 percent.

SPECIES DESCRIPTIONS AND HABITAT REQUIREMENTS

Whooping Crane

The whooping crane is easily identifiable by its snowy white body feathers, jet-black wingtips, and red and black head. The whooping crane stands almost 5 feet in height with a wingspan of 7 to 8 feet making it the largest bird in North America. This species was federally listed as endangered in 1970 (TPWD 2021).

From late April until their autumn migration around mid-September, whooping cranes are found in the marsh areas of Canada's Wood Buffalo National Park (TPWD 2021). Nests are typically large mounds of bulrushes about four feet wide with the flat-topped central mound up to 5 inches

above the water. They prefer areas deep within dense stands of bulrushes, cattails, and sedges that offer food as well as protection from predators.

The whooping cranes arrive in their principal wintering grounds in the Aransas National Wildlife Refuge (NWR) along the Texas coast between late October and mid-November. A variety of habitats are used during the whooping crane's 2400-mile migration. Typically, whooping cranes will roost standing in the shallow waters of marshes, flooded crop fields, artificial ponds, reservoirs, and rivers during their annual migration. Typical habitat used in the NWR wintering grounds includes salt flats and marshes, with some foraging occurring in adjacent gently rolling, sandy grasslands (USFWS 2007b).

Whooping cranes are diet generalists with a wide range of prey items. Preferred foods of the whooping crane can include insects, minnows, crabs, clams, crayfish, frogs, rodents, small birds, and berries (USFWS 2007b).

Tricolored Bat

The tricolored bat is currently proposed for listing as an endangered species under the Endangered Species Act. It is one of the smallest bats in eastern North America and is distinguished by its unique tricolored fur that appears dark at the base, lighter in the middle, and dark at the tip (Barbour and Davis 1969, p. 115). Tricolored bats (TCB) often appear yellowish (varying from pale yellow to nearly orange), but may also appear silvery-gray, chocolate brown, or black (Barbour and Davis 1969, p. 115). Males and females are colored alike, but females are consistently heavier than males (LaVal and LaVal 1980, p. 44).

During the spring, summer, and fall (i.e., non-hibernating seasons), TCB primarily roost among live and dead leaf clusters of live or recently dead deciduous hardwood trees (Veilleux et al. 2003, p. 1071; Perry and Thill 2007, pp. 976–977; Thames 2020, p. 32). In the southern and northern portions of the range, TCB will also roost in Spanish moss (*Tillandsia usneoides*) and *Usnea trichodea* lichen, respectively (Davis and Mumford 1962, p. 395; Poissant 2009, p. 36; Poissant et al. 2010, p. 374). In addition, TCB have been observed roosting during summer among pine needles (Perry and Thill 2007, p. 977), eastern red cedar (*Juniperus virginiana*) (Thames 2020, p. 32), within artificial roosts (e.g., barns, beneath porch roofs, bridges, concrete bunkers) (Jones and Pagels 1968, entire; Barbour and Davis 1969, p. 116; Jones and Suttkus 1973, entire; Hamilton and Whitaker 1979, p. 87; Mumford and Whitaker 1982, p. 169; Whitaker 1998, p. 652; Feldhamer et al. 2003, p. 109; Ferrara and Leberg 2005, p. 731), and rarely within caves (Humphrey et al. 1976, p. 367; Briggler and Prather 2003 p. 408; Damm and Geluso 2008, p. 384). Female TCB exhibit high site fidelity, returning year after year to the same summer roosting locations (Allen 1921, p. 54; Veilleux and Veilleux 2004, p. 197). Female TCB form maternity colonies and switch roost trees regularly (e.g., between 1.2 days and 7 days at roost trees in Indiana) (Veilleux and Veilleux 2004, p.197; Quinn and Broders 2007, p. 19; Poissant et al. 2010, p. 374). Males roost singly (Perry and Thill 2007, p. 977; Poissant et al. 2010, p. 374).

During the winter, TCB hibernate (i.e., reduce their metabolic rates, body temperatures, and heart rate) in caves and mines, although in the southern U.S., where caves are sparse, TCB often hibernate in road-associated culverts (Sandel et al. 2001, p. 174; Katzenmeyer 2016, p. 32; Limon et al. 2018, entire; Bernard et al. 2019, p. 5; Lutsch 2019, p. 23; Meierhofer et al. 2019, p. 1276)

and sometimes tree cavities (Newman 2020, p. 14) and abandoned water wells (Sasse et al. 2011, p. 126). TCB exhibit high site fidelity with many individuals returning year after year to the same hibernaculum (Davis 1966, p. 385; Jones and Pagels 1968, p. 137; Jones and Suttkus 1973, p. 964; Sandel et al. 2001, p. 175).

Hibernating TCB do not typically form large clusters; most commonly roost singly, but sometimes in pairs, or in small clusters of both sexes away from other bats (Hall 1962, p. 29; Barbour and Davis 1969, p. 117; Mumford and Whitaker 1982, p. 169; Raesly and Gates 1987, p. 19; Briggler and Prather 2003, p. 408; Vincent and Whitaker 2007, p. 62). TCB roost on cave walls (more often) and ceilings and are rarely found in cave crevices (Mumford and Whitaker 1982, p. 169). TCB will shift roosts from one to another during the winter but arouse less frequently than other cave-hibernating bat species (Barbour and Davis 1969, p. 119; Mumford and Whitaker 1982, p. 169). In road-associated culverts in the southern U.S., however, TCB exhibit shorter torpor bouts and move within and between culverts throughout the winter (Anderson et al. undated).

TCB are opportunistic feeders and consume small insects including caddisflies (Trichoptera), flying moths (Lepidoptera), small beetles (Coleoptera), small wasps and flying ants (Hymenoptera), true bugs (Homoptera), and flies (Diptera) (Whitaker 1972, p. 879; LaVal and LaVal 1980, p. 24; Griffith and Gates 1985, p. 453; Hanttula and Valdez 2021, p. 132). TCB emerge early in the evening and forage at treetop level or above (Davis and Mumford 1962, p. 397; Barbour and Davis 1969, p. 116) but may forage closer to ground later in the evening (Mumford and Whitaker 1982, p. 170). TCB forage most commonly over waterways and forest edges (Barbour and Davis 1969, p. 116; Mumford and Whitaker 1982, pp. 170–171; Hein et al. 2009, p. 1204).

Male and female TCB converge at cave and mine entrances between mid- August and mid-October to swarm and mate. Adult females store sperm in their uterus during the winter and fertilization occurs soon after spring emergence from hibernation (Guthrie 1933, p. 209). Females typically give birth to two young, rarely one or three between May and July (Allen 1921, p. 55; Barbour and Davis 1969, p. 117; Cope and Humphrey 1972, p. 9). Young grow rapidly and begin to fly at 3 weeks of age and achieve adult-like flight and foraging ability at 4 weeks (Lane 1946, p. 59; Whitaker 1998, pp. 653–655). Adults often abandon maternity roosts soon after weaning, but young remain longer (Whitaker 1998, p. 653).

Perry and Thill 2007 (p. 977) observed an average of 6.9 adult females and pups per colony in Arkansas (range 3 to 13). Maternity colonies include up to 18 females in trees in Nova Scotia (Poissant et al. 2010, p. 374). Whitaker (1998, p. 652) found colonies in buildings averaged 15 adult females (range 7 to 29 adult females). Hoying and Kunz 1998 (p. 19) reported the largest colony on record in a Massachusetts barn (19 adult females and 37 young).

Texas and Louisiana fall into the southern representative unit (RPU) of the TCB. Southern TCB exhibit shorter hibernation lengths and some remain active and feed year round (Grider et al. 2016, p. 8; Newman 2020, pp. 13–17). The Southern RPU is predominantly marked by subtropical climate conditions, high humidity (especially in summer), and the absence of harsh cold winters. Southern TCB may benefit from reduced physiological pressures associated with maintaining torpor during long harsh winters and in turn have higher survival rate (Fraser et al.

2012, p. 6). Southern TCB are also unique in their frequent exploitation of road-associated culverts as winter hibernacula in the southern U.S. As discussed in *Individual-level Ecology and Needs*, culverts account for most hibernacula documented in Mississippi, Georgia, and Louisiana (Limon et al. 2018, entire; NABat 2021). Researchers have hypothesized that utilizing culverts coupled with sub-tropical climate conditions will lead to TCB exhibiting frequent arousal and foraging events during winter (Castleberry et al. 2019, p. 2). If TCB utilizing culverts are exhibiting increased winter activity related to foraging or otherwise, these euthermic bouts could significantly reduce their susceptibility to WNS (Cornelison et al. 2019, p. 3).

During the summer, Southern TCB predominantly roost in foliage of live or recently dead deciduous hardwood trees (see *Individual-level Ecology and Needs*); however, TCB will also roost in Spanish moss (Davis and Mumford 1962, p. 395).

False Spike

The false spike is currently proposed as endangered under the Endangered Species Act. The false spike is a medium sized freshwater mussel that typically grows up to 5 inches in length, although individuals greater than this length have been collected.

The colors of the shell range from brown, black and yellow green. The nacre (shell surface) is typically white. The muscle has an elongated oval to sub-rhomboidal shell. The beak of the shell is located above the hinge line and the umbo is composed of double-loop sculpturing. The disc of the shell is composed of parallel dorsal-to-ventral grooves, pustules, and slight flutes on the posterior.

A suitable habitat for the false spike is composed of slowly flowing water with heterogenous mixtures of gravel, cobble, or sand. Adequate dissolved minerals, mainly calcium, and a salinity of less than two parts per thousand is required to support shell growth.

To breed, male false spike release their sperm into the water column, which is then taken in by the female, fertilizing her eggs. The female holds developing larvae until they become mature. Once ready for release, the glochidia (mature larvae) are released within proximity to a fish host. There are two fish species that have been identified as hosts. The red shiner (*Cyprinella lutrensis*) and blacktail shiner (*Cyprinella venusta*). It is likely there are other species of fish that act as hosts. The glochidia attach to the gills or fins of the host fish; failure to attach to a host or an attachment in the wrong location results in death. Glochidia that successfully attach to a host, will implant into the host and over a period of weeks or months, develop into juvenile mussels. The juveniles, once fully developed, break from the host (leaving the host relatively unharmed) and settle on the bottom of the stream (USFWS 2021).

False spikes are filter feeders, like all other freshwater muscles species. They feed on algae, particle matter, and bacteria that are filtered through the water column. Juvenile mussels live in sediment and rather than feeding from the water column, feed interstitially. To do this, a relatively

large muscular foot is used to sweep both inorganic and organic particles from the substrate into the opening of the shell.

Guadalupe Orb

Found exclusively in the Guadalupe River Basin, the Guadalupe orb is a unique and rare species first identified in 2018 (Burlakova 2018). The Guadalupe orb was initially thought to be a variation of the Texas pimpleback, found in the Colorado River. In September 2021, the Guadalupe orb was proposed for listing as endangered under the Endangered Species Act by the United States Fish and Wildlife Service. Both the San Marcos and Guadalupe Rivers have been designated as critical habitat. This mussel, along with five others, are facing declines in population due to habitat destruction and declining water quality.

A medium sized freshwater mussel, the Guadalupe orb has an offset hinge, rounded edges and is most commonly black or yellow to brown in color, often with green lines running from the hinge to the edge of the shell. Uniquely sculptured distortions are frequently found on this species (Howells 2014).

Spawning for the Guadalupe orb occurs between March and June (Dudding 2020). Shortly before spawning begins, the mussels begin to hold mature glochidia (larval stage mussels). Shortly after the glochidia mature, they are released by the Guadalupe orb, attach to the gills and fins of a variety of catfish fish hosts (Dudding 2018). Failure to attach to a host will result in death. After about a month, the glochidia that have attached become juvenile and fall onto the waterbody substrate where they burrow, for protection and continue to develop into adult mussels where they will have a lifespan of at least 15 years (Howells 2010d).

Adult Guadalupe orbs, like other freshwater mussels, are filter feeders. To feed, they filter small organisms, plankton, and organic matter. Juvenile glochidia receive nutrients from the gills of the fish host they inhabit.

Adult mussels have specific habitat requirements. They are found in the runs and riffles of moderately sized rivers in a water depth of .5 to 1 meter, with substrates of cobble, silt and mud. The mussel requires a dissolved oxygen concentration of at least 2 milligrams per liter (mg/L), water temperatures of no more than 79 degrees Fahrenheit, and a total ammonia concentration of .5 mg/L or less.

Monarch Butterfly

The monarch butterfly was listed as a candidate for federal status as a threatened or endangered species on December 17, 2020. The monarch, *Danaus plexippus*, is a species of butterfly in the order Lepidoptera (family Nymphalidae) that occurs in North, Central, and South America; Australia; New Zealand; islands of the Pacific and Caribbean, and elsewhere (Malcolm and Zalucki 1993). Adult monarch butterflies are large and conspicuous, with bright orange wings

surrounded by a black border and covered with black veins. The black border has a double row of white spots, present on the upper side and lower side of forewings and hindwings (Bouseman and Sternburg 2001). Adult monarchs are sexually dimorphic, with males having narrower wing venation and scent patches (CEC 2008). The bright coloring of a monarch is aposematic, as it serves as a warning to predators that eating them can be toxic (USFWS 2020).

During the breeding season, monarchs lay their eggs on their obligate milkweed host plant (primarily *Asclepias* spp.), and larvae emerge after two to five days (Zalucki 1982; CEC 2008). Larvae develop through five larval instars (intervals between molts) over a period of 9 to 18 days, feeding on milkweed and sequestering toxic cardenolides as a defense against predators (Parsons 1965). The larva then pupate into chrysalis before emerging 6 to 14 days later as an adult butterfly. There are multiple generations of monarchs produced during the breeding season, with most adult butterflies living approximately two to five weeks; overwintering adults enter into reproductive diapause (suspended reproduction) and live six to nine months (Cockrell et al. 1993; Herman and Tatar 2001).

In many regions where monarchs are present, monarchs breed year-round, repeatedly following the above-referenced life cycle throughout the year (USFWS 2020). Individual monarchs in temperate climates, such as eastern and western North America, undergo long-distance migration, where the migratory generation of adults is in reproductive diapause and lives for an extended period of time (Herman and Tatar 2001). In the fall, in both eastern and western North America, monarchs begin migrating to their respective overwintering sites. This migration can take monarchs distances of over 3,000 km (Urquhart and Urquhart 1978) and last for over two months (Brower 1996). Migratory individuals in eastern North America predominantly fly south or southwest to mountainous overwintering grounds in central Mexico, and migratory individuals in western North America generally fly shorter distances south and west to overwintering groves along the California coast into northern Baja California (Solensky 2004).

Adult monarch butterflies during breeding and migration require a diversity of blooming nectar resources, which they feed on throughout their migration routes and breeding grounds (spring through fall). Monarchs also need milkweed (for both oviposition and larval feeding) embedded within this diverse nectaring habitat (USFWS 2020). The correct phenology, or timing, of both monarchs and nectar plants and milkweed is important for monarch survival. The position of these resources on the landscape is important as well. In western North America, nectar and milkweed resources are often associated with riparian corridors, and milkweed may function as the principal nectar source for monarchs in more arid regions (Dingle et al. 2005; Pelton et al. 2018; Waterbury and Potter 2018; Dilts et al. 2018). Individuals need nectar and milkweed resources year-round in nonmigratory populations. Additionally, many monarchs use a variety of roosting trees along the fall migration route (USFWS 2020).

POTENTIAL EFFECTS DETERMINATION

Whooping Crane

According to the USFWS IPaC report, critical habitat has been designated for this species. However, the project area does not overlap the critical habitat.

No whooping cranes were identified within the project area, and no suitable roosting or foraging habitat is present.

Due to the absence of suitable roosting and/or foraging habitat and the temporary use of migratory habitat, it is unlikely that this species would utilize the project area. It is Sphere 3's opinion that proposed construction activities will have no effect on this species.

Tricolored Bat

According to the USFWS IPaC report, no critical habitat has been designated for this species.

No trees or artificial roosts are present within the project area. Suitable habitat for this species is not present within the project area.

It is Sphere 3's opinion that no effects to the tricolored bat will result from the proposed construction.

False Spike

According to the USFWS IPaC report, critical habitat has been proposed for this species. However, the project area does not overlap the proposed critical habitat.

No aquatic environments are located within or near the proposed project area. There is no suitable habitat for this species located in the project area.

It is Sphere 3's opinion that any proposed construction within the project area will have no effect on this species.

Guadalupe Orb

According to the USFWS IPaC report, critical habitat has been proposed for this species. However, the project area does not overlap the proposed critical habitat.

No aquatic environments are located within or near the proposed project area. There is no suitable habitat for this species located in the project area.

It is Sphere 3's opinion that any proposed construction within the project area will have no effect on this species.

Monarch Butterfly

Since the monarch butterfly is a candidate for listing, no critical habitat has been designated for this species within the project area.

Monarch butterflies require a diversity of blooming nectar resources, which they feed on throughout their migration routes and breeding grounds, along with embedded milkweeds for both oviposition and larval feeding. No milkweeds, which are necessary for the reproduction of this species, were identified within the project area.

It is Sphere 3's opinion that any proposed construction within the project area will have no effect on this species.

SUMMARY

Sphere 3 investigated the New Braunfels National Airport ATCT 3 project area for suitable habitat and potential presence of federally protected threatened or endangered species.

Based on the results of the field investigation and our interpretation of the best available data for the listed species, Sphere 3 concludes that construction activities associated with the New Braunfels National Airport ATCT 3 project will have no effect on the whooping crane, tricolored bat, false spike, Guadalupe orb, or the monarch butterfly.

LITERATURE CITED

Bonner, T.H., E.L. Oborny, B.M. Littrell, J.A. Stoeckel, B.S. Helms, K.G. Ostrand, P.L. Duncan, and J. Conway. 2018. Multiple freshwater mussel species of the Brazos River, Colorado River, and Guadalupe River basins. CMD 1 - 6233CS. Final Report to Texas Comptroller of Public Accounts. February 28, 2018. 306 pp.

Bouseman JK, Sternburg JG. 2001. Field guide to butterflies of Illinois. Illinois Natural History Survey. Champaign, IL.

Brower LP. 1996. Monarch butterfly orientation: Missing pieces of a magnificent puzzle. Journal of Experimental Biology 199:93-103.

Burlakova, L., Karatayev, A., Froufe, E., Bogan, A.E., and Lopes-Lima, M. "The Nautilus 132(2)." 2018. 45-50. 23 February 2024.

[CEC] Secretariat of the Commission for Environmental Cooperation. 2008. North American monarch conservation plan. Communications Department of the Center for Environmental Cooperation Secretariat.

Cockrell BJ, Malcolm SB, Brower LP. 1993. Time, temperature, and latitudinal constraints on the annual recolonization of eastern North America by the monarch butterfly. Pp. 233-251 in Malcolm SB, Zalucki MP, eds. Biology and Conservation of the Monarch Butterfly. Natural History Museum of Los Angeles County, Science Series 38.

Cummings, Kevin and Dan Graf. *The MUSSEL Project*. 2013. 22 February 2024.

Dilts TE, Steele M, Black S, Craver D, Cruz E, Engler J, Jepsen S, Jones A, McKnight S, Pelton E, Taylor A, and Forister M. 2018. Western Monarch and Milkweed Habitat Suitability Modeling Project Version 2 – Maxent Model Outputs. Xerces Society/US Fish and Wildlife Service/University of Nevada Reno. Retrieved from: www.monarchmilkweedmapper.org/

Dingle H, Zalucki MP, Rochester WA, Armijo-Prewitt T. 2005. Distribution of the monarch butterfly, Danaus plexippus (L.) (Lepidoptera: Nymphalidae), in western North America. Biological Journal of the Linnean Society 85:491-500.

Dudding, J. Hart, M., Khan, J.M., Robertson, C.R., Lopez, R., and Randklev, C.R. "Reproductive life history of 2 imperiled and 1 widely distributed freshwater mussel species from the southwestern United States." *Freshwater Science* 39.1 (n.d.). 23 February 2024.

Dudding, J., Hart, M., Morton, J., Robertson, C., Conway, K., Lopez, R., and Randklev, C. "Host fish association for two highly imperiled mussel species from the southwestern United States: Fusconaia mitchelli (false spike) and Cyclonaias petrina (Texas Pimpleback)." 2018. 23 February 2024.

Guadalupe-Blanco River Authority. *Guadalupe Orb*. 30 March 2022. 24 February 2024.

Herman WS, Tatar M. 2001. Juvenile hormone regulation of longevity in the migratory monarch butterfly. Proceedings of the Royal Society B-Biological Sciences 268:2509-2514.

Howells, R.G. "False spike (Quadrula mitchelli): Summary of Selected Biological and Ecological Data for Texas." *BioStudies* 16 (2010d). 23 February 2024.

Howells, R.G. *Field Guide to Texas Freshwater Mussels, 2nd edition*. 2014. 23 February 2024.

Howells, R.G., Neck, R.W.. and Murray, H.D. *Freshwater Mussels of Texas*. Austin: Texas Parks and Wildlife Department Inland Fisheries Division, 1996. 23 February 2024.

Malcolm SB, Zalucki MP. 1993. The monarch butterfly: Research and conservation. Pp. 3-8 in Malcolm SB, Zalucki MP, eds. Biology and Conservation of the Monarch Butterfly. Natural History Museum of Los Angeles County, Science Series 38.

Parsons JA. 1965. A digitalis-like toxin in monarch butterfly Danaus plexippus L. Journal of Physiology-London 178:290-304.

Pelton E, McKnight S, Fallon C, Code A, Hopwood J, Hoyle S, Jepsen S, Black SH. 2018. Managing for monarchs in the West: Best management practices for conserving the monarch butterfly and its habitat. Portland, OR: The Xerces Society for Invertebrate Conservation. vi + 106 pp.

Randklev, C. R., Johnson, N.A., Miller, T., Morton, J.M., Dudding, J., Skow, J., Boseman, B., Hart, M., Tsakiris. E.T., Inoue, K. and Lopez. R. R. *Freshwater Mussels (Unionidae): Central and West Texas Final Report*. 2017c. 23 February 2024.

Service, U.S. Fish & Wildlife. *False Spike*. 2013. 22 February 2024.

Solensky MJ. 2004. Overview of monarch migration. Pp. 79-83 in Oberhauser KS, Solensky MJ, eds. The Monarch Butterfly: Biology and Conservation. Ithaca, NY: Cornell University Press.

Texas Parks and Wildlife (TPWD). 2021. Whooping Crane (*Grus americana*) at; https://tpwd.texas.gov/huntwild/wild/species/whooper/. Texas Parks and Wildlife Department. Accessed April 08, 2021.

Texas Parks and Wildlife Department. 2021. Golden-cheeked Warbler (Dendroica chrysoparia) Fact Sheet; Available at https://tpwd.texas.gov/huntwild/wild/species/ Accessed on 04-13-2021. TPWD, 4200 Smith School Road, Austin, Texas, USA.

Texas Parks and Wildlife Department. Undated. Golden-cheeked Warbler (Dendroica chrysoparia) Fact Sheet; Private collection. TPWD, 4200 Smith School Road, Austin, Texas, USA.

Texas Parks and Wildlife. *Fountain Darter (Etheostoma fonticola)*. Undated. 26 February 2024.

Turgeon, D. D., A. E. Bogan, E. V. Coan, W. K. Emerson, W. G. Lyons, W. Pratt, et al. "Common and Scientific Names of Aquatic Invertebrates from the United States and Canada: Mollusks." *American Fisheries Society Special Publication* (1988): vii + 277. 22 February 2024.

Turgeon, D. D., J. F. Quinn, Jr., A. E. Bogan, E. V. Coan, F. G. Hochberg, W. G. Lyons, et al. "Common and scientific names of aquatic invertebrates from the United States and Canada: Mollusks, 2nd ed." *American Fisheries Society Special Publication 26* (1998): 526. 22 February 2024.

U.S. Fish and Wildlife Service (USFWS). "1 Draft Recovery Plan Revisions for 25 Species in 15 States Across the United States." *Federal Register* (2019): 38288-38291. 26 February 2024.

U.S. Fish and Wildlife Service (USFWS). "5-Year Reviews of 28 Southwestern Species." *Federal Register* (2008): 14995-14997. 26 February 2024.

U.S. Fish and Wildlife Service (USFWS). "Appendix D - United States List of Endangered Native Fish and Wildlife." *Federal Register* 35.199 (1970): 16048. 26 February 2024.

U.S. Fish and Wildlife Service (USFWS). "ETWP; Proposal of Critical Habitat for Four Species in Texas." *Federal Register* 45.55 (1980): 16047. 24 February 2024.

U.S. Fish and Wildlife Service (USFWS). "Initiation of 5- Year Status Reviews of 10 Species in Arizona, Arkansas, Kansas, Missouri, New Mexico, Oklahoma, Texas, and Mexico." *Federal Register* (2020). 26 February 2024.

U.S. Fish and Wildlife Service (USFWS). "Notice of Proposed Rule Making (Conservation of Endangered Species and Other Fish or Wildlife)." 35.165 (1970): 13519. 26 February 2024.

U.S. Fish and Wildlife Service (USFWS). 2023. IPaC – Information for Planning and Consultation. http://ecos.fws.gov/ipac/ Accessed March 5, 2024.

U.S. Fish and Wildlife Service (USFWS). *Species Status Assessment Report for the Central Texas Mussels: False Spike (Fusconaia mitchelli), Texas Fatmucket (Lampsilis bracteata), Texas Fawnsfoot (Truncilla macrodon), Texas Pimpleback (Cyclonaias petrina), Guadalupe Fatmucket (Lampsilis sp. Cf. b*. Alburquerque, 2018. 23 February 2024.

U.S. Fish and Wildlife Service (USFWS). 2007b. International recovery plan for the whooping crane (*Grus americana*). Ottawa: Recovery of Nationally Endangered Wildlife (RENEW), and U.S. Fish and Wildlife Service, Albuquerque, New Mexico. 162 pp.

U.S. Fish and Wildlife Service (USFWS). 2019. Species status assessment report for the Central Texas Mussels, Version 1.5. December 2019. Albuquerque, NM.

U.S. Fish and Wildlife Service (USFWS). 2020. Monarch (Danaus plexippus) Species Status Assessment Report. V2.1 96 pp + appendices.

Urquhart FA, Urquhart NR. 1978. Autumnal migration routes of the eastern population of monarch butterfly (Danaus p. plexippus L.; Danaidae; Lepidoptera) in North America to the overwintering site in the Neovolcanic Plateau of Mexico. Canadian Journal of Zoology 56:1759- 1764.

Waterbury B, Potter A. 2018. Integrating strategic conservation approaches for the monarch butterfly in the State Wildlife Action Plans of Idaho and Washington. Final report prepared for the U.S. Fish & Wildlife Service. 79 pp.

Zalucki MP. 1982. Temperature and rate of development in Danaus-plexippus L and D. chrysippus L (Lepidoptera, Nymphalidae). Journal of the Australian Entomological Society 21:241-246.

Attachment A:

Figures

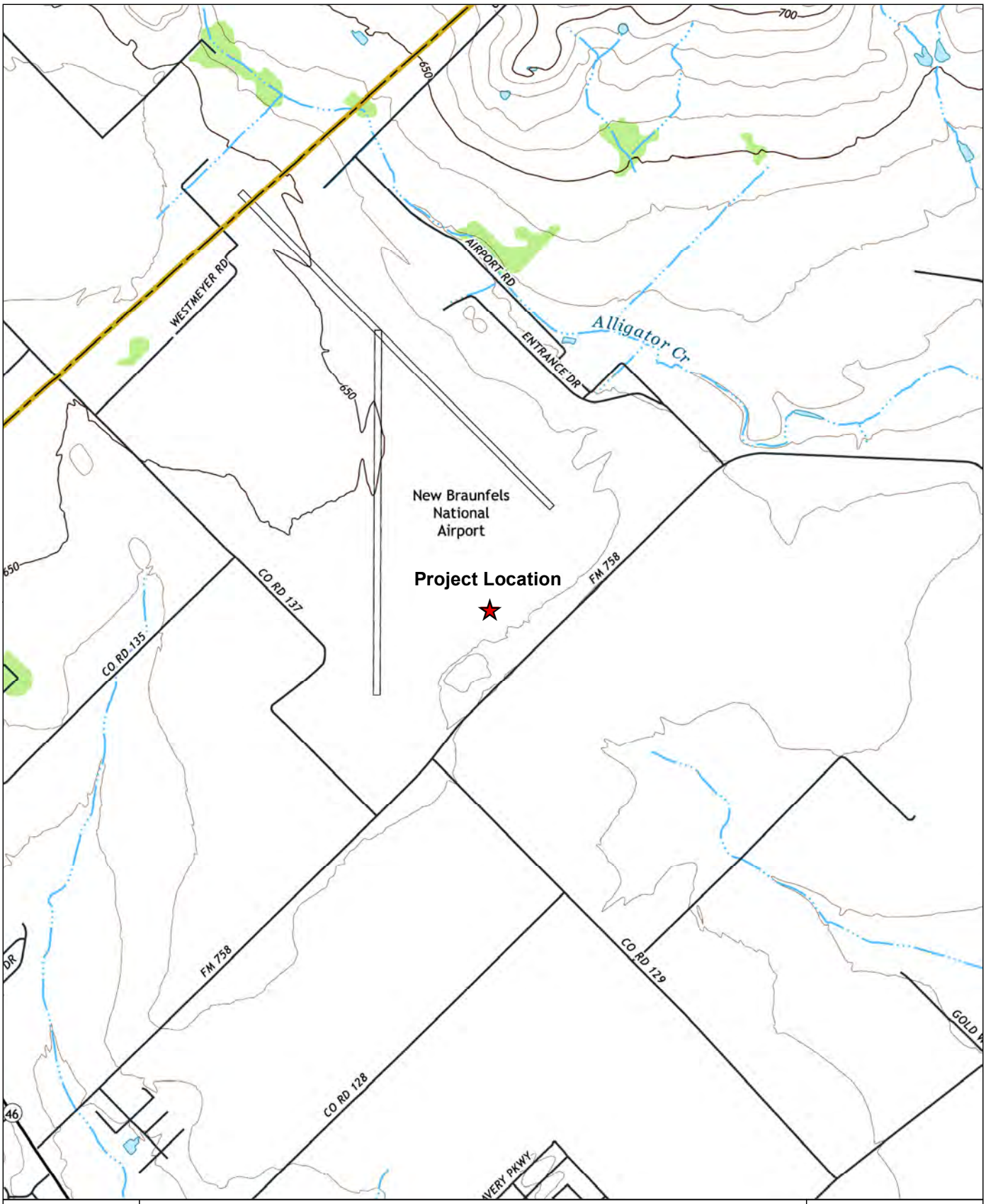


Figure 1
Topographic Features of the Proposed ATCT 3
in Guadalupe County, TX

N
W E
S

Feet
0 1,000 2,000 4,000 6,000 8,000

KSA Engineers, Inc. Project Number: 050097.00	Date: 02/20/2024	Base Map: USGS 7.5 Minute Topographic Quadrangle: New Braunfels East, TX (Published 2022)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

Figure 2
Aerial Photograph of the Proposed ATCT 3
in Guadalupe County, TX

N
W E
S

0 50 100 200 300 Feet

KSA Engineers, Inc. Project Number: 050097.00	Date: 02/20/2024	Base Map: NRCS Geospatial Data Gateway 2022 NAIP Aerial Imagery (Guadalupe County,TX)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

Attachment B:

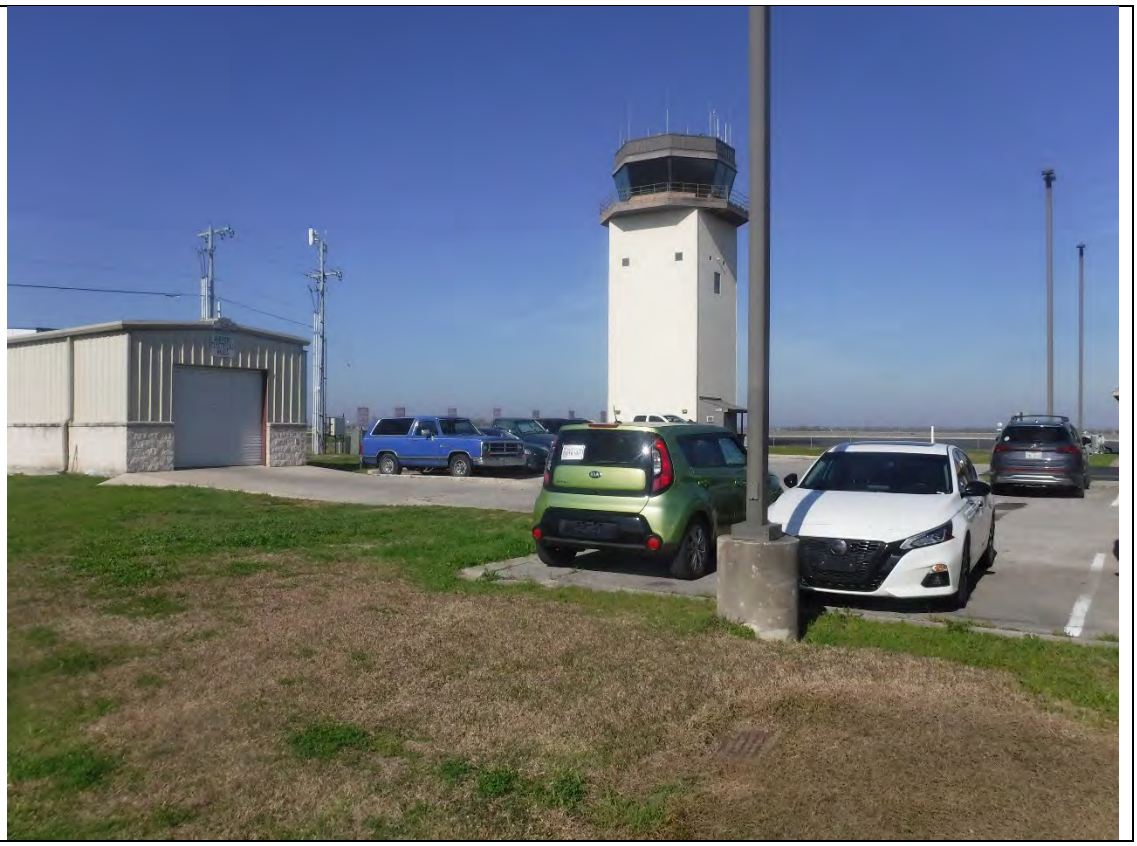
Project Photographs

Photograph: 1

Date:
February 20, 2024

County Name:
Guadalupe County, Texas

Description:
Photograph showing portions of the proposed project area within the existing infrastructure near the airport terminal.



Photograph: 2

Date:
February 20, 2024

County Name:
Guadalupe County, Texas

Description:
Photograph showing the herbaceous layer within the proposed project area adjacent to the existing terminal parking lot.

Attachment C:

USFWS IPaC Official T&E List

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Austin Ecological Services Field Office
1505 Ferguson Lane
Austin, TX 78754-4501
Phone: (512) 937-7371

In Reply Refer To: March 05, 2024
Project Code: 2024-0058048
Project Name: New Braunfels National Airport - Proposed Air Traffic Control Towers 1, 2, & 3

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through IPaC by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see Migratory Bird Permit | What We Do | U.S. Fish & Wildlife Service (fws.gov).

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Austin Ecological Services Field Office
1505 Ferguson Lane
Austin, TX 78754-4501
(512) 937-7371

PROJECT SUMMARY

Project Code: 2024-0058048

Project Name: New Braunfels National Airport - Proposed Air Traffic Control Towers 1, 2, & 3

Project Type: Airport - Maintenance/Modification

Project Description: Client proposes to construct a new air traffic control tower on one of three potential sites within the footprint of the existing New Braunfels National Airport.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@29.7027961,-98.04182683220827,14z

Counties: Guadalupe County, Texas

ENDANGERED SPECIES ACT SPECIES

There is a total of 7 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 2 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

BIRDS

NAME	STATUS
Piping Plover *Charadrius melodus* Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is **final** critical habitat for this species. Your location does not overlap the critical habitat. This species only needs to be considered under the following conditions: ▪ Wind Energy Projects Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Rufa Red Knot *Calidris canutus rufa* There is **proposed** critical habitat for this species. This species only needs to be considered under the following conditions: ▪ Wind Energy Projects Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened
Whooping Crane *Grus americana* Population: Wherever found, except where listed as an experimental population There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/758	Endangered

CLAMS

NAME	STATUS
False Spike *Fusconaia mitchelli* There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3963	Proposed Endangered
Guadalupe Orb *Cyclonaias necki* Population: There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/10781	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: John Quine
Address: 1501 Bill Owens Parkway
City: Longview
State: TX
Zip: 75604
Email quine@sphere3env.com
Phone: 9032974673

CULTURAL RESOURCES INVESTIGATION REPORT OF THE PROPOSED NEW BRAUNFELS NATIONAL AIRPORT PROPOSED ATCT 3 LOCATION GUADALUPE COUNTY, TEXAS

Texas Antiquities Permit Number 31606

Prepared for:
KSA Engineers, Inc.
4833 Spicewood Springs Road
Suite 204
Austin, Texas 78759
512.342.6868

Prepared by:
Sphere 3 Environmental, Inc.
1501 Bill Owens Parkway
Longview, Texas 75604
903.297.4673

Principal Investigator:
James S. Belew, RPA

Authored by:
James S. Belew, RPA and Michael Ryan

March 2024

ABSTRACT

Sphere 3 Environmental, Inc. (Sphere 3) conducted an intensive pedestrian cultural resources survey of approximately 0.37 hectare (0.91 acre) of land designated as the Area of Potential Effects (APE) in response to the proposed undertaking to construct a new control tower location at the New Braunfels National Airport in Guadalupe County, Texas. KSA Engineers, Inc. retained Sphere 3 to conduct a cultural resources survey of the proposed ATCT 3 potential tower location. The project area is situated wholly within the City of New Braunfels, Texas. The Texas Historical Commission issued Texas Antiquities Permit Number 31606 on behalf of the airport. Sphere 3's field crew, led by James S. Belew, RPA, Principal Investigator, conducted field investigations on February 20, 2024.

The cultural resources survey was conducted to identify properties eligible for inclusion in the National Register of Historic Places or listing as a State Antiquities Landmark. A total of 3 shovel tests were excavated across the project area. No archaeological sites or isolated finds were identified by the survey. All documents associated with this investigation were curated at the Texas Archeological Research Laboratory in Austin, Texas. Sphere 3 therefore recommends that construction of the proposed New Braunfels National Airport Control Tower ATCT 3 Location proceed as planned without further cultural resource investigations.

TABLE OF CONTENTS

FIGURES

APPENDICES

INTRODUCTION

The New Braunfels National Airport is currently conducting a siting study to determine the location for a new air traffic control tower (ATCT). The ATCT 3 potential tower location, designated as the project area or area of potential effect, is approximately 0.37 hectare (ha) (0.91 acre [ac]) of land on airport property in the City of New Braunfels, Guadalupe County, Texas (Figures 1 and 2). Sphere 3 Environmental, Inc. (Sphere 3) was retained by KSA Engineers, Inc. (KSA) to determine whether any cultural resources eligible for inclusion in the National Register of Historic Places (NHRP) and/or eligible for designation as a State Antiquities Landmark (SAL) will be adversely impacted by proposed construction activities at the ATCT 3 location. Federal involvement in the project was triggered by compliance with Federal Aviation Administration requirements. A Texas Antiquities Permit was required because the New Braunfels National Airport is owned by the City of New Braunfels, Texas, which is considered a political subdivision of the State of Texas and therefore falls within the regulatory authority of the Texas Historical Commission (THC). The project is designed to comply with the Texas Antiquities Code, the National Historic Preservation Act of 1966 (Public Law [PL] 89-665), as amended in 1974 (PL 97-442), 1976 and 1980, and the National Environmental Policy Act of 1969 (PL 81-190, 83 Stat. 915, 42 USC 4321, 1970). These investigations are also designed to comply with the Council of Texas Archeologists (CTA) standards and guidelines.

Proposed construction includes a control tower no more than 43.59 meters (m) (143 feet [ft]) high, a small parking lot, fencing, utilities, and drainage improvements within a 60.96 by 60.96 m (200 by 200 ft) area. The maximum depth of proposed soil disturbance is 30.48 meters (m) (100 feet [ft]) for geotechnical borings. To identify any historic and/or archaeological properties existing within the project area, Sphere 3 developed a scope of work for a Phase I intensive cultural resources survey. The THC accepted this proposed scope and issued Texas Antiquities Permit Number 31606 on behalf of the New Braunfels National Airport. Sphere 3 conducted the fieldwork on February 20, 2024. No inclement weather was encountered during the project. The work was carried out by a two-person crew consisting of Jay Belew, Principal Investigator, and Michael Ryan, Field Director. The field documents and report will be permanently curated at the Texas Archeological Research Laboratory (TARL), University of Texas at Austin, located in Austin, Texas.

The project area was visually inspected by pedestrian survey at a maximum of 30 m (98.4 ft) transect intervals. A total of 3 shovel tests were excavated across the project area. No archaeological sites or isolated finds were identified by the survey. Sphere 3 therefore recommends that construction of the proposed New Braunfels National Airport Control Tower ATCT 3 Location proceed as planned without further cultural resource investigations.

DEFINITION OF STUDY AREA

The project area consists of a square 0.37 ha (0.91 ac) area on nearly level uplands very gently sloping to the south and the east toward Alligator Creek (Figure 2), approximately 0.78 kilometers (0.48 mile) to the northeast. The project area lies mostly with an open field south of the airport terminal building and parking lot (Appendix B: Photographs 1 and 2). The northern corner of the project area does extend into the existing parking lot and encompasses a small building labeled Airport Electrical Vault. The southwestern edge of the project area also crosses

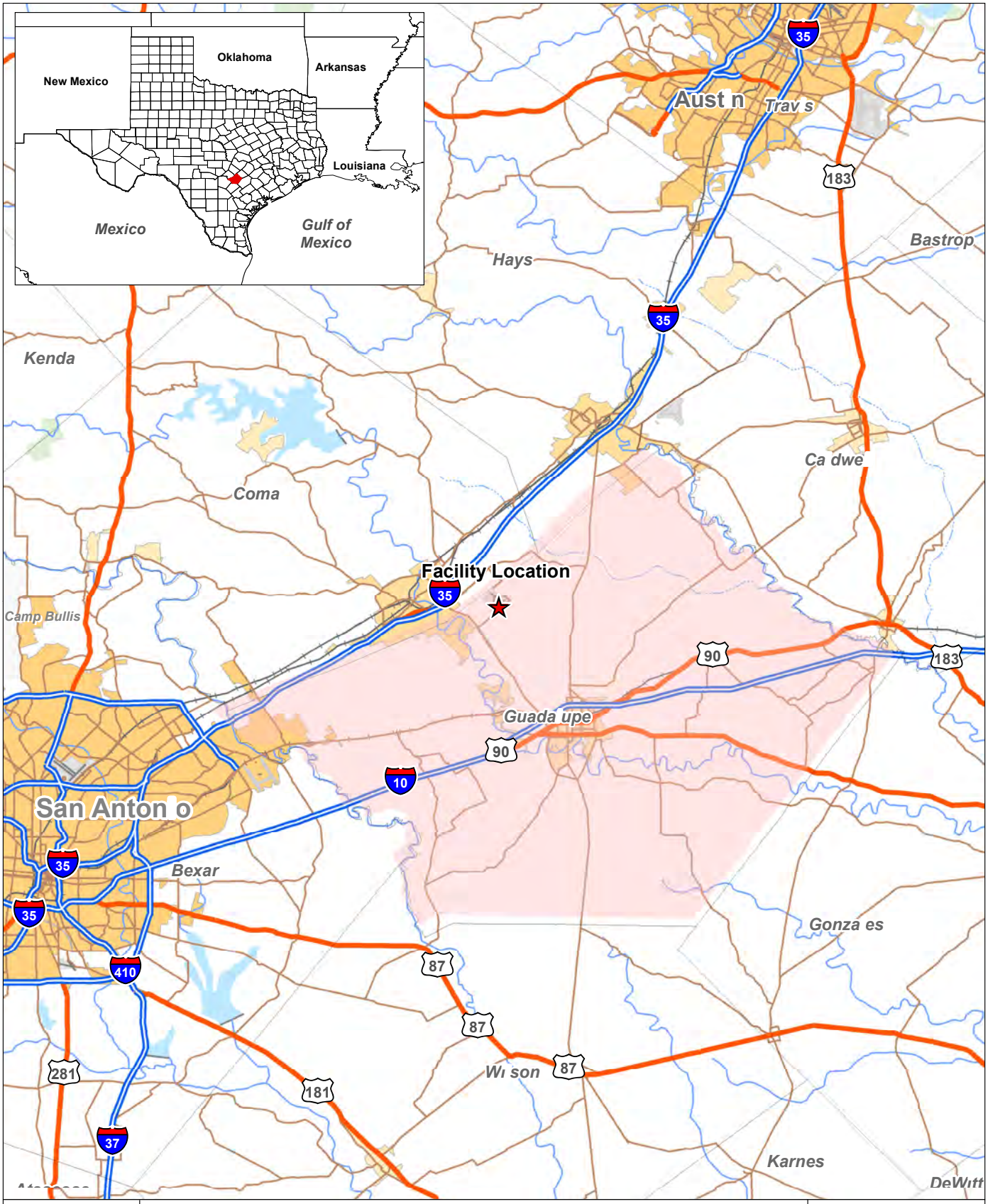


Figure 1
Vicinity Map of the New Braunfels National Airport
Proposed ATCT 3 Location in Guadalupe County, TX

Kilometers
0 10 20 40 60
Miles
0 5 10 20 30 40

KSA Engineers, Inc.
Project Number: 050097.00

Date: 02/20/2024

Coordinate System: NAD 1983
UTM Zone 14 North

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

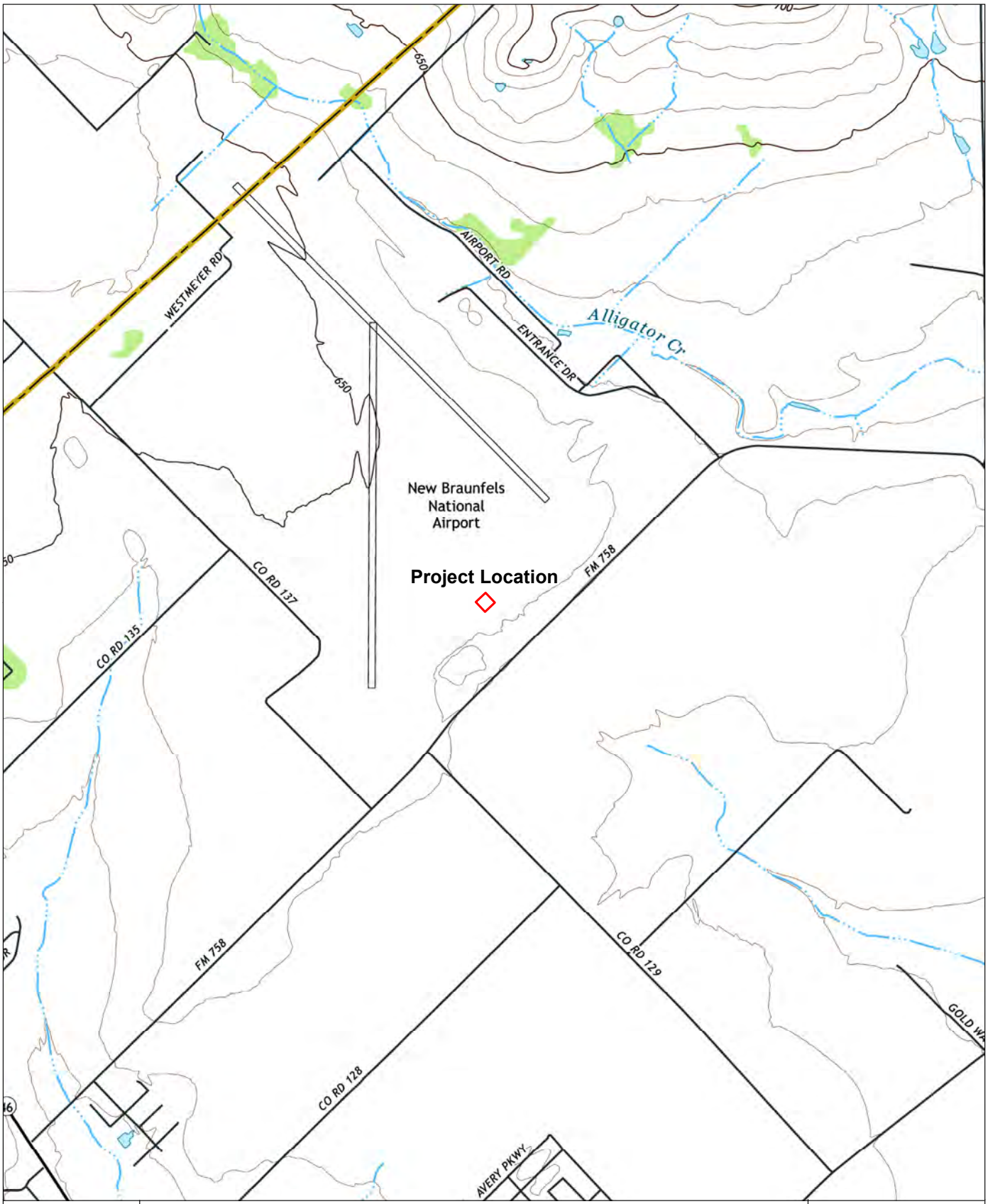


Figure 2
Topographic Features of the New Braunfels National Airport
Proposed ATCT 3 Location in Guadalupe County, TX

N
W E
S

Meters
0 300 600 1,200 1,800 2,400
Feet
0 1,000 2,000 4,000 6,000 8,000

KSA Engineers, Inc. Project Number: 050097.00	Date: 02/20/2024	Base Map: USGS 7.5 Minute Topographic Quadrangle: New Braunfels East, TX (Published 2022)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

a northwest/southeast running paved road. The project area is bound on the southwest, south, southeast, and east by a continuation of the open field. The project area is bounded on the north by the terminal building and parking lot. The project area is in New Braunfels, Texas and is owned solely by the New Braunfels National Airport.

The project area lies within the Texan biotic province, one of seven recognized by Blair (1950) and Dice (1943) for the state of Texas based on ecological associations of a relatively stable assemblage of plants and animals. This ecotone describes a region characterized by tall grass prairies supported by clay soils or sandy soils and oak hickory forests; the dominating species being post and blackjack oaks, and hickory. Vegetation within the project area consisted of mowed grass.

According to the Natural Resources Conservation Service's Web Soil Survey, the project is located on Branyon clay, 0 to 1 percent slopes. This soil is moderately well drained and formed in calcareous clayey alluvium derived from mudstone of Pleistocene age. The typical soil profile consists of clay from 0 to 203 centimeters. (USDA 2024).

PREVIOUS INVESTIGATIONS

Based on a site file search of the Texas Archaeological Sites Atlas database and literature search and records review, the proposed project area will not impact any previously recorded archaeological sites or other recorded cultural resources. No previously recorded archaeological sites or historic properties listed on the NRHP were found to be mapped within one kilometer of the project area. One previously recorded cultural resources survey was found to be mapped within one kilometer (Figure 3). Very little information was available about this survey in TASA. The survey, Atlas Number 8400001064, was conducted in 1998 by the GBRA (most likely the Guadalupe-Blanco River Authority). The survey is approximately one kilometer (0.62 mile) to the east of the project area.

RESEARCH DESIGN

Sphere 3 performed all necessary cultural resources investigations in connection with the New Braunfels National Airport Proposed Control Tower ATCT 3 Location construction undertaking. These investigations were conducted to locate prehistoric and historic cultural resources sites within the property, delineate the vertical and horizontal extent of each site, and make preliminary evaluations of each site's integrity and potential for SAL designation and/or NRHP eligibility.

Prior to initiating the fieldwork, Sphere 3 acquired a Texas Antiquities Permit. Sphere 3 conducted a records search for SALs, Historic Markers, properties listed on or eligible for inclusion in the NRHP, previously recorded sites documented at TARL, as officially managed by THC, previous survey reports available online through the Texas Archeological Site Atlas. Topographic maps, aerial images, and Google Earth imagery from the past 99 years were analyzed for modern and historic impacts to the property.

The pedestrian cultural resources survey relied on both visual examination and shovel testing. The visual examination focused on areas with exposed soil surfaces (e.g., tire tracks, animal disturbances, etc.). Per the THC's standards, a project area measuring 0.37 ha (0.91 ac) requires a minimum of 2 shovel tests. One shovel test was to be excavated in the east corner and the other in the west corner.

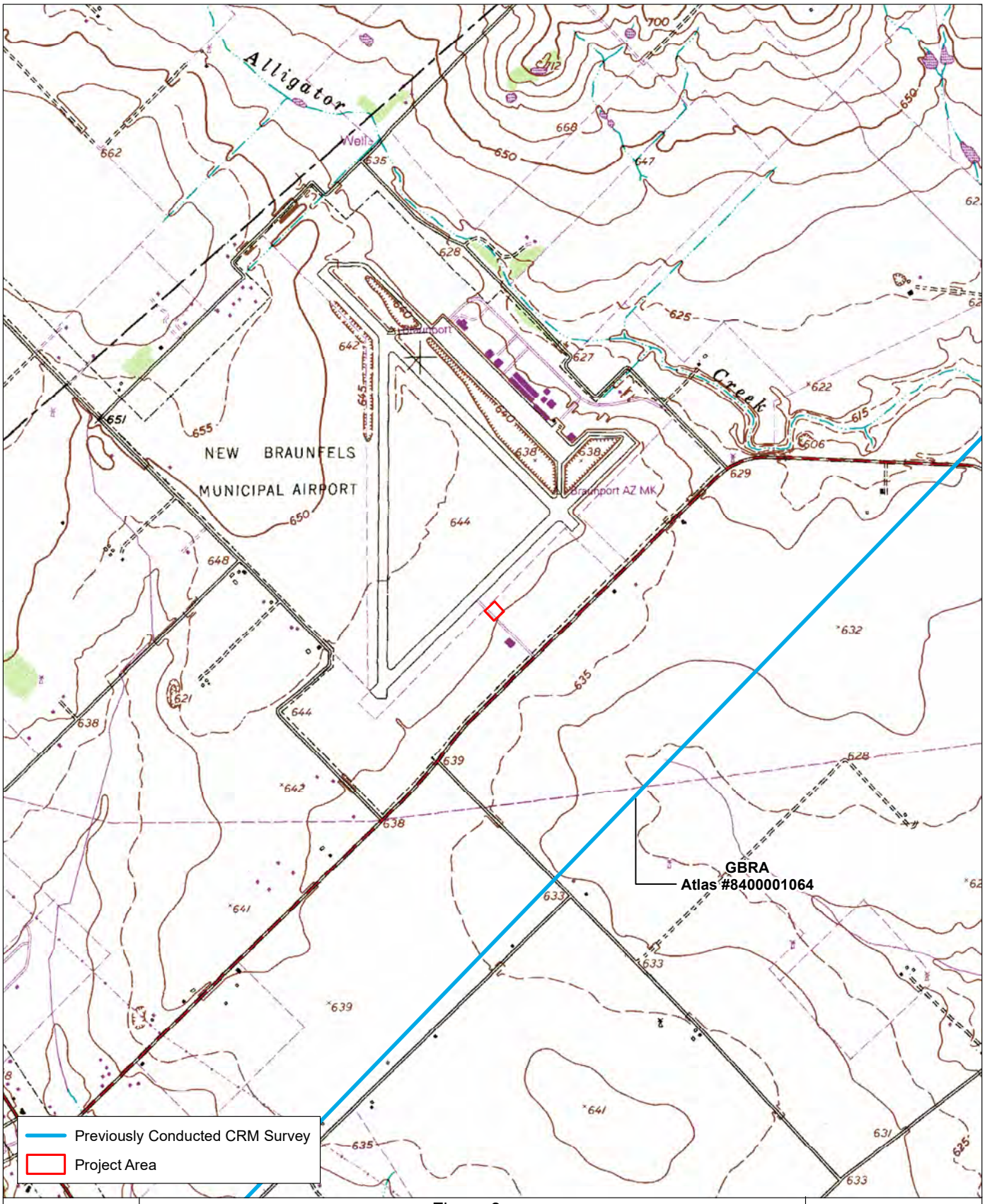


Figure 3
Previously Conducted CRM Surveys Within
One Kilometer of the Project Area

N
W E
S

Meters
0 300 600 1,200 1,800 2,400
Feet
0 1,000 2,000 4,000 6,000 8,000

KSA Engineers, Inc.
Project Number: 050097.00

Date: 02/20/2024

Base Map: USGS 7.5 Minute Topographic Quadrangle:
New Braunfels East, TX (Published 1958, Revised 1994)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

Shovel tests measuring 30 cm by 30 cm were excavated in 10 cm levels down to the clay substrate with the deepest test at 20 cm (7.9 in) below surface. The excavated matrix was screened through a 0.635 cm (0.25 in) wire mesh screen. Shovel test locations were recorded with a GPS capable of one meter (3.28 ft) accuracy. For each shovel test unit, notes were made in the shovel test form of soil color, texture, and extent of soil layers and of the maximum depth.

Upon finding an artifact, shovel tests were to be excavated solely within the project area boundaries at a maximum of 15 m (49.2 ft) intervals until the site limits could be delineated using surface features/artifacts or two consecutive negative shovel tests. Exceptions are: (1) If the project area boundary shall be reached before the second (or any) negative STs have been excavated, or (2) If a stream or other clearly recognized landform boundary forms a topographic limit to the site. Surface features were to be mapped with a GPS. Photos were to be taken of the site area. A soil profile was to be described from a positive shovel test on the site, and a State of Texas Archeological Site Data Form would be completed for each new site discovered. Sub-surface artifacts were to be collected by shovel test number and 10 cm (3.9 in) level. Shovel tests containing cultural materials were considered isolated finds, as long as: (1) no subsequent positive shovel tests were discovered during delineations, and (2) the original shovel test contained 3 or less artifacts from relatively undisturbed soils, and/or from an extremely disturbed soil from which no spatial or temporal context could be inferred (no matter how many cultural objects older than 50 years might be documented).

In the case of a historic site for which an unusual abundance of certain classes of non-diagnostic fragments of bottle glass, iron, brick, or other common material are found on the surface, only representative samples shall be required to be collected and curated in accordance with State Antiquities Permit guidelines. All diagnostic historic and other historic cultural objects recovered during investigations that do not meet these criteria, as well as all prehistoric cultural objects, were collected.

Following completion of the field survey, all collected artifacts were to be washed, cataloged, and analyzed to determine cultural affiliation. Site forms, artifacts, maps and photographs, along with documents containing other field data shall be curated at TARL in Austin, Texas.

RESULTS

This cultural resources investigation included an analysis of topographic maps and aerial imagery from the past 99 years followed by an intensive pedestrian survey. A total of 3 shovel tests were excavated within the project area. Soil profiles of all excavated shovel tests are found in Appendix A: Table 1. No archaeological sites or isolated finds were identified during the survey. Shovel test forms and other archival materials containing documentation comprising the Texas Antiquities Permit No. 31606 project shall be curated at TARL.

IMAGERY AND TOPOGRAPHIC ANALYSIS

Google Earth aerial imagery; historic aerial imagery from 1958 (Figure 4) and 1986 (Figure 5); and topographic maps from 1925 (Figure 6) and 1958 Photorevised 1994 (Figure 7) illustrate the modern use of the project area and its immediate surroundings. The topographic maps indicate the project area appears to have been largely used for agricultural purposes or was otherwise undeveloped from 1925 until acquisition by the airport. By 1958, the airport runways/taxiways

Figure 4
Historic 1958 Aerial Photograph of the Project Area

N
W E
S

Meters
0 200 400 800
Feet
0 500 1,000 2,000 3,000

KSA Engineers, Inc.
Project Number: 050097.00

Date: 02/20/2024

Base Map: USGS Earth Expolorer
1958 Aerial Imagery (Guadalupe County, TX)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

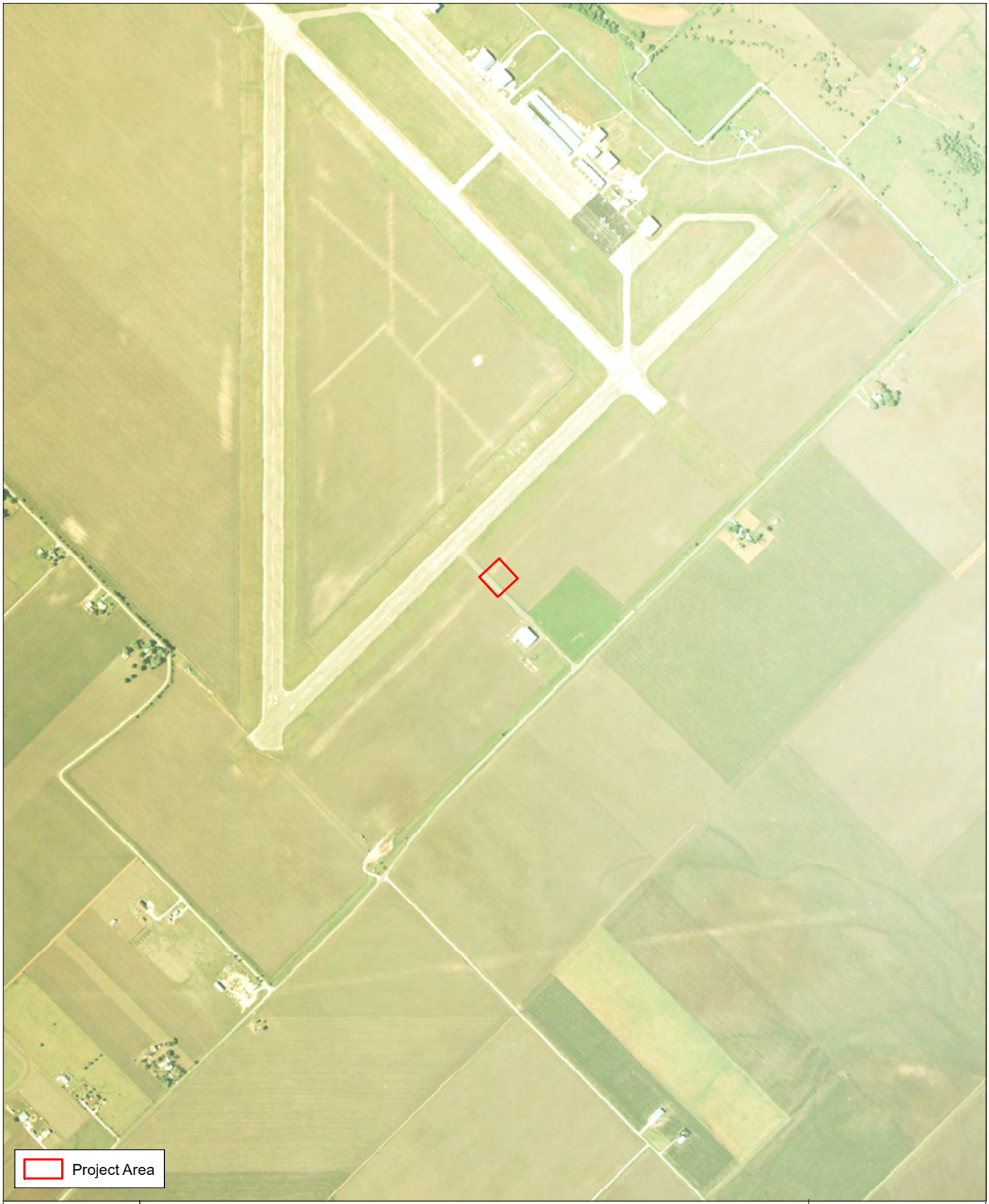


Figure 4
Historic 1986 Aerial Photograph of the Project Area

N
W E
S

Meters
0 200 400 800 1,200
Feet
0 1,000 2,000 4,000

KSA Engineers, Inc.
Project Number: 050097.00

Date: 02/20/2024

Base Map: USGS Earth Expolorer
1986 Aerial Imagery (Guadalupe County, TX)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

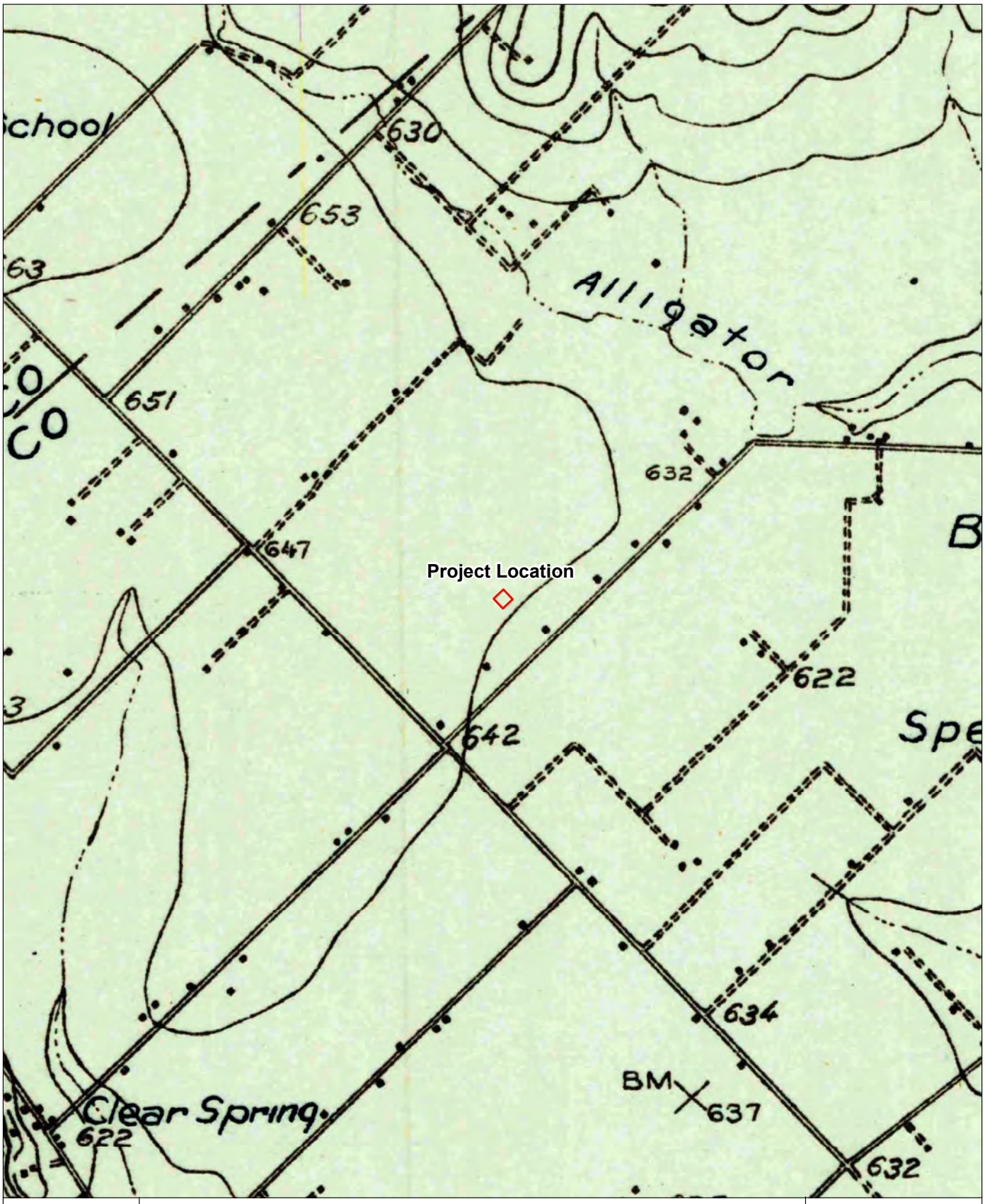


Figure 6
Historic Topographic Map of the Project Area - Published 1925

N
W E
S

Meters
0 300 600 1,200 1,800 2,400

Feet
0 1,000 2,000 4,000 6,000 8,000

KSA Engineers, Inc. Project Number: 050097.00	Date: 02/20/2024	Base Map: USGS 7.5 Minute Topographic Quadrangle: New Braunfels, TX (Published 1925)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

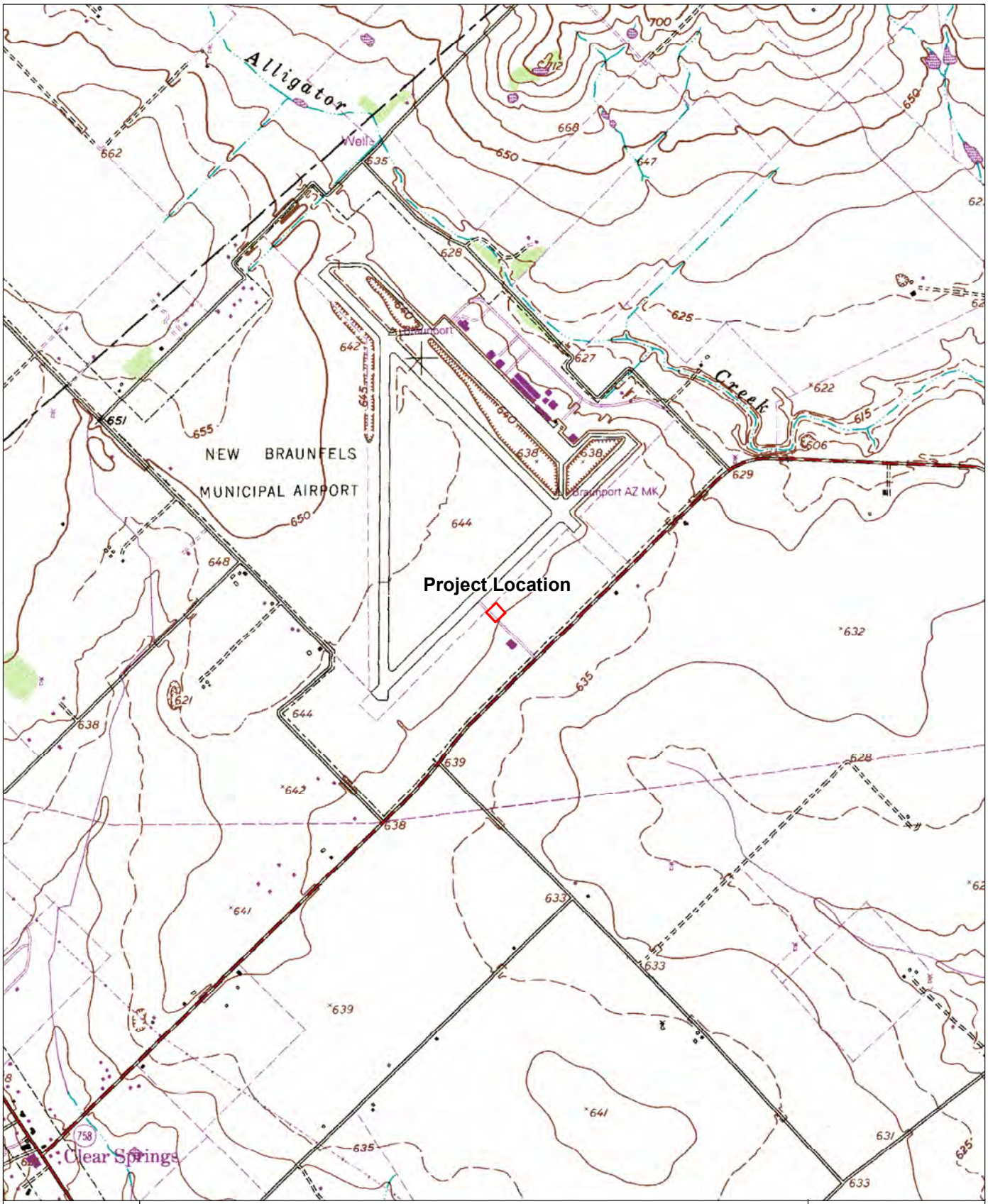


Figure 7
Historic Topographic Map of the Project Area - Published 1958
(Photorevised 1994)

Meters
0 300 600 1,200 1,800 2,400
Feet
0 1,000 2,000 4,000 6,000 8,000

KSA Engineers, Inc. Project Number: 050097.00	Date: 02/20/2024	Base Map: USGS 7.5 Minute Topographic Quadrangle: New Braunfels East, TX (Published 1958, Revised 1994)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

have been constructed but no buildings have yet been constructed at the airport. By 1986 numerous buildings have been constructed along the northwestern side of the runway/taxiways. The 1994 topographic map confirms this as well as indicating the construction of a building on the southeast side of the airport. Neither map indicates that the present-day airport terminal building or current control tower have yet been constructed. Google Earth aerial imagery from 1995 to present continues to illustrate the airport's growth over time. The airport's main terminal building appears to have been constructed between 1995 and 2005. The current control tower appears between 2006 and 2008. The small building within the project area was constructed between 2011 and 2014.

INTENSIVE PEDESTRIAN SURVEY SUPPORTED BY SHOVEL TESTING

Visual inspection was supported by two judgmentally placed shovel tests, in accordance with CTA guidelines. The project area lies within a grassy, nearly level upland field (Figure 8). The thick grass cover within the field reduced ground surface visibility to between 0 and 5 percent. A small building and numerous electrical utilities were observed within the project area (Appendix B: Photographs 1 and 3). A north/south oriented road also runs through the western corner of the project area (Appendix B: Photograph 2). The northern corner lies partially within the paved parking lot of the airport terminal building to the northeast. A total of three shovel tests were excavated within the project area. Only two shovel tests were originally planned to be excavated; however, shovel test 2 encountered gravelly fill likely covering a buried utility. Efforts were abandoned to excavate this shovel test to pre-Holocene underlying material, and a third shovel test was excavated to the southeast. Shovel tests encountered shallow clayey soils consisting of very dark grey or black humus over very dark grey or black loamy clay or clay loam underlain by black or very dark grey clay with only a few quartzite pebbles (Appendix A: Table 1) (Appendix B: Photograph 4). The clay loam layer in shovel test 1 contained a heavy layer of gravel likely representing disturbance from the construction of nearby airport facilities.

SUMMARY AND RECOMMENDATIONS

In summary, approximately 0.37 ha (0.91 ac) was surveyed to assess for existing cultural resources in the proposed New Braunfels National Airport Proposed ATCT 3 Location in the City of New Braunfels, Guadelupe County, Texas. The goal of the survey was to identify cultural resources and to make a preliminary evaluation of the documented cultural resources as to their eligibility for inclusion in the NRHP and their worthiness for being listed as a SAL.

The investigations conducted by Sphere 3 included an examination of previous archaeological and other cultural resources investigations within one kilometer of the project area, an analysis of aerial imagery and topographic maps over the past 99 years, and an intensive pedestrian archaeological survey supported by judgmental shovel testing of the project area. A total of three shovel tests were excavated.

No archaeological sites or isolated finds were identified during the survey. Accordingly, Sphere 3 recommends that the proposed work be permitted to proceed without further cultural resources requirements.

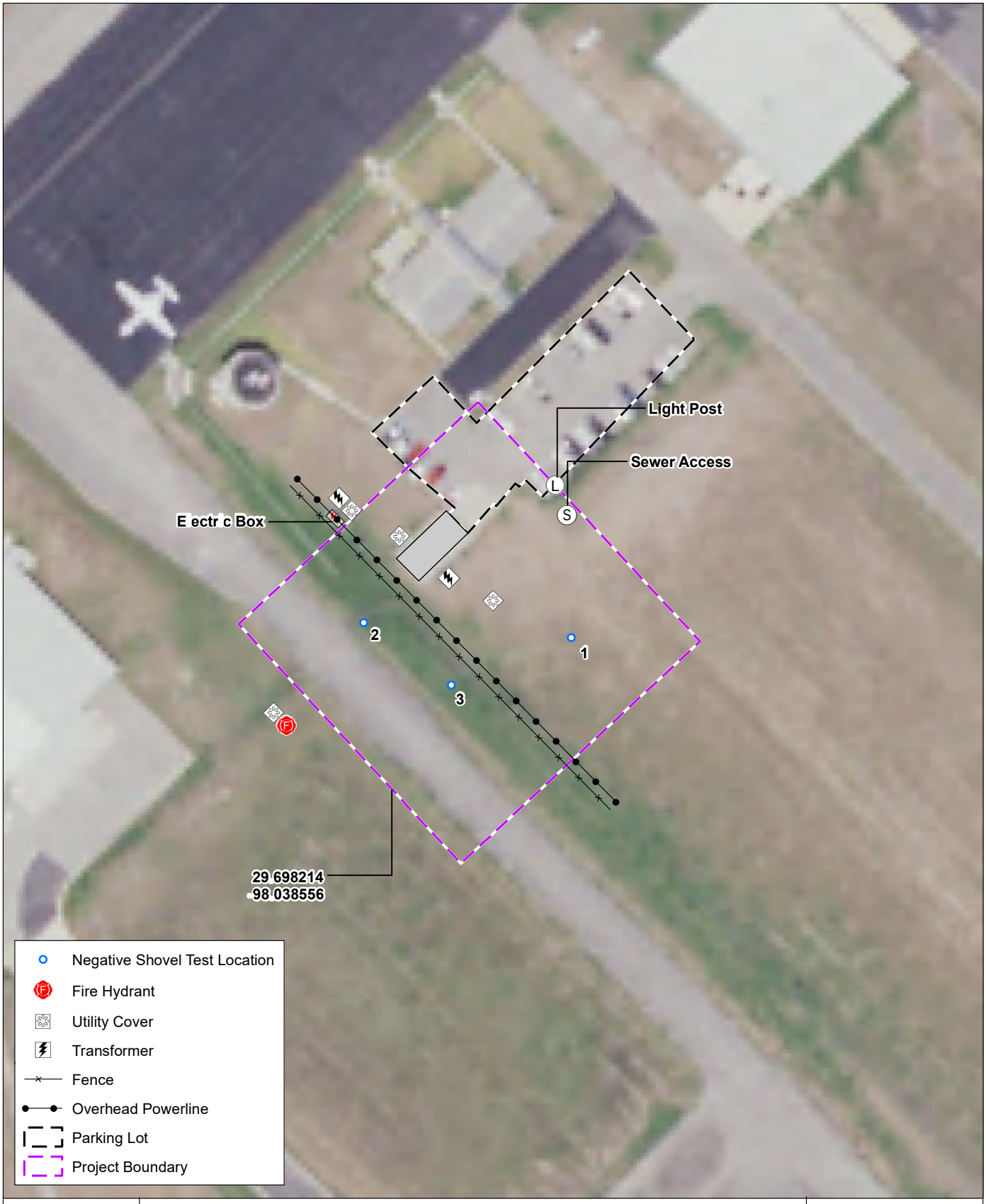


Figure 8
Shovel Test Locations of the New Braunfels National Airport
ATCT 3 Location

Meters
0 25 50 100
Feet
0 50 100 200 300

KSA Engineers, Inc.
Project Number: 050097.00

Date: 02/20/2024

Base Map: NRCS Geospatial Data Gateway
2022 NAIP Aerial Imagery (Guadalupe County,TX)

SPHERE 3 ENVIRONMENTAL
1501 Bill Owens Parkway
Longview, TX 75604
Phone: (903) 297-4673
www.sphere3env.com

REFERENCES

Blair, W. Frank

1950 "The Biotic Provinces of Texas." *The Texas Journal of Science* 11(1):93-117.

Council of Texas Archeologists (CTA)

2020 *Guidelines (Performance, Curation, and Reports).* Volume, and summary sheet entitled, "Archeological Survey Standards for Texas." Council of Texas Archeologists and Texas Historical Commission, Archeology Division, Austin.

Dice, L. R.

1943 *The Biotic Provinces of North America.* University of Michigan Press, Ann Arbor.

United States Department of Agriculture

2024 Natural Resources Conservation Service (NRCS) Web soil survey. Data downloaded from http://www.ftw.nrcs.usda.gov/ssur_data.html. Accessed online on February 1, 2024

United States Department of the Interior, National Park Service, National Register of Historic Places (US-NRHP)

1997 National Register Bulletin: How to Apply the National Register Criteria for Evaluation. Revised for Internet 1995. Washington, D.C.

APPENDIX A:

TABLES

Appendix A: Table 1: New Braunfels National Airport Proposed ATCT 3 Location Shovel Test Log

Shovel Test Number	Landform	Depth of Soil Horizon (cm below surface)	Horizon Soil Type	Munsell Color	Presence of Cultural Resources ("positive"-one or more artifacts)
1	Terrace	0-8	Humus	10YR3/1	Negative
		8-20	Clay Loam	10YR3/1	
		20-32	Clay	10YR2/1	
2	Terrace	0-6	Humus	10YR2/1	Negative
		6-13	Clay Loam	10YR2/1	
		13-15	Clay Loam	10YR2/1 with 10YR5/3 mottles	
3	Terrace	0-7	Humus	10YR3/1	Negative
		7-14	Loamy Clay	10YR3/1	
		14-20	Clay	10YR3/1	

APPENDIX B

PHOTOGRAPH LOG

Photograph #1 *Photo by Michael Ryan* Date: 2-20-2024 Subject: General environmental photo of grassy field making up the project area. Taken from ST 1 facing north. Small building, control tower, parking lot, and airport terminal in background.	
Photograph #2 *Photo by Michael Ryan* Date: 2-20-2024 Subject: Western half of project area. Facing west from fence line east of ST 3. Road running north/south in view and hangers in background.	
Photograph #3 *Photo by Michael Ryan* Date: 2-20-2024 Subject: Example photo of utilities found throughout project area. Taken form south of small building within project area facing north.	

Photograph #4 *Photo by Jay Belew* Date: 2-20-2024 Subject: Shovel Test 1 south profile. Very dark grey humus over very dark grey clay loam underlain by black clay.	

Appendix H – AIR TRAFFIC CONTROL VISIBILITY ANALYSIS TOOL (ATCVAT)

Visibility Siting Requirements Human Factors Analyses

Objective: Two human performance metrics, Object Discrimination Analysis and Object Discrimination and Line of Sight (LOS) Angle of Incidence, were used to assess the impact of tower height on air traffic control tower specialist distance perception.

Technical Approach: the tower visibility analysis tool (http://www.hf.faa.gov/visibility) was used to assess the human performance metrics[1].

Air Traffic Control Tower: **BAZ Site 1**
Light Level: **Sunlight Clouds**
Ground Turbulence: **Medium**
Target Object: **Dodge Caravan**, target orientation: **Front View**
Observer Eye Height: **125**
Vertical Elevation Change Between Observer and Key Point (feet): **116**
Ground Elevation at Tower (MSL): **650**
Ground Elevation at Key Point (MSL): **659**
Tower to Key Point Distance: **4810** (feet) **1.47** (km)
Visibility Range: **10**(Miles) **16.09** (km)

1. Object Discrimination Analysis Results

Criteria	Threshold	Tower Results	Pass/Fail
probability(detection)	95.5%	99.6%	Pass
probability(recognition)	11.5%	57.6%	Pass

2. Line of Sight (LOS) Angle of Incidence

Threshold	Tower Results	Pass/Fail
0.8 degrees or 48 minutes	1.38degrees	PASS: Change in elevation between observer and key point should be no less than 67 feet.

[1]Krebs, Hewitt, Murrill, and Driggers. 2005. *How High is High Enough? Quantifying the Impact of Air Traffic Control Tower Observation Height on Distance Perception*, International Symposium on Aviation Psychology, 1-5.

Visibility Siting Requirements Human Factors Analyses

Objective: Two human performance metrics, Object Discrimination Analysis and Object Discrimination and Line of Sight (LOS) Angle of Incidence, were used to assess the impact of tower height on air traffic control tower specialist distance perception.

Technical Approach: the tower visibility analysis tool (http://www.hf.faa.gov/visibility) was used to assess the human performance metrics[1].

Air Traffic Control Tower: **BAZ Site 2 Recommended**
Light Level: **Sunlight Clouds**
Ground Turbulence: **Medium**
Target Object: **Dodge Caravan**, target orientation: **Front View**
Observer Eye Height: **115**
Vertical Elevation Change Between Observer and Key Point (feet): **122**
Ground Elevation at Tower (MSL): **651**
Ground Elevation at Key Point (MSL): **644**
Tower to Key Point Distance: **5197** (feet) **1.58** (km) **Approach end of Runway 35**
Visibility Range: **10**(Miles) **16.09** (km)

1. Object Discrimination Analysis Results

Criteria	Threshold	Tower Results	Pass/Fail
probability(detection)	95.5%	99.5%	Pass
probability(recognition)	11.5%	50%	Pass

2. Line of Sight (LOS) Angle of Incidence

Threshold	Tower Results	Pass/Fail
0.8 degrees or 48 minutes	1.34degrees	PASS: Change in elevation between observer and key point should be no less than 73 feet.

[1]Krebs, Hewitt, Murrill, and Driggers, 2005. *How High is High Enough? Quantifying the Impact of Air Traffic Control Tower Observation Height on Distance Perception*, International Symposium on Aviation Psychology, 1-5.

Appendix I – SERVICING SECURITY ELEMENT

Appendix G. Security Requirements for Sponsor-Owned or Sponsor-Leased Federal Contract Towers (FCT)

G-1. Purpose. Sponsor-owned/leased Federal Contract Towers are air traffic control towers not owned by the FAA but "sponsored" by another entity, typically an airport authority, and are designated facility security level (FSL) 1A facilities under this order. Security countermeasures for these facilities will use the FSL 1 criteria in chapter 4 unless adjusted in Table G-1 below. FAA-owned/leased FCTs are considered FSL 1 facilities and the criteria in chapter 4 apply without adjustment.

G-2. Adjusted Security Countermeasures. Table G-1 lists chapter 4 LOP baseline countermeasures that are adjusted for sponsor-owned or sponsor-leased FCTs.

Table G-1. Adjusted Security Countermeasures for Sponsor-Owned/Leased FCTs

Security Countermeasure	Reference	See:
Identification of a Federal Facility	Table 4-1-1 and paragraph 4-1-2	G-3
Pedestrian Access to Site	Table 4-1-1 and paragraph 4-1-4	G-4
Regulatory Signage	Table 4-3-1 and paragraph 4-3-3	G-5
Employee Access Control	Table 4-3-1 and paragraph 4-3-4	G-6
Visitor Access Controls	Table 4-3-1 and paragraph 4-3-5	G-7
Facility Security Plan	Table 4-6-1 and paragraph 4-6-9	G-8
Occupant Emergency Plan Testing	Table 4-6-1 and paragraph 4-6-10	G-9
Availability of Emergency Plans and Documentation	Table 4-6-1 and paragraph 4-6-11	G-10
Protection of Construction Information	Table 4-6-1 and paragraph 4-6-12	G-11

G-3. Identification of a Federal Facility. "US property" signs are not required.

G-4. Pedestrian Access to Site. The use of fence standards prescribed in chapter 4 are not required. The FCT requirement is a 6-foot chain link or ornamental fence with no special security (e.g., barbed wire or outriggers) additions.

G-5. Regulatory Signage. Required signs are limited to "No Weapons" and "Restricted"/ "Closed" Area (as applicable) signs. Sponsor owned/leased FCTs cannot request signs through the Logistics Center Support System (see paragraph 4-3-3). Locally produced signs are authorized.

G-6. Employee Access Control. Facility managers may allow unescorted entry to personnel who do not possess FAA ID consistent with operational requirements. When doing so, the FM must restrict access to non-sensitive areas and, when not possible, provide some oversight or controls over the person's activities. Personnel allowed access under these provisions must still be entered on a Visitors Register (see paragraph G-7).

G-7. Visitor Access Controls. Unless exempted under paragraph G-6, visitor access controls in paragraph 4-3-5 apply. Visitors and those exempted under paragraph G-6 will be recorded on a Visitors Register.

G-8. Facility Security Plan (FSP). An FSP is not required.

G-9. Occupant Emergency Plan (OEP) Testing. Associated OEP testing and an FRB are not required.

G-10. Availability of Emergency Plans and Documentation. See paragraphs G-8 and G-9.

G-11. Protection of Construction Information. There are no requirements or special measures that apply.

SITING REPORT
AIRPORT TRAFFIC CONTROL TOWER (ATCT)
NEW BRAUNFELS NATIONAL AIRPORT (BAZ)
NEW BRAUNFELS, TEXAS

AXF Guidance Memorandum	U. S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION **Office of Security and Hazardous Materials** Office of Infrastructure Protection - AXF	**AXF-2019-T-03**
SUBJ: INFORMATION: Updated Security Measures for Sponsor-Owned or Sponsor-Leased Federal Contract Towers (FCT)		**Date: March 7, 2019**

1. **Purpose:** This Guidance Memorandum provides updated security measures in a revised Risk Assessment Tool (RAT) to use when conducting security assessments at sponsor-owned or sponsor-leased FCTs, Facility Security Level (FSL) -1A facilities.

2. **Background**: Collaborating with the FCT Program Office, the ATO Strategic Planning Office, and the Office of the Chief Counsel (AGC), AXF identified practical and contract-compliant security measures to apply at sponsor-owned or sponsor-leased FCTs. The attached RAT reflects these security requirements.

3. **Guidance**: Assessment activity at FSL 1A sponsor-owned or sponsor-leased FCTs is currently deferred until otherwise directed by AXF-1. Servicing Security Elements (SSEs) are to use the attached RAT for FSL-1A facilities when assessment activity resumes. Although there are differences between FAA Order 1600.69C and the attached RAT, the security measures identified in the RAT will supersede those in the order. The next update to FAA Order 1600.69 will incorporate these changes in security requirements.

Government (FAA)-owned or government (FAA)-leased FCTs will continue to follow the requirements in FAA Order 1600.69C identified for FSL-1 facilities. FCTs located on military bases or those staffed by a military entity are exempt from FAA facility security requirements. They will apply the physical security requirements of their military command.

Any open security findings in FSRS-1 referencing requirements not found in the attached RAT will be administratively closed by AXF-100.

Patricia A. Pausch

Patricia A. Pausch
Director, Office of Infrastructure Protection, AXF-1

FCT Sponsor-Owned or Sponsor-Leased Security Requirements
FSL 1A Facility

ISC - Category	MASTER RAT: FCT FSL 1A Sponsor-Owned/Leased Security Requirements	FAA Order 1600.69C Reference	Findings are examples. N/A for reqts clarity.
SITE	Does the facility have the required perimeter fencing? FCT FSL 1A facilities may use a non-standard, minimum 6-foot high security fence, unless the tower is within the operations area or part of the terminal building, in which case no fence is required.	FAA Order 1600.69C, Chapter 4, Paragraph 4-1-8.	The facility does not have a fence that meets requirements.
SITE	Are the fence and gates in good condition and not in need of repair?	FAA Order 1600.69C, Chapter 4, Paragraph 4-1-8.	Fence and gates are in poor condition and must be repaired.
SITE	Does the fence have a 20-foot clear zone on the outside of the fence?	FAA Order 1600.69C Chapter 4. Paragraph 4-1-8c.	The fence does not have a 20-foot clear zone on the outside of the fence.
SITE	Does the fence have a 20-foot buffer zone from the fence inward?	FAA Order 1600.69C, Chapter 4, Paragraph 4-1-6.	The fence does not have a 20-foot buffer zone from the fence inward.
SITE	Are gates secured at all times?	FAA Order 1600.69C Chapter 4, Paragraph 4-1-8b(7).	Gates are not secured at all times.
SITE	Does the gate (vehicle and pedestrian) construction maintain the structural integrity of the fence?	FAA Order 1600.69C Chapter 4, Paragraph 4-1-8 b(6).	Gate construction does not maintain the structural integrity of the fence.
SITE	Are gates locked using either the FAA standard locking system or other commercially available locks as long as they are BHMA grade 1 locking system equivalent.	FAA Order 1600.69C Chapter 4, Paragraph 4-1-8 b(7).	The gate does not have the FAA standard locking system or a BHMA grade 1 locking system installed.
SITE	Does the facility have security lighting that provide sufficient illumination (not less than 0.5 FC) in the area surrounding the base of the ATCT?	FAA Order 1600.69C, Chapter 4, Paragraph 4-1-9 and Table 4-1-1.	The facility does not have security lighting that provides sufficient illumination in the area surrounding the base of the ATCT.
SITE	Does the facility have security lighting that provide sufficient illumination (not less than 0.8 FC) in the parking area if parking is not adjacent to the facility?	FAA Order 1600.69C, Chapter 4, Paragraph 4-1-9 and Table 4-1-1.	The facility does not have security lighting that provides sufficient illumination in the parking area, as required.
SITE	Are "No Weapons" signs posted at all building entry points to all staffed facilities? FCT FSL 1A facilities can use locally produced signs in lieu of FAA-issued signs.	FAA Order 1600.69C Chapter 4. Paragraph 4-1-7b(2) and Table 4-1-2.	"No Weapons" signs are not posted at all building entry points at all staffed facilities.
SITE	Are "Restricted Area" signs posted, where required? FCT FSL 1A facilities can use locally produced signs in lieu of FAA-issued signs.	FAA Order 160.69C, Chapter 4, Paragraph 4-1-7.b.(6) and Table 4-1-2.	"Restricted Area" signs are not posted where required.
SITE	Are exterior critical operational areas secured to prevent unauthorized access?	FAA Order 1600.69C Chapter 4, Paragraph 4-4-6a and Tables 4-1-1 and 4-3-1.	There are no physical controls in place preventing unauthorized access to exterior critical operational areas.
ENTRY	Are all exterior doors and critical interior doors through which the Facility Manager restricts access kept locked unless there are dedicated personnel providing access control?	FAA Order 1600.69C Chapter 4. Paragraph 4-1-11a.	Exterior doors and critical interior doors restricting access are not secured at all times.

FCT Sponsor-Owned or Sponsor-Leased Security Requirements
FSL 1A Facility

ISC - Category	MASTER RAT: FCT FSL 1A Sponsor-Owned/Leased Security Requirements	FAA Order 1600.69C Reference	Findings are examples. N/A for reqts clarity.
ENTRY	Are mechanical push-button key pads or hard coded electronic keypads used for access control at facility perimeter equipped with either an FAA standard locking system that is used when the facility is unoccupied.	FAA Order 1600.69C Chapter 4, Paragraph 4-1-12e.	Mechanical push-key button or hard coded electronic keypads used for access control are not equipped with an FAA standard or BHMA grade 1 locking system.
ENTRY	Are visitor doors equipped with functioning Entry Control Video (ECV) (Video and Intercom) and remote release capability?	FAA Order 1600.69C Chapter 4, Paragraph 4-3-5b and 4-3-5b(1).	Doors with remote release capability controlling visitor access do not have ECV or the screening equipment is not functioning properly.
ENTRY	Are the number of access doors utilized for ingress and egress kept to a minimum to support operations?	FAA Order 1600.69C Chapter 4, Paragraph 4-1-11a.	There are an excessive number of access doors utilized for ingress and egress.
ENTRY	Is the facility using either the FAA standard or a BHMA grade 1 locking system?	FAA Order 1600.69C Chapter 4, Paragraph 4-1-12.	The facility is not using the FAA standard or a BHMA grade 1 locking system.
ENTRY	Has a Key Control Officer (KCO) been appointed in writing?	FAA Order 1600.69C Chapter 4, Paragraph 4-4-9a.	The KCO is not appointed in writing.
ENTRY	Does the KCO maintain a record of the total number of keys and cores, number issued and number on hand?	FAA Order 1600.69C Chapter 4, Paragraph 4-4-9b.	There is no accurate record of the total number of keys, cores, number issued, and number of keys on hand.
ENTRY	Has the annual key and core inventory been conducted?	FAA Order 1600.69C Chapter 4, Paragraph 4-4-9d.	The annual key and core inventories are not being conducted.
ENTRY	Are unissued keys maintained in a locked container?	FAA Order 1600.69C Chapter 4, Paragraph 4-4-9c.	Unissued keys are not stored in a locked container.
ENTRY	Are the quantity of keys, cards, or combinations kept to a minimum and issued only to persons who need them for official duties?	FAA Order 1600.69C Chapter 4, Paragraph 4-4-9c.	Keys are not being issued based on operational need.
ENTRY	Are keys retrieved by the issuing authority from personnel who leave, transfer, or retire?	FAA Order 1600.69C Chapter 4, Paragraph 4-4-9c(1).	Keys are not being retrieved from personnel who leave, transfer, or retire.
OPS/ADM	Are cipher lock codes and other combinations/codes changed and documented, as required?	FAA Order 1600.69C Chapter 4, Paragraph 4-4-9 b(6).	Security combination/codes are not changed or documented, as required.
ENTRY	Are lost keys reported to the SSE as required?	FAA Order 1600.69C Chapter 4, Paragraph 4-4-9 f(1).	Lost keys are not reported to the SSE.
ENTRY	Is only authorized agency photo I.D. media utilized at the facility, or other approved ID media being displayed? FCT personnel at FSL 1A facilities with fewer than 10 personnel assigned to the facility are not required to wear ID media unless required by local security procedures; however, they must have it in their possession.	FAA Order 1600.69C, Chapter 4, Paragraph 4-2-8a,b,c.	Personnel at the facility do not display or do not have in their possession authorized agency photo ID, or other approved ID media, as required.
INTERIOR	Does the facility limit unescorted access to critical operational areas to only those personnel that need it to perform their duties?	FAA Order 1600.69C, Chapter 4, Paragraph 4-4-6 .	The facility is not limiting unescorted access to critical areas to only those personnel who need it to perform their duties.

FCT Sponsor-Owned or Sponsor-Leased Security Requirements
FSL 1A Facility

ISC - Category	MASTER RAT: FCT FSL 1A Sponsor-Owned/Leased Security Requirements	FAA Order 1600.69C Reference	Findings are examples. N/A for reqts clarity.
INTERIOR	Is access to critical administrative areas controlled?	FAA Order 1600.69C, Chapter 4, Paragraph 4-4-6b.	The facility does not control access to critical administrative areas.
INTERIOR	Are interior critical operational areas secured to prevent unauthorized access, except when occupied?	FAA Order 1600.69C, Chapter 4. Paragraph 4-4-6a and Tables 4-1-1 and 4-3-1.	Interior doors leading to critical areas are not secured at all times.
ENTRY	Are visitors being escorted, as required.	FAA Order 1600.69C Chapter 4, Paragraph 4-2-9a.	Visitors are not being escorted, as required.
ENTRY	Are all visitors logged in on the DOT/FAA Visitor Register (FAA Form 1600.8) or electronic equivalent?	FAA Order 1600.69C Chapter 4, Paragraph 4-2-9b.	A record of visitors are not being kept, as required.
OPS/ADM	Have the facilities reported any loss or theft of ID media?	FAA Order 1600.69C Chapter 4, Paragraph 4-2-8d(5).	Incident reports of loss or theft of ID media are not reported to the SSE.
INTERIOR	Are facility personnel protecting Sensitive Unclassified Information (SUI) such as Privacy Act, Sensitive Security Information (SSI), and For Official Use Only (FOUO) as required?	FAA Order 1600.75, Chapter 3, Appendix D and Appendix E, FAA Order 1280.1B, Chapter 3, Paragraph 1j. and FAA Order 1600.69C Chapter 4, Paragraph 4-4-4b & b(1)(4).	Personnel are not protecting Sensitive Unclassified Information (SUI) such as Privacy Act, SSI and FOUO.
OPS/ADM	Has the Facility Manager established procedures for the receipt and distribution of security threat and intelligence awareness information?	FAA Order 1600.69C, Chapter 4, Paragraph 4-4-8.	The facility has not established procedures for the receipt and distribution of security threats and intelligence awareness information.
INTERIOR	Are there adequate security measures for high value materials? (There is no FSP requirement so the SSE will determine compliance by speaking with the FM)	FAA Order 1600.69C Chapter 4. Paragraph 4-4-10a(2)b,c.	There are insufficient protective measures in place for high value materials.
OPS/ADM	Has all incidents of loss, theft, fraud, or damage been properly reported?	FAA Order 1600.69C Chapter 4, Paragraph 4-4-11.	All instances of known loss, theft, fraud, or damage have not been reported to the SSE.
OPS/ADM	Has the facility implemented adequate theft prevention measures to include removal of property from the facility? (There is no FSP requirement so the SSE will determine compliance by speaking with the FM)	FAA Order 1600.69C Chapter 4, Paragraph 4-4-10a,b.	There are no theft prevention measures or procedures for removal of property from the facility.
OPS/ADM	Is the facility accredited?	FAA Order 1600.69C Chapter 3, Paragraph 3-6.	The facility is not accredited.
OPS/ADM	Have annual security education and awareness briefings been conducted, as required to all personnel at facility?	FAA Order 1600.69C Chapter 4, Paragraph 4-4-5b(3).	Annual security education and awareness briefings have not been conducted to all personnel at facility.
OPS/ADM	Have contractor background checks been conducted as required?	FAA Order 1600.72A, Chapter 1, Paragraph 10g.	Contractor checks have not been conducted as required.
OPS/ADM	Is the facility updating the SSE on the progress and/or closure of all open findings?	FAA Order 1600.69C Chapter 3, Paragraph 3-4e(1).	The facility is not complying with the reporting response timeline.

Appendix J – MEETING MINUTES

BAZ NEW BRAUNFELS NATIONAL AIRPORT
ATCT SITE SELECTION-PROGRESS MEETING
NOTES- 12/18/2023

AGENDA

- INTRODUCTIONS
- OBJECTIVE
- SCOPE OF SERVICES
- PHYSICAL SITING CONSTRAINTS
- INITIAL SITES OBSERVATIONS
- SCHEDULE

BAZ / KSA MTG NOTES

Preferred Sites

Site 1 – An outcome from today's meeting highlighted that Site 1 is the preferred location for the airport's new Air Traffic Control Tower (ATCT). This site is adjacent to the new passenger facility, which the airport plans to commence construction on soon. Another advantage of this location is that, among the three sites considered, Site 1 has the lowest eye height at 62 feet AGL, potentially making it a more cost-effective option for tower construction. Its central position provides optimal visibility across the entire airfield. The main concern raised was the proximity of a residential area to the west, which could pose challenges for this location and its view of the planned 1,000-foot runway extension for Runway 13.

Site 2 – Situated approximately 500 feet south of the airport's AWOS system, also received significant positive feedback. Like Site 1, it is located on the west side of the airport, which is the focal point for airport expansion plans. Although the area is currently undeveloped, future infrastructure developments such as airport hangars and the passenger terminal planned for the west side would not pose significant challenges for the new tower's placement there. Airport officials ranked Site 2 as the second most desirable location.

Site 3 – In close proximity to the existing tower at BAZ, Site 3 is positioned on the eastern side of the airfield. During our preliminary assessment, this location had an eye height of 126 feet, making it notably taller than the other two towers discussed. Concerns were raised regarding visibility of the runway extension for Runway 13 from this site. Nevertheless, the well-established infrastructure of the existing tower was considered a significant factor in evaluating this site.

In addition to the sites discussed there was discussion about the RFI information needed to continue working on the report. Grayson from KSA assured us that information was forthcoming and to be on the lookout. Also BAZ is very much interested

in getting their FAA VISTA date expedited and would like CTBX/ A Pond Brand to give an estimate as to how soon they might be able to get a safety assessment date if we were to conduct the 3D/ VR model. An amendment is forthcoming if we can get them done sooner. Our draft report will be submitted to KSA the week of 2/20/2024 and a subsequent review meeting will take place to incorporate comments and revisions.

New Braunfels National Airport (BAZ)
New Braunfels, TX
Initial Contact Meeting
May 20, 2024

Purpose: Introduce the siting process and plan and coordinate future siting activities.

Participants:

Benito Mercado
Brendan Haas
Carl Collins (ATM)
Carl Craig (ATC Req)
Cody Owen (POND)
Grayson Cox
Joe Sims (SMF)
Johnathan Taylor (POND)
Kim Ledford
Matt Ballon
Moni Jacob
Patrick Mannella (POND)
Robert Lee (Airport Director)
Scott Mann (NC)
Scott McClelland
Son Hua (Lead Electronics Engineer)
Stephanie Griffin (POND)
Victoria M Wilpitz (Lead Engineer)

1. Introductions
2. Proposed Schedule:
   - Kickoff TELECON: 6/6/24
   - ALP Date: 5/20/24
   - Pre-Site Data Due: 6/3/24
   - Model Validation Date: 6/13/24
   - Siting and Assessment Date: 6/25 and 26/24
3. Scott Mann covered the presentation and schedule.
4. Johnathan Taylor covered the airport conference room space requirements and needed resources.
5. Robert Lee stated the rotating beacon is located on top of the existing tower and would be relocated to the top of the new tower.
6. Carl Collins stated this facility does not have STARS and there is a NOAA weather station on the field.
7. C. Collins stated the air traffic control tower is staffed from 7am CST to 7 pm CST with FAA controllers.
8. C. Collins stated the type aircraft on the airfield consists of Cessna's, Cherokee's, Conquest, hawkers, Citation's, Gulfstream, Falcon's, King airs (civilian and military), Global' s, Blackhawks, and Apache's,
9. This is a NATCA tower. The union representative is Michael Pairett, bazlocal@hotmail.com.
10. There are three control positions, Local Control (LC), Ground Control and Flight Data combined (GC/FD), and Controller in Charge (CIC), at this facility.
11. This will be a 440 sq foot tower cab.
12. The primary instrument runway is RWY 13/31. However, the primary operational runway is RWY 17/35. RWY 17/35 will be used as the reference runway for the pre-sites initial rotation.

13. POND has the ALP and the 3 pre-sites. Sites 1 and 2 are on the west side of the airport in undeveloped areas. Site 3 is approximately 300 feet East of the existing tower.

14. POND will be developing the 3-D model of this airport and writing the siting report.

15. POND will be on site for the siting dates.

16. Pre-Site Requirements were discussed as follows:

    A. Viable Sites. Select sites that are optimum for control of the movement areas as any selected viable site could be the final recommended site. Do not select a pre-site just to provide three sites. 3-D modelers need Lat/Longs for viable sites.

    B. Orientation. North, East, West, South (NEWS) if possible.

    C. Land. 2–3 acres.

    D. Environmental. Areas with known environmental issues (e.g., wetlands, endangered species, hazardous storage, etc.) should not be proposed as an option unless the airport already has a way to mitigate the issue.

    E. Expansion. Consider allowing for site expansion at the existing facility, when possible.

    F. Protected Areas. Consider areas outside of Building Restriction Line, Runway Visibility Zone, Airport Property Line, Runway/Taxiway/Precision Approach Object Free Zones, etc. when selecting pre-sites.

    G. Security requirements within FAA Order 1600.69D:

    - Buffer Zone: A clear minimum distance of 20 feet outward from any tower structure or building to the property line must be provided.

    - Clear Zone: A clear minimum distance of 20 feet beyond the property line must be provided.

    H. Unobstructed View Requirements within FAA Order 6480.4C (draft):

    - Unobstructed View of the Operations Area:
        - Movement Area
        - Air Operations Area
        - Helicopter Operations Area
        - Other Areas as Required for Traffic Flow, etc.

Action Items:

1. S. Mann will send the participants the power point that was displayed today.
2. C. Collins provided the NATCA representative's information.
3. J. Taylor will send S. Mann the approved ALP and the pre-site information.
4. Benito Mercado will send S. Mann the security requirements needed.

New Braunfels National Airport (BAZ)
New Braunfels, TX
Kickoff Meeting
June 6, 2024

Purpose: Introduce the Virtual Immersive Siting Tower Assessment (VISTA) siting process and plan and coordinate future siting activities.

Participants

Aaron Southerland
Benito Mercado (FAA Security)
Bill Dever
Bob Gibbens
Brendan Haas
Carl Collins (ATM)
Chris Johnson
Dustin Ashmore
Eli Strebel
Frank Boyer
Grayson Cox
J.R. Thornton
Jason C Frisch
Joe Sims
Johnathan Taylor (POND)
Joseph Kim
Kim Ledford
Max Cooper
Michael Smith
Mohammed Al Amarri (Lead Engineer)
Moni Jacob
Robert Lee (Airport Director)
Samuel Perez
Scott Mann (NC)
Scott McClelland
Stephanou Yonkeu
Tony Greco
Walter A Stokes

1. Introductions
2. Proposed Schedule:
   - ALP Date: Received
   - Pre-Site Data Due: Received. Sites 1, 2, and 3
   - Model Validation Date: 6/13/24
   - Siting and Assessment Date: 6/25 and 26/24
3. Scott Mann covered the presentation and schedule.
4. S. Mann covered that the data requirements have been met and the ALP has been received. The ALP or approved airport construction project electronic data is preferred in AutoCAD (.dwg) format and as a PDF drawing should illustrate ground elevation contours and/or point data.
5. Johnathan Taylor covered the airport conference room space requirements and needed resources.
6. J. Taylor stated that the VR Kit will be brought in on June 24th by two VR Techs. The 3-D modelers will assist with set-up and train controllers on the headset menu use the day before the siting. Control personnel must be available during set-up and become familiar before the siting with the 3-D operation. An IT technical person should be available to assist in the set-up with Wi-Fi or Ethernet. VR set up:
   - Conference room with unobstructed available area of 10 feet x 10 feet.
   - Ethernet connection to airport LAN.
   - Open port to make available Zoom conferencing and to allow remote access to laptop (*confer with local IT*).
   - Power outlet(s).

- If there is a large screen monitor in conference room, a 10-foot HDMI cable can be provided so any local participants may view the meeting.
- If others are attending the in person, participants MUST have a speaker/mic headset if they are to be co-located in the conference room with the person in the VR headset.

7. J. Taylor indicated the siting will be hosted at a location off the airport due to internet connectivity.
8. This is a Reimbursable Agreement (RA). POND and KSA are the airport consultants.
9. This will be a 440 sq ft tower cab.
10. The primary runway is RWY 13, however, the primary operations runway is RWY 17/35. There is an RNAV approach to all runways and there is no ILS.
11. Benito Mercado discussed the security setbacks needed and the airport indicated they have taken these into consideration when choosing the sites.
12. J. Taylor discussed the TERPS and NEH. Walter Stokes and Jason Frisch indicated they would need the data sent to them to have the FAA do a TERPS assessment.

Action Items:

1. S. Mann will send W. Stokes and J. Frisch the site data for Sites 1, 2, and 3 for a TERPS assessment.

New Braunfels National Airport (BAZ)
New Braunfels, TX
VISTA Model Validation Meeting Minutes
June 13, 2024

Purpose: Allow the Airport Sponsor, Air Traffic Manager (ATM), Lead Engineer, and 3-D Modeler to verify that the VISTA 3-D model accurately displays the current Airport Layout Plan (ALP) and pre-sites.

Presentation. Attached to minutes.

Model Validation. The model was deemed accurate by the Airport Sponsor and ATM.

Participants:

Ben Brack
Bob Gibbens
Brendan Haas (Airport Director)
Bryan Wallace
Carl Collins (ATM)
Chris Johnson
Cody Owenby (POND)
Craig Phipps
Don Standley
Eli Strebel
Evelyn Lee
Frank Boyer
Gary Nielsen
Grayson Cox
Johnathan Taylor (POND)
Kim Ledford
Matt Ballon
Michael Van Vliet
Moni Jacob
Morgan Coleman
Patrick Mannella
Scott Mann (NC)
Scott McCelland
Son Hua
Stephanie Griffith
Tony Greco
Victoria M Wilpitz (Lead Eng)
William Moody

1. **Schedule:** The Siting and Safety Assessment is scheduled for 06/25-26/24, 11:00 am to 5:00 pm EST.

2. **3-D Model:** The entire 3-D model was reviewed and scanned from one runway end to the next end, pointing out critical areas – Hold Short Lines (HSL), runway ends, intersections, tree lines, planned building structures, taxi-lanes future pavement, future runway extensions, existing buildings, roadway and parking, areas to be removed, etc.

3. **Pre-sites:** The Airport Director and the ATM provided the following three pre-sites for review: Site 1, 2 and Site 3.

4. **Equipment Shipment/Conference Room Setup:**

   A. Cody Owenby will be at the airport the day of the siting to set the equipment up. A day before the siting, C. Owenby will set up the equipment and will make sure everything is running properly. The ATM is asked to be there the day before or 45 minutes prior to the siting to be familiarized with the menu functions of the VR headset.

   B. One half hour before siting C. Owenby will turn everything on and make sure it is up and running for the siting. IT support will need to be present to make sure they will be open internet public access.

5. **ALP Aerial View and Colors:**

   C. Owenby presented an aerial view of the airport/model and the colors (cyan – runway extensions, future terminal building, ramp, and parking; brown – removed or to be removed areas; green – future passenger roadways; red – proposed buildings; white – existing buildings.

   C. Owenby provided views of the airport pre-site locations from Site 1, 2, 3, and from the existing tower.

6. Existing Cab: M. Ballon scanned from the existing cab. Carl Collins and Brendan Haas stated that the model is accurate.

7. Site 1: C. Owenby scanned the airport from inside the cab of Site 1.

A. Cab height: 120 ft AGL floor, 125 ft AGL eye level.

B. Orientation: E from Panel A.

C. Site 1 has two acres of land available. There is no road or utility access.

D. C. Owenby scanned the airport for model accuracy from Site 1 and Carl Collins and Brendan Haas stated that the model is accurate.

8. Site 2: C. Owenby scanned the airport from inside the cab of Site 2.

A. Cab height: 80 ft AGL floor, 85 ft AGL eye level.

B. Orientation: E from Panel A.

C. Site 2 has two acres of land available. There is no road or utility access.

D. C. Owenby scanned the airport for model accuracy from Site 2 and Carl Collins and Brendan Haas stated that the model is accurate.

9. Site 3: C. Owenby scanned the airport from inside the cab of Site 3.

A. Cab height: 122 ft AGL floor, 127 ft AGL eye level.

B. Orientation: NW from Panel A.

C. Site 3 has one and a half acres of land available. There is road and utility access.

D. Located behind the existing tower.

E. C. Owenby scanned the airport for model accuracy from Site 3 and Carl Collins and Brendan Haas stated that the model is accurate.

10. Airport information:

A. The tower does not have STARS.

B. The tower has four positions, LC, GC, FD/CD, CIC.

C. Rotating beacon is on top of the existing tower and will be placed on top of the new tower.

D. Hours of operation are 7am to 7pm CT, seven days a week, 365 days a year.

E. This is a reimbursable agreement (RA) site. POND developed the model.

F. This facility is represented by NATCA.

G. The column size was 6”x10”, the larger mullion size is 6”x10”, the smaller mullion size is 4”x5”

H. Johnathan Taylor stated the height of Site 1 tower cab would raise the RNAV minimums by 20

feet.

I. C. Owenby will add the rotating beacon as a toggle in the model.

J. The sun placement was not correctly displayed for the day/time of year. The time zone was displayed as -6 GMT but will need to be corrected to -5 GMT. These items will be corrected for the siting.

Actions:

1. C. Owenby will correct the sun placement and GMT time in the model prior to the siting.

2. Scott Mann will send the data sheet to the participants that requested it.

New Braunfels National Airport (BAZ)
New Braunfels, Texas
VISTA Siting Meeting Minutes
June 25–26, 2024

Federal Aviation Administration (FAA) representatives of the Central Service Area (CSA) and New Braunfels National Airport (BAZ) participated in the siting activities at BAZ located in New Braunfels, Texas, on June 25–26, 2024. The team followed the VISTA Process Memorandum, Version 1.1, dated October 16, 2023.

Facilitator: Scott Mann

SRM Facilitator: Joe Sims

Modeler: Pond & Company

Participants: See Attachment 1.

Purpose of Meeting: To determine the optimum height, cab size, and location of a replacement Airport Traffic Control Tower (ATCT).

Agenda

a. Introductions
b. Airport Layout Plan (ALP) Overview
c. Assessment of Preferred Sites – Control Personnel
d. Safety Risk Management (SRM) Panel Assessment
e. Recommended Site
f. Actions

1. Overview of Airport Model and Preferred Sites:

a. An overview of the airport model was provided to all participants, to include identification of aircraft movement and definitions of colors:

- Cyan – Runway Extensions, Ramp, and Parking
- Brown – Removed or to be Removed Areas
- Green – Future Passenger Roadways
- Red – Proposed Buildings, including Future Terminal Building
- White – Existing Buildings

b. Pre-Sites Summary: Site 1 and Site 2.

Figure 1. BAZ Overview with Pre-Sites

2. Siting Assessment Issues and/or Notes:

- The tower does not have Standard Terminal Automation Replacement System (STARS).

- For Site 1, mitigation will be required for Area Navigation (RNAV) as the top of the tower is 805 feet (ft.) Above Mean Sea Level (AMSL) which is higher than the Not to Exceed Height (NEH) of 799 ft. AMSL Top of Tower (TOT). This classifies the tower as an obstacle. The missed approach will need to be amended as a result. The Airport Director/Dr. Robert Lee concurred with raising the minimums if Site 1 is selected. Concurrence will also be required from the users.

- Due to the proximity of the Automated Surface Observing Systems (ASOS) to Site 2, the ASOS may need to be relocated. The airport plans to relocate the ASOS and may also upgrade to a Surface Weather Observation Station (AWOS) A3.

3. **Preferred Site Assessment by the Air Traffic Control Team:** See Attachment 2.

4. Security Requirements:

- Buffer Zone: A clear minimum distance of 20 ft. outward from any tower structure or building to the property line must be provided.

- Clear Zone: A clear minimum distance of 20 ft. outside of the fence must be maintained.

5. **Recommended Site:** The recommended site is Site 2 (see Attachment 2 for details and Attachment 3 for the site comparison chart). Site 2 was selected over the other sites due to the following advantages:

   - The Site 2 elevation provides more visibility in the center of the airfield, to hold short lines, and to all approaches and departures on the runways.

   - Site 2 does not hamper any future development on the west side of the airport. The airport will have a clear Line of Sight (LOS) to all runways from Site 2 even considering future development plans.

   - The sight line for Site 2 does not cross private property. Site 1 crosses undeveloped private property with unknown development plans.

6. **Site Rankings (Order of Preference):** Site 2 then Site 1.

7. **Post-Siting Actions:** See Attachment 10.

Attachment 1 – Participant List

Aaron Southerland
Abi Fleischmann
Andrew Tamanaha
Benito Mercado
Bob Gibbens
Brendan Haas
Carl Collins (ATM)
Ben Breck
Cody Owenby
Darlisa Riggs
Douglas Switzer
Dr. Robert Lee (Airport Director)
Eli Strebel
Franklin Boyer
Gary Nielsen
Grayson Cox
Jared Reynolds
Jason Frisch
Jennifer VandenBrook
Joe Sims (SRM Facilitator)
Johnathan Taylor
Kimberly Ledford
Lillie Smith
Matt Ballon
Michael Van Vliet
Morgane Coleman
Patrick Mannella
Rita Moore
Scott Mann (NC)
Scott McClelland
Shari Teel
Stephanie Griffith
Stephanou Yonkeu
Victoria Wilpitz (Lead Engineer)
Walter Parker

Attachment 2 – Sites Assessed

NOTE: During the siting assessment, the cab can be rotated, and the controller can take a step back and/or move their head to look around columns and mullions to achieve the best operational LOS. Refer to the Safety Risk Management Document (SRMD) for details.

1. Site 1

A. Reference Location: Site 1 is located near the future terminal building due west of Runway (RWY) 17/35 on the western boundary of the airport property.

B. Airport Quadrant: West

C. ATCT Orientation: East from Local Control (LC), parallel to RWY 17/35.

D. Acreage: >2 acres

E. Cab Size Evaluation: A 440 square foot (sf) cab is large enough and configured to fit all approved positions and accommodate controller movement during consolidated/slow traffic periods with additional space for expansion, if needed.

F. Console Discussion: The ATCT will have slat-wall consoles.

G. Utilities: The site does not have access to utilities.

H. Access: The site does not have road access.

I. Rotating Beacon: The rotating beacon is located on top of the existing tower. The airport plans to move the beacon to the top of the new tower.

J. Position Locations:

- LC – Panel A
- Ground Control (GC) – Panel H
- Flight Data (FD)/Clearance Delivery (CD) – Panel B
- Controller-in-Charge (CIC) – Panel C

K. Stair Location/Orientation: Left Ingress/Egress

L. No Effect Height: 799 ft. AMSL TOT

NOTE: At 120 ft. Above Ground Level (AGL) cab floor, the TOT is 805 ft. AMSL, which is above the NEH. Per Flight Procedures/Jason Fisch, there is a Terminal Instrument

Procedures (TERPS) Inflight Rules (IFR) effect on the Category (CAT) A Circling Minimums Decision Altitude (CMDA) for the RNAV Global Positioning System (GPS) at RWY 31. The CMDA is currently 1,100 ft. and will increase to 1,120 ft. (an increase of 20 ft.). The Airport Director/Dr. Robert Lee concurred with raising the minimums if Site 1 is selected. Concurrence will also be required from the users.

M. Cab Height: The starting cab floor height for this evaluation is 120 ft. AGL cab floor; Cab Rotation: 0 degrees.

Final Selection: Cab Height: 120 ft. AGL cab floor; Column Configuration; Cab Rotation: 20 degrees.

N. Column Assessment (6″×10″): Starting Cab Height: 120 ft. AGL cab floor; Starting Rotation: 0 degrees.

(1) Unobstructed View (Movement and Non-Movement Areas): The BAZ ATM scanned the airport at both LC and GC looking at hold short lines, runways/taxiways, aircraft movement, etc.

- LC: At a rotation of 25 degrees, a column blocked the runway between Panel F and Panel G. The cab was rotated from 25 degrees to a final rotation of 20 degrees which cleared the blockage.

- GC: The ATM did not identify any issues. With a rotation of 10 degrees, the column between Panel A and Panel H created a blockage at RWY 31. The cab was rotated to 25 degrees which cleared the view. The ATM did not identify any issues with the view of movement areas. The scan was not repeated at the final rotation of 20 degrees.

(2) Look-Down Angle: The BAZ ATM scanned the airport at both LC and GC.

- LC: At a rotation of 20 degrees, the BAZ ATM stated that all ramp areas were visible and no issues were identified.

- GC: At a rotation of 25 degrees, the BAZ ATM stated that all ramp areas were visible and no issues were identified. The scan was not repeated at the final rotation of 20 degrees.

(3) Look Across LOS: The BAZ ATM scanned the airport at both LC and GC.

- LC: At a rotation of 20 degrees, the BAZ ATM scanned the airport and did not identify any issues.

- GC: At a rotation of 25 degrees, the BAZ ATM scanned the airport and did not identify any issues. The scan was not repeated at the final rotation of 20 degrees.

(4) Look-Up Angle: The BAZ ATM scanned the airport at both LC and GC.

- LC: At a rotation of 20 degrees, the BAZ ATM scanned the airport and added aircraft at all runways on a left base approach and no issues were identified.

- GC: At a rotation of 25 degrees, the BAZ ATM scanned the airport and added aircraft at all runways and no issues were identified. The scan was not repeated at the final rotation of 20 degrees.

Final Column Selection: Cab Height: 120 ft. AGL cab floor; Column Configuration; Cab Rotation: 20 degrees.

O. Mullion Assessment (Larger Mullions: 4.25″×7-3/8″; Smaller Mullions: 2.5″×3-9/16″): Starting Cab Height: 120 ft. AGL cab floor; Starting Rotation: 20 degrees.

(1) Unobstructed View (Movement and Non-Movement Areas): The BAZ ATM scanned the airport at both LC and GC, looking at hold short lines, runways/taxiways, aircraft movement, etc.

- LC: The BAZ ATM did not identify any issues. With a 25-degree cab rotation (due to the blockages at GC), the ATM noted a blockage of future Taxiway (TWY) B at RWY 13 at Panel G and Panel F.

- GC: RWY 31 was blocked between Panel A and Panel B, and RWY 35 between Panel A and Panel H. The cab was rotated from 20 degrees to a rotation of 25 degrees.

NOTE: The National Coordinator (NC) asked if the BAZ ATM preferred mullions or columns. The BAZ ATM stated that columns were preferred and the mullion assessment was stopped at this time.

P. 2-Point Lateral Discrimination: The BAZ ATM was able to discriminate aircraft between runways/taxiways.

NOTE: The SRM Facilitator/Joe Sims requested that the airport define the point between movement and non-movement areas around the hangars shown in Figure 2 and Figure 3. The airport confirmed that if Site 1 is selected, any planned hangar(s) impacting the site will be removed from future development plans.

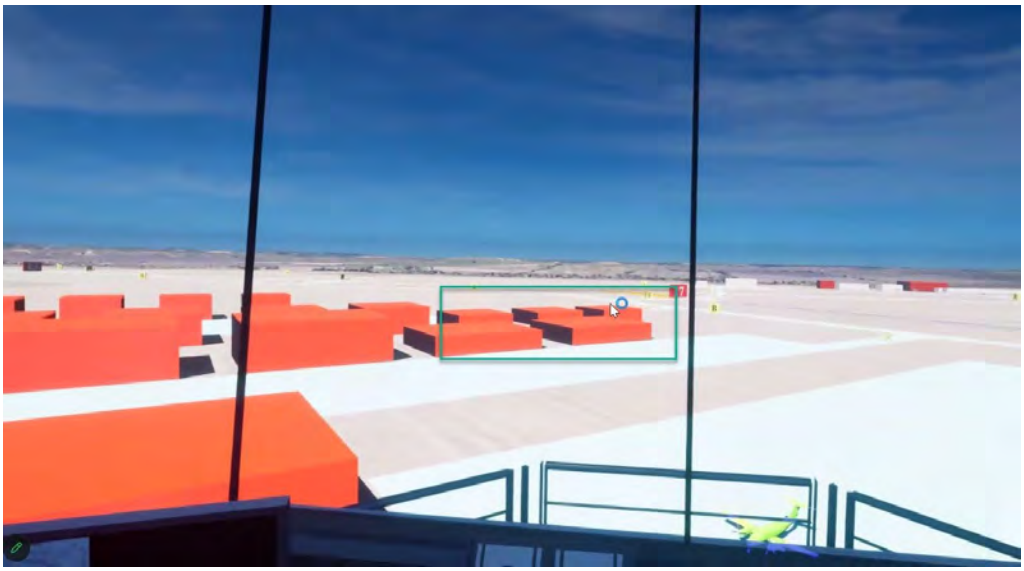


Figure 2. Proposed Hangars Impacting LOS at Site 1

Figure 3. Proposed Hangars Impacting LOS at Site 1

The proposed hangars impacting Site 1 were removed from the model and the scan was repeated. The airport identified that the boundary of movement/non-movement areas will be at the Object Free Area (OFA) boundary of TWY B (see Figure 4).

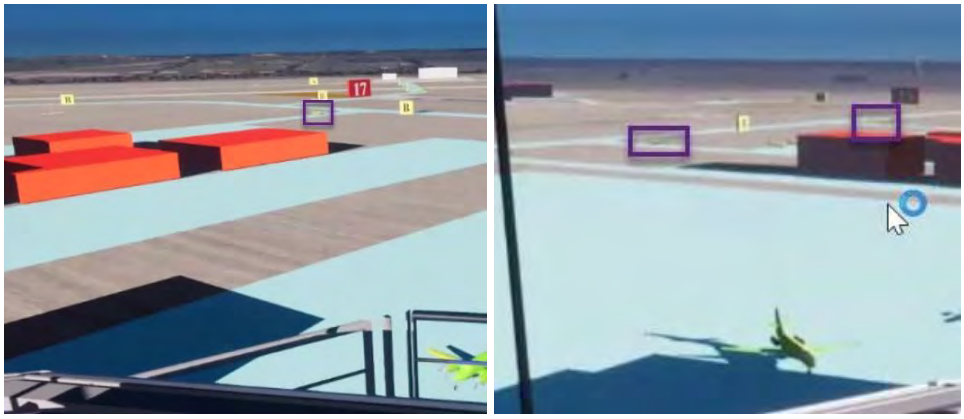


Figure 4. Object Free Area Boundary

Q. Construction: No construction issues are expected from the current tower during construction of the new tower, or operating from the new tower until the old tower is demolished.

R. Weather: No weather issues are expected at Site 1.

S. Advantages:

- Site 1 is located on the west side of the airfield, near where the new terminal will be constructed, providing good access to the tower from the terminal. The entrance to the new terminal will be shared by the site.
- With Site 1, expediting development on the west side works best for the airport.
- The ATCT at Site 1 is easier for the sponsor to access and maintain.
- Site 1 provides a better LOS to the approach end of RWY 13.
- Site 1 is located midfield, providing a good LOS to all runways.

T. Disadvantages:

- With Site 1, the airport does lose some hangar space; future development plans will have to be scaled back to due LOS issues. However, the Airport Director/Dr. Robert Lee agreed to this reduction in hangar space if Site 1 is the recommended site.
- Site 1 has a TERPS IFR effect on the CAT A CMDA for RNAV GPS at RWY 31, requiring a 20 ft. increase. Airport Director/Dr. Robert Lee stated the airport will make this change if Site 1 were to be selected.

- Site 1 is close to the ramp which will increase noise and jet fumes from aircraft into the tower.

NOTE: Airport Director/Dr. Lee asked if the height of the tower poses any issues with transition zones (i.e., Part 77). Airport Consultant/Grayson Cox stated that there are no Part 77 issues with Site 1.

U. **Safety Risk Management Panel:** A safety analysis was conducted on Site 1. No hazards were identified. The SRM Facilitator will provide the final safety analysis to the NC.

V. Preference (Columns or Mullions): The BAZ ATM/Carl Collins selected Columns.

2. Site 2

A. Reference Location: Near the ASOS at the intersection of RWY 13 and RWY 17.

B. Airport Quadrant: West

C. ATCT Orientation: East from LC

D. Acreage: >2 acres

E. Cab Size Evaluation: A 440 sf cab is large enough and configured to fit all approved positions and accommodate controller movement during consolidated/slow traffic periods with additional space for expansion, if needed.

F. Console Discussion: The ATCT will have slat-wall consoles.

G. Utilities: The site has access to power and sewage.

H. Access: The site has existing partial access.

I. Rotating Beacon: The rotating beacon is located on top of the existing tower. The airport would like to move the beacon to the top of the new tower.

J. Position Locations:

- LC – Panel A
- GC – Panel B
- FD/CD – Panel H
- CIC – Panel C

K. Stair Location/Orientation: Left Ingress/Egress

L. No Effect Height: 799 ft. AMSL TOT

M. Cab Height: The starting cab floor height for this evaluation is 80 ft. AGL cab floor. Cab Rotation: 0 degrees.

Final Selection: Cab Height: 110 ft. AGL cab floor; Cab Rotation: 0 degrees.

N. Column Assessment (6″×10″): Starting Cab Height: 80 ft. AGL cab floor; Starting Rotation: 0 degrees.

NOTE: ATC indicated that they could take a step back and/or move their head left or right to achieve an operational LOS.

(1) Unobstructed View (Movement and Non-Movement Areas): The BAZ ATM scanned the airport at both LC and GC looking at hold short lines, runways/taxiways, aircraft movement, etc.

- LC: At 80 ft. AGL cab floor, the BAZ ATM did not identify any issues.
- GC: At 80 ft. AGL cab floor, the BAZ ATM did not identify any issues.

(2) Look-Down Angle: The BAZ ATM scanned the airport at both LC and GC.

- LC: At 80 ft. AGL cab floor, the BAZ ATM did not identify any issues.
- GC: At 80 ft. AGL cab floor, the BAZ ATM did not identify any issues.

(3) Look Across LOS: The BAZ ATM scanned the airport at both LC and GC.

- LC: At 80 ft. AGL cab floor, the BAZ ATM did not identify any issues.
- GC: At 80 ft. AGL cab floor, the BAZ ATM did not identify any issues.

(4) Look-Up Angle: The BAZ ATM scanned the airport at both LC and GC.

- LC: At 80 ft. AGL cab floor, the BAZ ATM did not identify any issues.
- GC: At 80 ft. AGL cab floor, the BAZ ATM did not identify any issues.

NOTE: The NC asked the airport if raising the cab floor height at Site 2 would improve object discrimination (the ability to discriminate aircraft between runways/taxiways). The airport agreed that raising the cab to 110 ft. AGL cab floor would be helpful and accommodate future development. The cab was raised to 110 ft. AGL cab floor and the scans repeated.

(1) Unobstructed View (Movement and Non-Movement Areas): The BAZ ATM scanned the airport at both LC and GC, looking at hold short lines, runways/taxiways, aircraft movement, etc.

- LC: At 110 ft. AGL cab height, the BAZ ATM did not identify any issues.
- GC: At 110 ft. AGL cab height, the BAZ ATM did not identify any issues.

(2) Look-Down Angle: The BAZ ATM scanned the airport at both LC and GC.

- LC: At 110 ft. AGL cab height, the BAZ ATM stated that all ramp areas were visible and no issues were identified.
- GC: At 110 ft. AGL cab height, the BAZ ATM stated that all ramp areas were visible and no issues were identified.

(3) Look Across LOS: The BAZ ATM scanned the airport at both LC and GC.

- LC: At 110 ft. AGL cab height, the BAZ ATM did not identify any issues.
- GC: At 110 ft. AGL cab height, the BAZ ATM did not identify any issues.

(4) Look-Up Angle: The BAZ ATM scanned the airport at both LC and GC.

- LC: At 110 ft. AGL cab height, the BAZ ATM added aircraft on to all runways (approach, takeoff, and left base patterns) and did not identify any issues.
- GC: At 110 ft. AGL cab height, the BAZ ATM added aircraft on to all runways (approach, takeoff, and left base patterns) and did not identify any issues.

Final Column Selection: Cab Height: 110 ft. AGL cab floor; Cab Rotation: 0 degrees.

O. Mullion Assessment (Columns: 4-1/4″×7-3/8″; Mullions: 2-1/2″×3-9/16″): Starting Cab Height: 110 ft. AGL cab floor; Starting Rotation: 0 degrees.

NOTE: ATC indicated that they could take a step back and/or move their head left or right to achieve an operational LOS.

(1) Unobstructed View (Movement and Non-Movement Areas): The BAZ ATM scanned the airport at both LC and GC looking at hold short lines, runways/taxiways, aircraft movement, etc.

- LC: The approach end of RWY 35 was blocked at the center of Panel B. The cab was rotated from 0 degrees to a final rotation of 5 degrees which cleared the view. The BAZ ATM did not identify any issues with this view.
- GC: The BAZ ATM did not identify any issues.

(2) Look-Down Angle: The BAZ ATM scanned the airport at both LC and GC.

- LC: The BAZ ATM did not identify any issues.
- GC: The BAZ ATM did not identify any issues.

(3) Look Across LOS: The BAZ ATM scanned the airport at both LC and GC.

- LC: The BAZ ATM did not identify any issues.
- GC: The BAZ ATM did not identify any issues.

(4) Look-Up Angle: The BAZ ATM scanned the airport at both LC and GC.

- LC: The BAZ ATM did not identify any issues.
- GC: The BAZ ATM did not identify any issues.

Final Mullion Selection: Cab Height: 110 ft. AGL cab floor; Cab Rotation: 5 degrees.

P. 2-Point Lateral Discrimination: At 110 ft. AGL cab floor, the BAZ ATM was able to discriminate aircraft between runways/taxiways.

Q. Construction: No construction issues are expected from the current tower during construction of the new tower, or operating from the new tower until the old tower is demolished.

R. Weather: No weather issues are expected at Site 2.

S. Advantages:

- Site 2 has a better LOS to the entire airport, and it separates the ATCT from the terminal and other airport congestion, thus buffer and clear zones are easier to manage.
- Site 2 is further from the ramp which separates the tower from terminal congestion with less noise and fumes.
- Site 2 will have airport perimeter fencing and will be segregated with its own secure fencing.
- Site 2 already has partial access via a gravel road.
- Site 2 frees up development along the Fixed Based Operator (FBO) ramp.

T. Disadvantages: The ASOS will need to be relocated.

U. **Safety Risk Management Panel:** A safety analysis was conducted on Site 2. No hazards were identified. The SRM Facilitator will provide the final safety analysis to the NC.

V. Preference (Columns or Mullions): The BAZ ATM selected Columns.

3. Site 3

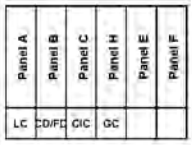
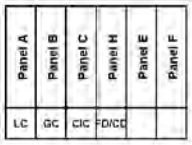
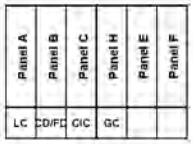
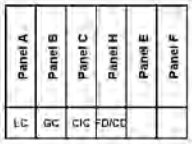
Site 3 was deemed non-viable due to the extreme distance of the tower to the end of RWY 13 (approximately one mile) and the inability to raise the tower (per the TERPS analysis) to improve the view. The BAZ ATM stated that even with current equipment, such as the use of binoculars, the view would not be improved and the overall safety of the airport would not be improved.

Attachment 3 – Site Comparison Chart

VISTA Site Comparison Chart

Airport: New Braunfels National Airport (BAZ) **Siting Date(s):** 6/26/2024

Service Area: ☐ ESA ☒ CSA ☐ WSA **Type:** ☐ BIL ☒ Non-BIL

Item Description	Site 1	Site 2
Recommended Site:		X
Latitude	29°42'14.95" N	29°42'32.53" N
Longitude	98°02'53.70" W	98°02'50.77" W
Reference Location	WEST of RWY 17/35	Near RWY 17/13 Intersection
Airport Quadrant	WEST	WEST
Square Acreage	>2	>2
Cab Orientation	EAST	EAST
Cab Size	440 SQ FT	440 SQ FT
Interior Columns (*Mullions*) Control Positions Location [Respect to CAB Ref Points by control position (i.e., LC, LC2, GC, FD, CD, SUPE/CIC, Other)]		
Perimeter Columns (*Columns*) Control Positions Location [Respect to CAB Ref Points by control position (i.e., LC, LC2, GC, FD, CD, SUPE/CIC, Other)]		
Stairs	LEFT	LEFT
TERPS No Effect Height (NEH)	799' MSL	799' MSL
Cab Floor Level (AGL)	120'	110'
Cab Floor Level (AMSL)	770'	761'
Eye-Level (AGL) *	125'	115'
Eye-Level (AMSL)	775'	766'
Top of Tower (AGL)	155'	145'
Top of Tower (AMSL)	805'	796'
Estimated Ground Level at Tower *	650'	651'
Ground Elevation at Key Point (Threshold Elev) *	659'	644'

* Human Factors

VISTA Site Comparison Chart

Item Description	Site 1	Site 2
Tower to Key Point Distance (Farthest RWY distance) (RWY Threshold) *	4810'	5197'
Columns		
Interior (Mullions)	N/A	N/A
Perimeter (Columns)		
Cab Rotation (Start/Final)	Columns: 000/020	Columns: 000/000
	Mullions: 020/025	Mullions: 000/005
2-Point Lateral Discrimination (Deg)	PASS	PASS
Line of Sight Angle of Incidence (.8 lookdown)	1.38	1.34
Object Discrimination		
Minivan – Front View	☒ Pass ☐ Fail	☒ Pass ☐ Fail
Minivan – Side View	☒ Pass ☐ Fail	☒ Pass ☐ Fail
14 CFR Part 77 Impacts	TBD	TBD
ATCT Potential Impacts to Future & Existing NAVAIDs	TBD	TBD
Equipment Configuration	☒ Slatwall ☐ Traditional	☒ Slatwall ☐ Traditional
Access to ATCT Site (Yes or No)	NO	PARTIAL
Rotating Beacon	TOT	TOT
TOPR Issues	YES	NO

* Human Factors

VISTA Site Comparison Chart

Item Description	Site 1	Site 2
Ken69dalAirspace – Lat/Longs (4 corners)	**S1C1:** 29°42'15.04"N 98°02'53.48" W **S1-C2:** 29°42'14.76N 98°02'53.60" W **S1-C3**: 29°42'14.86"N 98°02'53.92" W **S1-C4:** 29°42'15.14"N 98°02'53.80" W	**S2-C1:** 29°42'32.68"N 98°02'50.60" W **S2-C2:** 29°42'32.38"N 98°02'50.60" W **S2-C3:** 29°42'32.38"N 98°02'50.94" W **S2-C4**: 29°42'32.68"N 98°02'50.94" W
4-Corners Images		

Attachment 4 – Site Location Aerial View

Attachment 5 – Air Traffic Control Visibility Analysis Tool (ATCVAT)

Visibility Siting Requirements Human Factors Analyses

Objective: Two human performance metrics, Object Discrimination Analysis and Object Discrimination and Line of Sight (LOS) Angle of Incidence, were used to assess the impact of tower height on air traffic control tower specialist distance perception.

Technical Approach: the tower visibility analysis tool (http://www.hf.faa.gov/visibility) was used to assess the human performance metrics[1].

Air Traffic Control Tower: **BAZ Site 1**
Light Level: **Sunlight Clouds**
Ground Turbulence: **Medium**
Target Object: **Dodge Caravan**, target orientation: **Front View**
Observer Eye Height: **125**
Vertical Elevation Change Between Observer and Key Point (feet): **116**
Ground Elevation at Tower (MSL): **650**
Ground Elevation at Key Point (MSL): **659**
Tower to Key Point Distance: **4810** (feet) **1.47** (km)
Visibility Range: **10**(Miles) **16.09** (km)

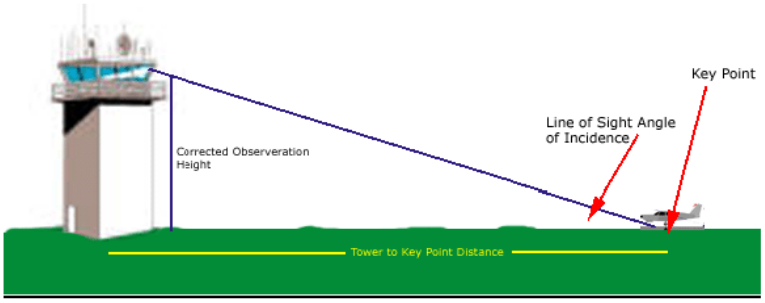
1. Object Discrimination Analysis Results

Criteria	Threshold	Tower Results	Pass/Fail
probability(detection)	95.5%	99.6%	Pass
probability(recognition)	11.5%	57.6%	Pass

2. Line of Sight (LOS) Angle of Incidence

Threshold	Tower Results	Pass/Fail
0.8 degrees or 48 minutes	1.38degrees	PASS: Change in elevation between observer and key point should be no less than 67 feet.

[1]Krebs, Hewitt, Murrill, and Driggers. 2005. *How High is High Enough? Quantifying the Impact of Air Traffic Control Tower Observation Height on Distance Perception*, International Symposium on Aviation Psychology, 1-5.



[1]Krebs, Hewitt, Murrill, and Driggers, 2005. *How High is High Enough? Quantifying the Impact of Air Traffic Control Tower Observation Height on Distance Perception*, International Symposium on Aviation Psychology, 1-5.

Visibility Siting Requirements Human Factors Analyses

Objective: Two human performance metrics, Object Discrimination Analysis and Object Discrimination and Line of Sight (LOS) Angle of Incidence, were used to assess the impact of tower height on air traffic control tower specialist distance perception.

Technical Approach: the tower visibility analysis tool (http://www.hf.faa.gov/visibility) was used to assess the human performance metrics[1].

Air Traffic Control Tower: **BAZ Site 2**
Light Level: **Sunlight Clouds**
Ground Turbulence: **Medium**
Target Object: **Dodge Caravan**, target orientation: **Front View**
Observer Eye Height: **115**
Vertical Elevation Change Between Observer and Key Point (feet): **122**
Ground Elevation at Tower (MSL): **651**
Ground Elevation at Key Point (MSL): **644**
Tower to Key Point Distance: **5197** (feet) **1.58** (km)
Visibility Range: **10**(Miles) **16.09** (km)

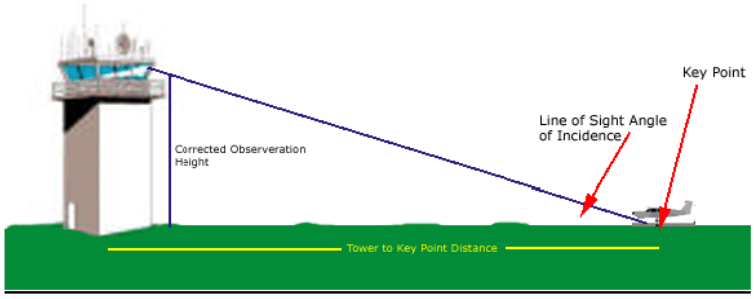
1. Object Discrimination Analysis Results

Criteria	Threshold	Tower Results	Pass/Fail
probability(detection)	95.5%	99.5%	Pass
probability(recognition)	11.5%	50%	Pass

2. Line of Sight (LOS) Angle of Incidence

Threshold	Tower Results	Pass/Fail
0.8 degrees or 48 minutes	1.34degrees	PASS: Change in elevation between observer and key point should be no less than 73 feet.

[1]Krebs, Hewitt, Murrill, and Driggers, 2005. *How High is High Enough? Quantifying the Impact of Air Traffic Control Tower Observation Height on Distance Perception*, International Symposium on Aviation Psychology, 1-5



[1]Krebs, Hewitt, Murrill, and Driggers, 2005. *How High is High Enough? Quantifying the Impact of Air Traffic Control Tower Observation Height on Distance Perception*, International Symposium on Aviation Psychology, 1-5.

Attachment 6 – TERPS Analysis

Site 1 805 MSL 1A A/C

RNAV (GPS) RWY 31 – CMDA 1120, NEH 799

Site 2 766 MSL 1A A/C

No IFR Effect, NEH 799

Site 3 798 MSL 1A A/C

No IFR Effect, NEH 799

Attachment 7 – Technical Operations Preliminary Review (TOPR)

6/14/24, 9:53 AM Facility Circle Search

Federal Aviation Administration

« OE/AAA

Facility Circle Search

You may search about (center point): **Search radius:**

- A specific OE Case: - - - OE OE Case Number
- A specific NRA Case: - - - NRA NRA Case Number
- A specific NR Case: - - - NR NR Case Number
- A specific location: Latitude: 29 - 42 - 14.95 N NAD 83 SE: 650
  Longitude: 98 - 2 - 53.70 W AGL: 155
  AMSL: 805

5 Nautical miles

Search

Facility Search results:
10 Facilities were found for LOCATION: 29-42-14.95N / 98-02-53.70W (NAD83) SE: 650.0 AGL: 155.0 AMSL: 805.0

Facility	Facility Id	Apt ID	Latitude	Longitude	Ground Elev (FT)	Facility AGL(FT)	Vertical Angle (Degs)	Azimuth	Dist (FT)	Dist (NM)	Source
ASOS	BAZ	BAZ	29-42-31.96N	98-02-45.05W	651.00	30.00	3.77	23.94	1,880.07	0.31	OEAAA
RTR	BAZ	BAZ	29-41-55.40N	98-02-20.30W	641.20	65.00	1.60	123.84	3,546.47	0.58	OEAAA
Within 1,000ft-2.5NM above 0.25 degrees											
ATCT	BAZ	BAZ	29-41-55.07N	98-02-20.42W	647.00	10.00	2.38	124.38	3,556.41	0.59	OEAAA
Convex hull of 4000 ft. radius circles centered at the runway end points of the airport.											
REIL/13	BAZ	BAZ	29-42-54.40N	98-02-59.78W	658.40		2.09	352.33	4,020.83	0.66	NASR
MALS/13	BAZ	BAZ	29-42-54.40N	98-02-59.78W	658.40		2.09	352.33	4,020.83	0.66	NASR
PAPI/13	BAZ	BAZ	29-42-54.40N	98-02-59.78W	658.40		2.09	352.33	4,020.83	0.66	NASR
PAPI/31	BAZ	BAZ	29-42-08.30N	98-02-08.32W	643.50		2.28	99.53	4,058.17	0.67	NASR
NXRAD	EWX		29-42-14.60N	98-01-43.00W	641.00	82.00	0.75	90.32	6,235.27	1.03	OEAAA
ASR	SATA	SAT	29-33-32.24N	98-28-09.43W	870.00	57.00	-0.05	248.56	143,815.52	23.67	OEAAA
Within 60NM if a wind turbine and smooth earth LOS exists.											
ASR	AUS	AUS	30-11-29.10N	97-39-05.83W	466.00	87.00	0.07	35.23	217,219.59	35.75	OEAAA
Within 60NM if a wind turbine and smooth earth LOS exists.											

Long Range Radar Search results:
0 Long Range Radar(s) were found for LOCATION: 29-42-14.95N / 98-02-53.70W (NAD83) SE: 650.0 AGL: 155.0 AMSL: 805.0

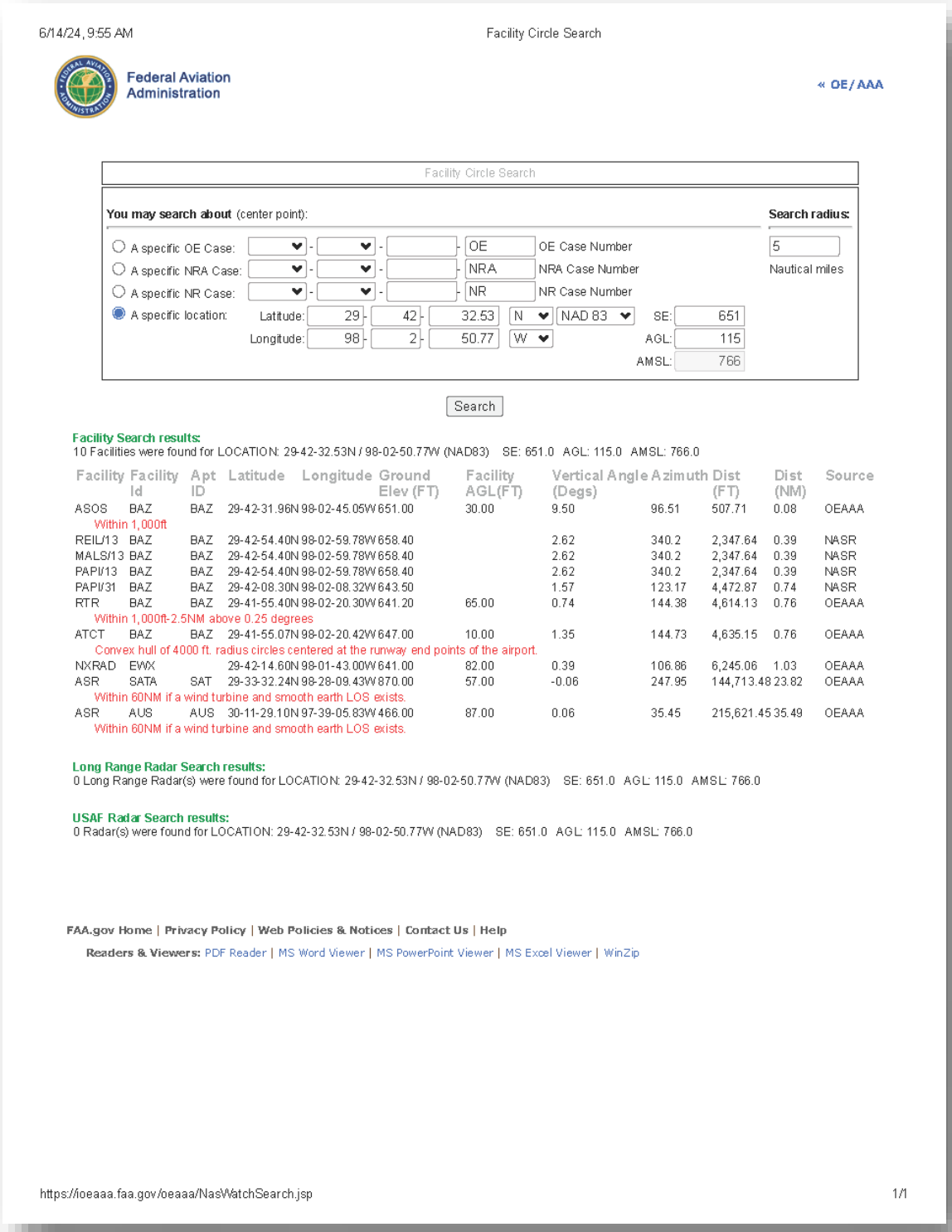
USAF Radar Search results:
0 Radar(s) were found for LOCATION: 29-42-14.95N / 98-02-53.70W (NAD83) SE: 650.0 AGL: 155.0 AMSL: 805.0

FAA.gov Home | Privacy Policy | Web Policies & Notices | Contact Us | Help

Readers & Viewers: PDF Reader | MS Word Viewer | MS PowerPoint Viewer | MS Excel Viewer | WinZip

https://oeaaa.faa.gov/oeaaa/NasWatchSearch.jsp 1/1

Site 2:



6/14/24, 9:55 AM Facility Circle Search

Federal Aviation Administration

« OE/AAA

Facility Circle Search

You may search about (center point): **Search radius:**

- A specific OE Case: - - - OE OE Case Number
- A specific NRA Case: - - - NRA NRA Case Number
- A specific NR Case: - - - NR NR Case Number
- A specific location: Latitude: 29 - 42 - 32.53 N NAD 83 SE: 651
  Longitude: 98 - 2 - 50.77 W AGL: 115
  AMSL: 766

Search radius: 5 Nautical miles

Search

Facility Search results:
10 Facilities were found for LOCATION: 29-42-32.53N / 98-02-50.77W (NAD83) SE: 651.0 AGL: 115.0 AMSL: 766.0

Facility	Facility Id	Apt ID	Latitude	Longitude	Ground Elev (FT)	Facility AGL(FT)	Vertical Angle (Degs)	Azimuth	Dist (FT)	Dist (NM)	Source
ASOS	BAZ	BAZ	29-42-31.96N	98-02-45.05W	651.00	30.00	9.50	96.51	507.71	0.08	OEAAA
Within 1,000ft											
REIL/13	BAZ	BAZ	29-42-54.40N	98-02-59.78W	658.40		2.62	340.2	2,347.64	0.39	NASR
MALS/13	BAZ	BAZ	29-42-54.40N	98-02-59.78W	658.40		2.62	340.2	2,347.64	0.39	NASR
PAPI/13	BAZ	BAZ	29-42-54.40N	98-02-59.78W	658.40		2.62	340.2	2,347.64	0.39	NASR
PAPI/31	BAZ	BAZ	29-42-08.30N	98-02-08.32W	643.50		1.57	123.17	4,472.87	0.74	NASR
RTR	BAZ	BAZ	29-41-55.40N	98-02-20.30W	641.20	65.00	0.74	144.38	4,614.13	0.76	OEAAA
Within 1,000ft-2.5NM above 0.25 degrees											
ATCT	BAZ	BAZ	29-41-55.07N	98-02-20.42W	647.00	10.00	1.35	144.73	4,635.15	0.76	OEAAA
Convex hull of 4000 ft. radius circles centered at the runway end points of the airport.											
NXRAD	EWX		29-42-14.60N	98-01-43.00W	641.00	82.00	0.39	106.86	6,245.06	1.03	OEAAA
ASR	SATA	SAT	29-33-32.24N	98-28-09.43W	870.00	57.00	-0.06	247.95	144,713.48	23.82	OEAAA
Within 60NM if a wind turbine and smooth earth LOS exists.											
ASR	AUS	AUS	30-11-29.10N	97-39-05.83W	466.00	87.00	0.06	35.45	215,621.45	35.49	OEAAA
Within 60NM if a wind turbine and smooth earth LOS exists.											

Long Range Radar Search results:
0 Long Range Radar(s) were found for LOCATION: 29-42-32.53N / 98-02-50.77W (NAD83) SE: 651.0 AGL: 115.0 AMSL: 766.0

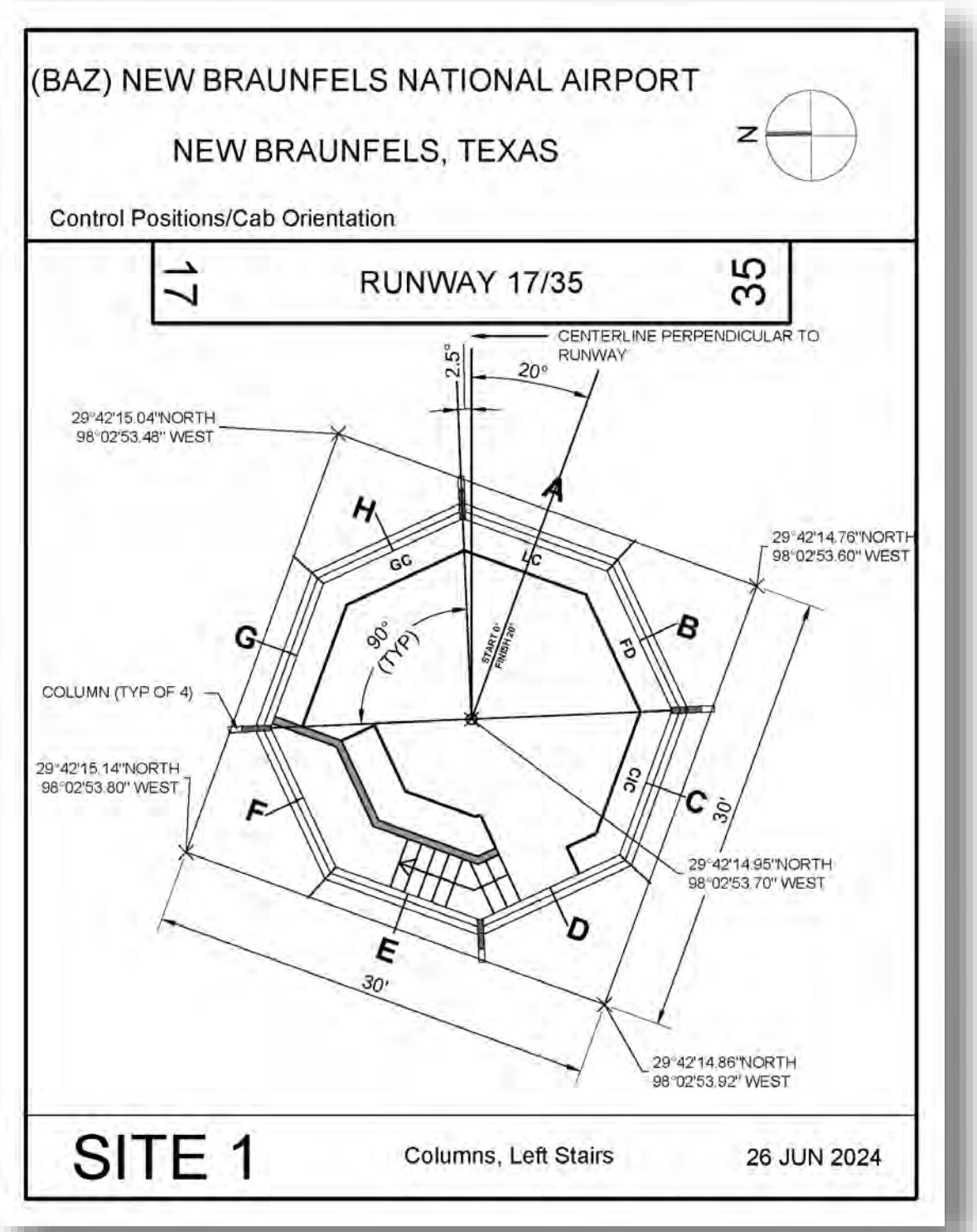
USAF Radar Search results:
0 Radar(s) were found for LOCATION: 29-42-32.53N / 98-02-50.77W (NAD83) SE: 651.0 AGL: 115.0 AMSL: 766.0

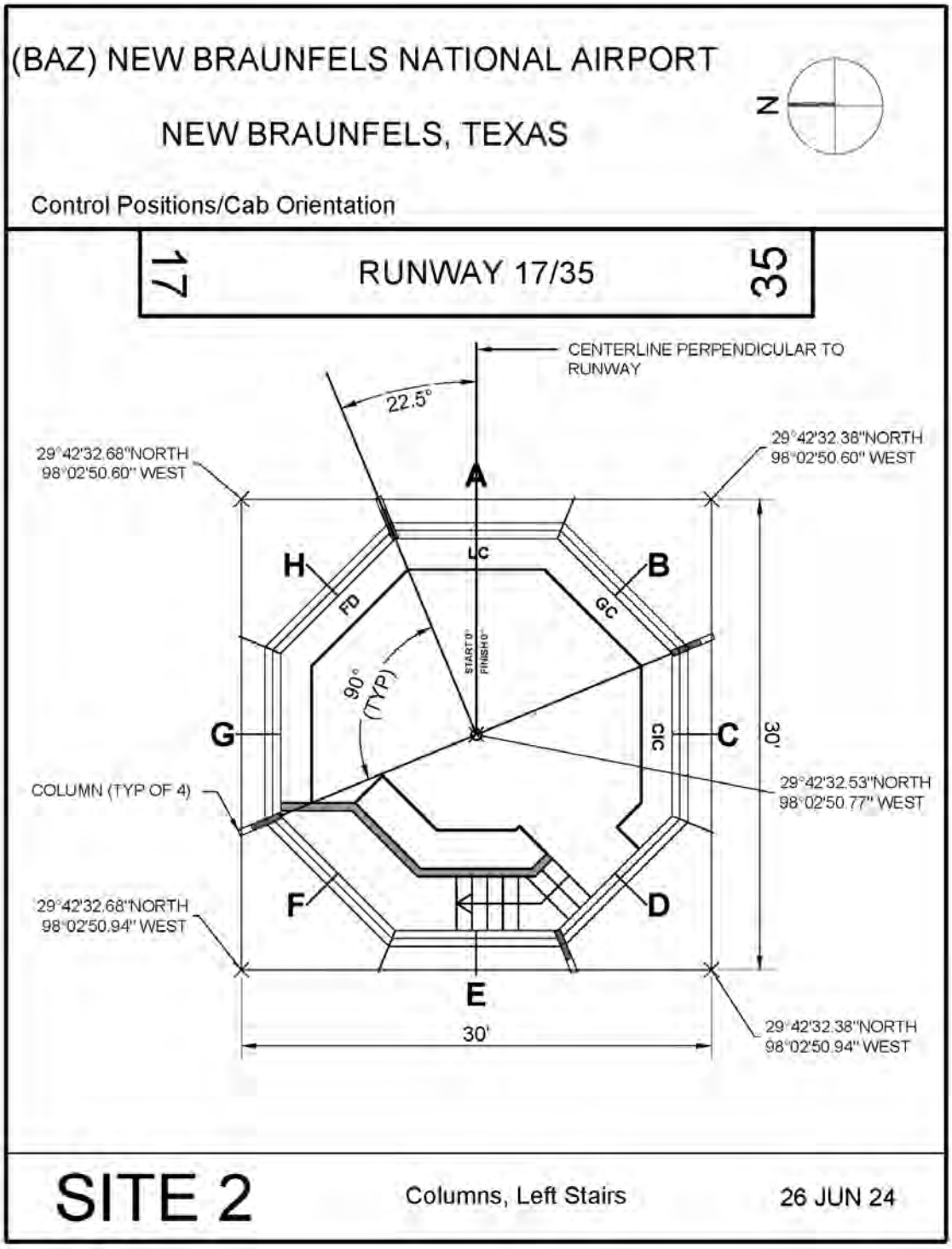
FAA.gov Home | Privacy Policy | Web Policies & Notices | Contact Us | Help

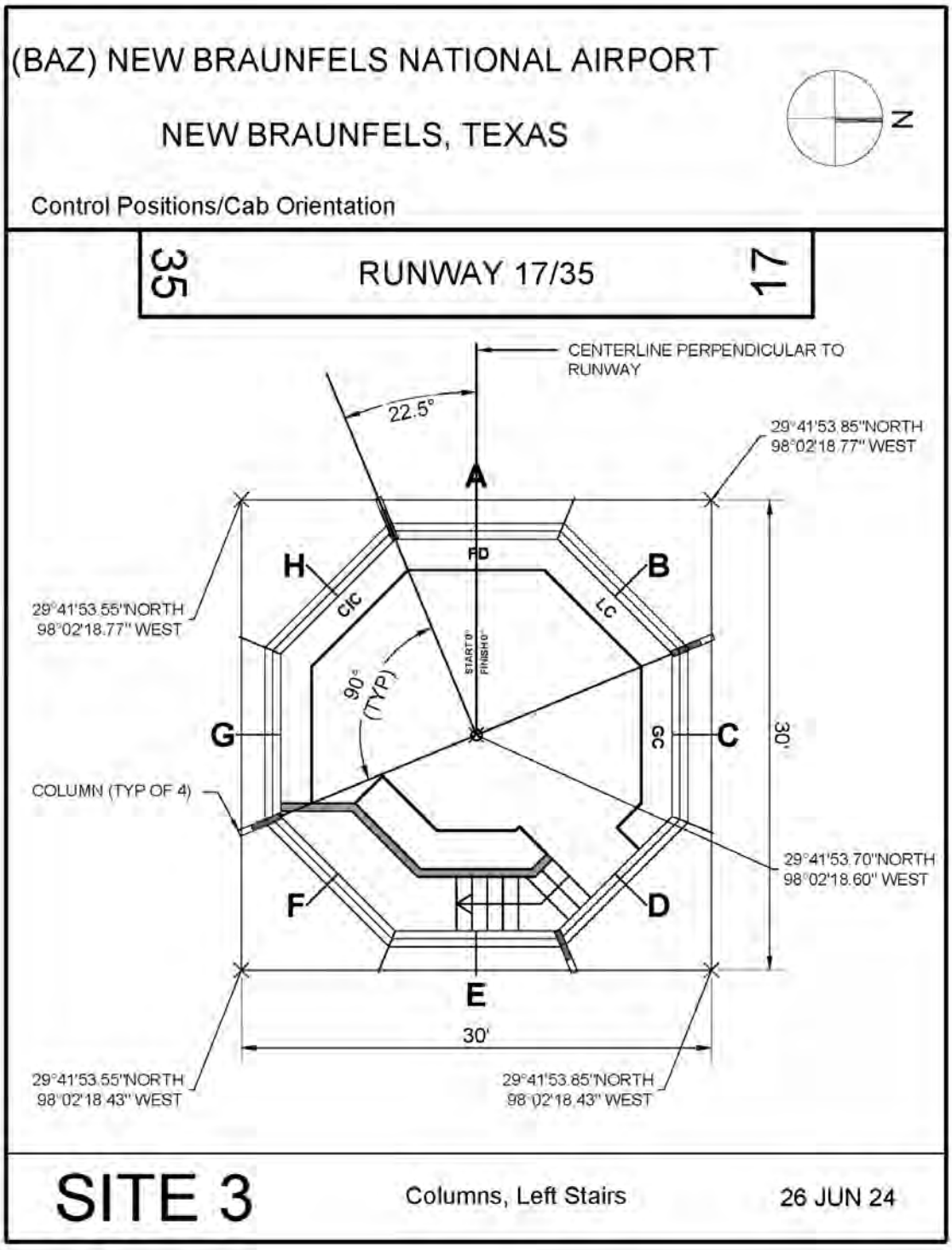
Readers & Viewers: PDF Reader | MS Word Viewer | MS PowerPoint Viewer | MS Excel Viewer | WinZip

https://oeaaa.faa.gov/oeaaa/NasWatchSearch.jsp 1/1

Attachment 8 – Controller Positions/Cab Orientation Drawing




(BAZ) NEW BRAUNFELS NATIONAL AIRPORT
NEW BRAUNFELS, TEXAS
N
Control Positions/Cab Orientation
17
RUNWAY 17/35
35
CENTERLINE PERPENDICULAR TO RUNWAY
22.5°
29°42'32.68"NORTH
98°02'50.60" WEST
29°42'32.38"NORTH
98°02'50.60" WEST
A
H
B
LC
FD
GC
START 0°
FINISH 0°
90° (TYP)
G
C
CIC
30'
COLUMN (TYP OF 4)
29°42'32.53"NORTH
98°02'50.77" WEST
29°42'32.68"NORTH
98°02'50.94" WEST
F
D
E
30'
29°42'32.38"NORTH
98°02'50.94" WEST
SITE 2
Columns, Left Stairs
26 JUN 24


(BAZ) NEW BRAUNFELS NATIONAL AIRPORT
NEW BRAUNFELS, TEXAS
N
Control Positions/Cab Orientation
35
RUNWAY 17/35
17
CENTERLINE PERPENDICULAR TO RUNWAY
22.5°
29°41'53.85"NORTH
98°02'18.77" WEST
A
H
B
FD
CIC
LC
START 0°
FINISH 0°
90° (TYP)
29°41'53.55"NORTH
98°02'18.77" WEST
G
GC
C
30'
COLUMN (TYP OF 4)
29°41'53.70"NORTH
98°02'18.60" WEST
F
D
E
30'
29°41'53.55"NORTH
98°02'18.43" WEST
29°41'53.85"NORTH
98°02'18.43" WEST
SITE 3
Columns, Left Stairs
26 JUN 24

Attachment 9 – Memo of Record

Memo of Record

New Braunfels National Airport (BAZ) Recommended Site

for a new

Airport Traffic Control Tower (ATCT)

The team members below concur with the following Recommended Site: **Site 2, followed by Site 1 in order of preference.**

Site 2 Lat/Long/Height: 29°42'32.53" N 98°02'50.77" W with 110 ft AGL cab floor

Site 1 Lat/Long/Height: 29°42'14.95'' N 98°02'53.70" W with 120 ft AGL cab floor

CARL COLLINS

Carl Collins 6/26/24
BAZ ATM

rROBERT LEE

Dr. Robert Lee 6/26/24
BAZ Airport Sponsor

Scott Mann

Scott Mann 6/26/24
Terminal Facilities National Coordinator

Victoria Wilpitz

Victoria Wilpitz 6/26/24
Lead Engineer

June 26, 2024

Attachment 10 – Post-Siting Action Items – BAZ, 06/26/2024

Item	Action	POC	Due Date	Comments
1	**Meeting Minutes**	National Coordinator/ Technical Writer	2 weeks after the Siting Assessment	Develop meeting minutes and distribute to all participants.
2	**Memo of Record for Recommended Site**	National Coordinator/ Technical Writer	Last day of the Siting Assessment	Initiate the Memo of Record on the Recommended Site on the last day of the siting and obtain signatures.
3	**Initiate Safety Assessment**	Safety Facilitator	To meet Siting Report date: **12/18/2024**	Send initial draft of Safety Assessment to Team.
4	**Initiate Phase I ESA**	(1) Airport Sponsor for FCTs/NFCTs conducted via reimbursable agreement. Sponsor (2)	Initiate within 2 weeks of completion of the Siting Assessment	(1) Phase I ESA (per the latest version of ASTM International Standard E1527, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process)* is required on each of the preferred sites. (2) FCT/NFT: Provide the Phase I ESAs to the appropriate Technical Operations – Facilities & Engineering Services EOSH Center for review.
5	**7460's**	Airport Sponsor for sitings conducted via reimbursable agreement.	Submit within 2 weeks of completion of the Siting Assessment	Submit FAA Form 7460's for a feasibility study on all preferred sites via the OE/AAA website.

Item	Action	POC	Due Date	Comments
6	**Initiate Siting Report**	Sponsor – Airport Sponsor Unless otherwise indicated in a reimbursable agreement.	To meet Siting Report date: **12/18/2024**	Sponsor: The Airport Sponsor is responsible for development of the Siting Report, which includes the SRM Document authored by the ATCT Siting Safety Management System (SMS) Facilitator. If the Airport Sponsor developed the model, the Airport Sponsor must include, in the siting report, a signed and sealed letter from a PLS or PE certifying the model is developed in accordance with the required accuracy (within ±6 inches vertical/±1 feet horizontal), as well as the signature of the engineer and the appropriate seal. The Airport Sponsor will deliver the draft of the siting report to all participants. After the Airport Sponsor has resolved all comments, the Airport Sponsor should submit the final draft of the report to the Terminal Facilities Siting Team no later than 5 months after the siting assessment.
7	**Service Area Coordination & Issue Resolution**	Terminal Facilities Siting Team	On-going	All team members are tasked to resolve issues within their area of expertise identified during the siting. The Terminal Engineering – Lead Project Engineer will provide the follow-up coordination, as needed.
8	**Siting Report Approval**	The Terminal Facilities Siting Team will coordinate Siting Report approval, with the assistance of the PIM, as follows:	6 months after the Siting Assessment	(1) The PIM will brief the siting report to the Service Area Director of Air Traffic Operations and Service Area Director of Technical Operations for their concurrence. (2) The Terminal Facilities Siting Team will brief the siting report to the Director of Facilities & Engineering Services for their concurrence.
9	**Issue Final Siting Report and SRM Document**	Terminal Facilities Technical Writer	TBD	After approval, the Siting Report will be posted on an electronic document management system.

Item	Action	POC	Due Date	Comments
10	**Update Airport Layout Plan**	Airport Manager	Within 60 days after the Siting Assessment	The Airport Sponsor must identify the recommended site on the current ALP to ensure protection of the LOS, and subsequently notify the National Coordinator via e-mail once this action is complete.
11	**Update Aeronautical Study**	Technical Operations – Facilities & Engineering Services Sponsor	TBD by the Lead Engineer	Technical Operations – Facilities & Engineering Services will resubmit FAA Form 7460-1 to update the aeronautical study to protect the LOS of the recommended site. Sponsor – Sponsor will resubmit FAA Form 7460-1 to update the aeronautical study to protect the LOS of the recommended site.
12	**Siting Hazard Analysis**	Lead Engineer/ National Coordinator Sponsor	TBD by the Lead Engineer	FAA. The Lead Engineer will notify the National Coordinator to coordinate siting hazard analysis before the design phase, construction phase, and facility commissioning. This is necessary due to the potential delays between ATCT siting and facility commissioning. Siting hazard analyses are conducted to verify that the site has not been compromised and hazard mitigation strategies are in place. Sponsor. The Airport Sponsor will coordinate a siting hazard analysis before the design phase, construction phase, and facility commissioning. This is necessary due to the potential delays between ATCT siting and facility commissioning. Siting hazard analyses are conducted to verify that the site has not been compromised and hazard mitigation strategies are in place.

Item	Action	POC	Due Date	Comments
13	**Provide RDWB-Validated Equipment and Positions**	Terminal Facilities Planning	TBD by Terminal Facilities Planning	Terminal Planning shall provide to Terminal Facilities DEI Requirements Document Workbook (RDWB) Lead National Coordinator a list of equipment and cab controller positions that have been validated per the RDWB for the project. This list shall be used for the tower cab model. Send data to the Electronics Engineer
14	**Review/Modify Controller Positions and Equipment Placement During Design Phase**	Lead Engineer/ Electronics Engineer	Design Phase	Provide air traffic controllers the opportunity to review/modify controller positions and equipment placement during the design phase. This can be accomplished using 3-D/VR, as available.
15	**Siting Report Renewal Process**	National Coordinator	18 months after the Siting and Safety Assessment	The National Coordinator will coordinate with the core stakeholders to renew the siting report results. This includes the following: a. Determining if there are any changes to the ALP that will impact the tower sites. b. Resubmit the FAA Form 7460-1 as appropriate. c. Prepare a memo of record to confirm the validation of the siting report. The memo will be uploaded to an electronic document management system.

Appendix K – Safety Risk Management Document During FAA VISTA Process

EXECUTIVE SUMMARY

Title: New Braunfels National Airport (BAZ) New ATCT Siting Safety Risk Management Document Without Hazards

Change Proponent Organization: BAZ ATCT, District: TCHU

SRM Document Type: Operations (OPS)

New Braunfels National Airport (BAZ) is four miles east of New Braunfels, Texas. It has two runways: Runway (RWY) 13/31 (6,503 X 100 feet (ft.)) and RWY 17/35 (5,364 X 100 ft.). The airport is used by general aviation, commercial, and corporate aircraft.

The city of New Braunfels will build a new contractor-designed and maintained Airport Traffic Control Tower (ATCT) to replace the current structure. Two sites have been deemed viable and represent the preferred candidates. Following the siting activity at each proposed location, a Safety Assessment was conducted on the two sites. The site orientations and safety assessments were performed using the Safety Risk Management (SRM) process defined in the Federal Aviation Administration (FAA) Air Traffic Organization (ATO) Safety Management System (SMS) Manual dated December 2022.

A SRM Panel met at BAZ and virtually on 06/25-26/2024, to assess the potential change, and determine if this change to the National Airspace System (NAS) has the potential to introduce hazards that could affect the safe provision of air traffic communication, navigation, or surveillance services. The ATCT siting attendees included members representing the BAZ FCT, BAZ airport management, the Central Service Area (CSA), Air Traffic Requirements representatives, the City of New Braunfels, the Virtual Immersive Siting Tower Assessment (VISTA) team, and other interested offices. The Siting and SRM Facilitators followed the VISTA Memo Version 1.1, dated October 16, 2023, and the SMS Manual dated December 2022 for all siting and SMS activities.

Upon conclusion, the panel determined that Site 2 would be the recommended ATCT location, followed by Site 1, in order of preference. The locations, elevations, and configurations do not introduce new hazards to the NAS nor elevate any existing safety issues to hazards. The SRM Panel members determined that these two sites can be introduced into the NAS with an acceptable level of risk as defined in the FAA Air Traffic Organization SMS Manual.

SAFETY RISK MANAGEMENT DOCUMENT SIGNATURES

Title: New Braunfels National Airport (BAZ) New ATCT Siting Safety Risk Management Document Without Hazards

Concurrence:	Joseph Sims, SRM Facilitator, AJW-213	Date
Approval:	Oralia Martinez, GM, TCHU	Date
Risk Acceptance:	Name, Position, FAA Organization Name and Routing Code	Date
Concurrance:	Name, Directory of Policy, and Performance AJI-3	Date

CURRENT SYSTEM

New Braunfels National Airport (BAZ) is four miles east of New Braunfels, Texas. BAZ has two runways: Runway (RWY) 13/31 (6,503 X 100 ft.) and RWY 17/35 (5,364 X 100 ft.). The airport is used primarily by commercial, general aviation, and corporate aircraft. During the calendar year 2023, aircraft activity totaled 56,343 operations.

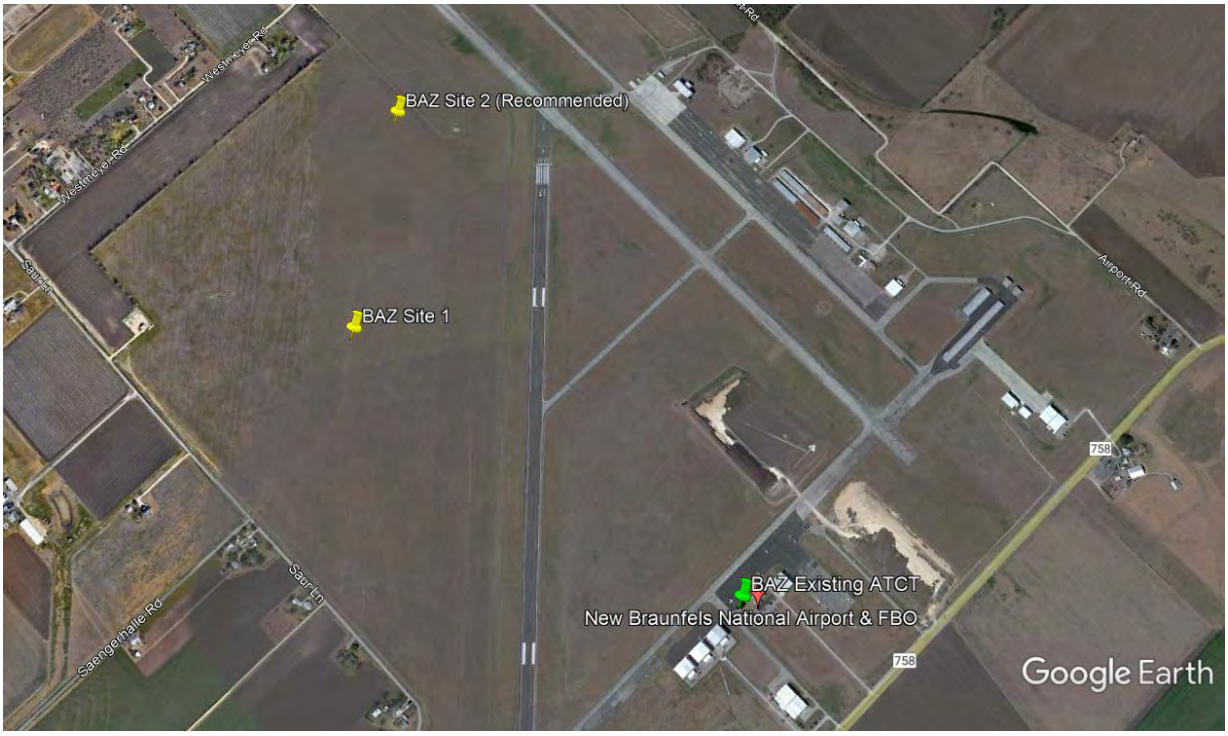
The current City of New Braunfels-owned FAA Contract Tower (FCT) was commissioned in 2010 and operates daily from 7:00 AM to 7:00 PM. The BAZ ATCT has four control positions:

- Local Control (LC)
- Ground Control (GC)
- Flight Data (FD)/Clearance Delivery (CD)
- Controller In Charge (CIC)

DESCRIPTION OF CHANGE

A replacement ATCT will be built at one of two pre-selected sites (depicted below). The proposed new structure will have a contractor-designed, 8-sided, 440 sq. ft. cab.

The SRM Panel determines whether any of the two pre-selected sites for the new ATCT for BAZ introduce hazards into the NAS. SRM Panel attendees participated in the siting activities for the proposed new BAZ ATCT and in the SRM Panel to generate a safety assessment of the two sites.



DESCRIPTION OF THE PROPOSED SITES

RECOMMENDED SITE	Site 1	Site 2	
Order of Preference	2	X	
Latitude	29°42’14.95"N	29°42’32.53"N	
Longitude	-98°2'53.70” W	-98°2'50.77” W	
Cab Floor Level (AGL)	120’	110’	
Cab Floor Level (AMSL)	770’	761’	
Eye-Level (AGL)	125’	115’	
Eye-Level (AMSL)	775’	766’	
Top of Tower (AGL)	155’	145’	
Top of Tower (AMSL)	805’	796’	
Ground Level (AMSL) (Surveyed 1A)	650’	651’	
Maximum Distance (to the farthest point on all runways and taxiways)	4,810’ (RWY 31)	5,197’ (RWY 4)	
2-Point Lateral Discrimination (Deg)	Pass	Pass	
Object Discrimination (Pass/Fail) Front View (Dodge Caravan)	Pass	Pass	
Object Discrimination (Pass/Fail) Front View (C-172)	Pass	Pass	
Line of Sight Angle of Incidence	1.38^{o}	1.34^{o}	
ATCT Orientation Direction	South	West	
Cab Size	440 SF	440 SF	
Columns/Mullions	Columns	Columns	
Console Type (traditional, slat wall)	Traditional	Traditional	
Land Area	>2 Acres	>2 Acres	
Access to ATCT Site (Yes or No)	No	Partial	
Tech Ops Preliminary Review Issues	- Within 1,000 ft. of Radio Transmitter/Receiver (RTR) -2.5NM above 0.25 degrees - Within 1,000 ft. of Radio	- Within 1,000 ft. of RTR-2.5NM above 0.25 degrees - Within the LOC Protection Area for small and large structures	

	Communications Outlet (RCO) - Within the Localizer (LOC) Protection Area for small and large structures								
TERPS Impacts	TBD			TBD					
14 CFR Part 77 Impacts	TBD			TBD					
Environmental Issues	TBD			TBD					
ATCT Potential Impacts on Future & Existing Navaids	TBD			TBD					
Comparative Cost Estimate* ($100K per vertical foot)									
Safety Assessment Initial Risk Ranking	**L**	**M**	**H**	**L**	**M**	**H**	**L**	**M**	**H**
Safety Assessment Predicted Residual Risk Ranking	**L**	**M**	**H**	**L**	**M**	**H**	**L**	**M**	**H**

RATIONALE FOR A SAFETY FINDING WITHOUT HAZARDS

An SRM Panel followed the new ATCT siting activity held on 06/25-26/2024, at BAZ and via Zoom. After completing siting activities, an SRM Panel met to conduct a viable site safety analysis on the proposed NAS change based on the SRM process defined by the ATO SMS Manual, dated December 2022. Additionally, procedures as outlined in the VISTA Memorandum Version 1.1, dated October 16, 2023, were followed during both siting and safety analysis to determine if the sites introduced any hazards to the NAS, and if found, to ensure hazards were mitigated to the lowest level of acceptability as described in the SMS Manual.

After the SRM Panel Orientation, panel deliberations began of the current system state and known controls within FAAO 7110.65 and FAAO 7210.3.

The BAZ SRM Panel evaluated the proposed sites in coordination with BAZ Airport Management for best visibility with minimal line of sight (LOS) issues. In addition, procedures encompassing placement, analysis, compass orientation of the ATCT to the field, equipment, mullions, columns, stairwell location, and orientation were assessed for overall optimal field visibility from each site.

The Safety Assessment encompassed analysis and assessment of the orientation of ATCT cab to the field, LOS issues including look-up/look-down, unobstructed, object discrimination, and two-point lateral discrimination views of the field. It also included placement, analysis, and evaluation of the orientation of the ATCT cab to the field, mullions/columns, and stairwell location for optimal field visibility. The assessment also included views of each of the two proposed sites from the current site, to determine whether or not construction at the proposed new sites might introduce hazards or exacerbate current issues. The SRM Panel and siting attendees agreed that construction at, and operations in the proposed new ATCT from Site 1, and Site 2 will not introduce new safety hazards into the NAS.

The SRM facilitator solicited all panel attendees for any safety issues, concerns, or questions regarding the safety assessment process and findings. None were identified. The Panel agreed that the planned changes do not introduce new hazards, or elevate existing risks in the NAS. Therefore, no further safety analysis is required per the ATO SMS Manual.

SRM Panel Attendees

The SRM panel convened in person and via Zoom on 06/25-26/2024 to perform a thorough safety risk examination. This table lists the panel attendees.

Name	Position/Facility/ Organization	SRM Panel Role	Email
Aaron Sutherland	Aviation Safety Inspector	Subject Matter Expert (SME)	Aaron.southerland@faa.gov
Abi Fleischmann	Engineer	SME	afleischman@ksaeng.com
Andrew Tamanaha	Community Planner (Airports District Office)	SME	Andrew.tamanaha@faa.gov
Benito Mercado	Infrastructure Protection Specialist	SME	Benito.mercado@faa.gov
Bob Gibbens	Air Traffic Control Specialist (ATCS)	SME	Bob.gibbens@faa.gov
Brendan Haas	Airport Operations Manager	SME	bhass@newbraunfels.gov
Carl Collins	Air Traffic Manager (ATM)	Panel Member	Carl.ctr.collins@faa.gov
Ben Breck	Airport Planner	Observer	Ben.breck@txdot.gov
Cody Owensby	3D Modeler (Pond)	SME	Cody.owensby@pondco.com
Darlisa Riggs	VISTA Technical Writer	Facilitation Team	Darlisa.p.riggs@saic.com
Douglas Switzer	Leidos Task Order Manager	Observer	Douglas.ctr.switzer@faa.gov
Dr. Robert Lee	Airport Director (Sponsor)	SME	rlee@newbraunfels.gov
Eli Strebel	ATCS	SME	Elias.strebel@faa.gov
Franklin Boyer	National Coordinator	Facilitation Team	Franklin.e-ctr.boyer@faa.gov
Gary Nielsen	Engineering Planner	SME	Gary.e-ctr.nielsen@faa.gov
Grayson Cox	Civil Engineer	SME	gcox@ksaeng.com
Jared Reynolds	3D Modelor	SME	Jared.reynolds@pondco.com
Jason Frisch	Aeronautical InformationSpecialist	SME	Jason.c.frisch@faa.gov

Name	Position/Facility/ Organization	SRM Panel Role	Email
Jennifer Vandenbrook	Civil Engineer	SME	Jennifer.vandanbrook@faa.gov
Joe Sims	Safety Risk Management Facilitator	Facilitation Team	Joe.ctr.sims@faa.gov
Johnathan Taylor	Project Manager (Pond)	SME	Johnathan.taylor@pondco.com
Kimberly Ledford	National Coordinator	Facilitation Team	Kimberly.d-ctr.ledford@faa.gov
Lillie Smith	Technical Writer	Facilitation Team	Lillie.m-ctr.smith@faa.gov
Matt Ballon	Leidos VR Team Lead	Facilitation Team	Matthew.ballon@faa.gov
Michael VanVliet	Community Planner (Airports District Office)	SME	Michael.e.vanvliet@faa.gov
Morgane Coleman	3D Modelor (Pond)	SME	Morgane.coleman@pondco.com
Patrick Mannella	3D Modelor (Pond)	SME	Patrick.mannella@pondco.com
Rita Moore	Technical Writer	Facilitation Team	Rita.l-ctr.moore@faa.gov
Scott Mann	National Coordinator	Facilitation Team	Kendall.s-ctr.mann@faa.gov
Scott McClelland	Assistant Director of Transportation & Capital Improvements	Observer	smcclelland@newbraunfels.gov
Shari Teel	VISTA Team Lead	Observer	Shari.a-ctr.teel@faa.gov
Stephanie Griffith	3D Modelor	SME	Stephanie.griffith@pondco.com
Stephanou Yonkeu	Supervisory Aviation Technical Systems Specialist	SME	Stephanou.yonkeu@faa.gov
Victoria Wilpitz	Lead Engineer	SME	Victoria.m.wilpitz@faa.gov
Walter Parker	Mechanical Engineer	SME	Walter.parker@faa.gov

APPENDICES

N/A

SMTS2024110400418 Signature Page

Project :

P-6913 - New Braunfels National Airport (BAZ) New ATCT Siting Safety Risk Management Document Without Hazards

SRM Document :

D-9898 - SMTS2024110400418 - New Braunfels National Airport (BAZ) New ATCT Siting Safety Risk Management Document Without HazardsNew contr (OPS)

Concurrer	Signature	Date
Joe CTR Sims	**signed** *Joe CTR Sims*	**04-Nov-2(**

Approver	Signature	Date
Oralia Martinez	**signed** *Oralia Martinez*	**05-Nov-2(**

An asterisk(*) beside a user name indicates that they are not currently an active user in the SMTS system.
A caret(^) beside a user name indicates that their access request is pending.

SMTS v3.16.7

SRM Document Change Log - SMTS2024110400418 - New Braunfels National Airport (BAZ) New ATCT Siting Safety Risk Management Document Without HazardsNew contr

Show notification entries

Show 50 entries

Search:

Change

P-6913 - SMTS2024110400418
SRM Document Finalized
All Signatures Obtained

P-6913 - SMTS2024110400418
All Approvers have signed

P-6913 - SMTS2024110400418
SRM Document Signed:
Approved by Oralia Martinez

P-6913 - SMTS2024110400418
SRM Document Signed:
Concurrence by Joe CTR Sims

P-6913 - SMTS2024110400418
All Concurrers have signed

P-6913 - SMTS2024110400418
Initiated SRM Document Signature Process
SRMd Signatory notification sent to: Joe CTR Sims, Oralia Martinez

P-6913 - SMTS2024110400418
Attachment Type changed : Replacement Airport Traffic Control Tower For New Braunfels National Airport (BAZ).docx is now a SRMd

P-6913 - SMTS2024110400418
Attachment added: File - Replacement Airport Traffic Control Tower For New Braunfels National Airport (BAZ).docx

P-6913 - SMTS2024110400418
SRM Document Signatures edited:
'Joe CTR Sims' added as Concurrer
'Oralia Martinez' added as Approver

Showing 1 to 9 of 9 entries

Previous 1 Next

Very long entries may be truncated

An asterisk(*) beside a user name indicates that they are not currently an active user in the SMTS system.
A caret(^) beside a user name indicates that their access request is pending.

SMTS v3.16.7

Appendix L – Access & Utilities Infrastructure

NEW BRAUNFELS NATIONAL AIRPORT
NEW BRAUNFELS, TEXAS

CIVIL SITE DEVELOPMENT REPORT FOR AIR TRAFFIC CONTROL TOWER SITING

June 2024

Prepared by:

4833 Spicewood Springs Rd., Suite 204
Austin, TX 78759
Phone (512) 342-6868
TBPE Firm Reg. No. F-1356

TABLE OF CONTENTS

TABLES

APPENDICES

I. PROJECT OVERVIEW

A total of three (3) proposed Air Traffic Control Tower (ATCT) sites were evaluated at the New Braunfels National Airport (BAZ) to replace the existing ATCT. These sites are 1, 2, and 3 (see Site Selection Overview graphic). Proposed amenities at each site are similar:

- A parking lot comprised of at least nine (9) parking spaces (includes one space with handicap access)
- A pad for a trash receptacle
- A turnaround pad for firetruck ingress/egress
- A fire hydrant
- Access to an existing road
- 6' chain-link fence with barbed wire surrounding parking lot and tower with gated controlled access
- Site lighting
- 3-phase electricity for elevator power
- Telephone and internet service (communications)

The primary difference between sites is the lengths of utility service connections required and the scale of utility and equipment relocation required to accommodate the new ATCT site. Table 1 summarizes these lengths for water, sanitary sewer, and electricity.

II. UTILITIES

For the purposes of this study, existing water and sewer main locations as well as existing electrical utility information was obtained from New Braunfels Utilities (NBU) in the form of CAD base files. Existing communications utility information was obtained as QLD from Google Earth; locations assumed to coexist with existing electrical lines. 3-phase electricity is currently available for all sites; however, the lengths of required for electric service runs vary (see Table 1). The existing utilities are shown graphically following this narrative on an airport-wide overview (see Appendix A: Utility Overview Exhibits) and location specific for each ATCT site (see Appendix B: ATCT Site Relocation, Utilities, and Access Exhibits).

III. ATCT SITE 1

Site Location and Access: This site is located in an undeveloped area west of Runway 17-35 and is depicted in the general location identified in the current approved Airport Layout Plan (ALP). This proposed ATCT is located approximately midway along Runway 17-35. Access to the new 425 square yard parking lot is via a 1,585 linear foot access road connecting to Saur Lane. The proposed access road is designed to generally conform with the proposed West Side Development access road depicted on the ALP so that future airport improvements are congruent with improvements made for ATCT Site 1.

Utilities: Because this area is generally undeveloped, utility access will typically require longer service runs. For cost estimating purposes, electrical, water, and communications connections were assumed

to connect near Saur Lane. An existing 24" diameter sewer line conflicts with the proposed tower location and is identified for relocation by NBU. It is unknown when this relocation will occur, so the cost estimates included with this report assume that the exiting sewer line will be relocated as part of the new ATCT project and utilized for sewer service to the proposed building. If the existing sewer line is relocated prior to construction of the new ATCT, the sewer service line will need to be longer but overall cost savings should be expected.

Conveyance and mitigation of drainage flows is an important issue on the Airport. Based on the general topography of the west side airfield, ATCT Site 1's stormwater flows are likely to be directed to Saur Lane. Stormwater mitigation, as required by the City of New Braunfels Drainage and Erosion Control Design Manual, will be satisfied by on-site detention as generally depicted in the Appendix B exhibits.

KSA is aware of potential Line of Sight (LOS) issues for ATCT Site 1 discovered via the virtual reality model which may disqualify the site from further information or require a taller tower or restrictions on development on the west side of the Airport. For additional information regarding LOS and other siting considerations, please refer to the siting study document.

IV. ATCT SITE 2

Site Location and Access: This site is located an undeveloped area southwest of Runway 13-31, northwest of Runway 17, and 500 feet west of the existing Automated Surface Observing Systems (ASOS). Access to the new 415 square yard parking lot is via a 140 linear foot access road connecting to the Airport's existing ASOS access driveway, with access from the end of Westmeyer Road. Improvements to the ASOS access driveway up to the ATCT Site 2 driveway is assumed in the cost estimates.

Utilities: Because this area is generally undeveloped, utility access will typically require longer service runs. For cost estimating purposes, electrical and water connections were assumed to connect near Saur Lane due to the general lack of utility service of adequate capacity along Westmeyer Road. Nearby electric utilities on Westmeyer Road are currently only single-phase. A nearby sewer main and telecommunications are available. However, this sewer line is identified for relocation by NBU. It is unknown when this relocation will occur, so the cost estimates included with this report assume sewer service to the existing sewer line location.

Conveyance and mitigation of drainage flows is an important issue on the Airport. Based on the general topography of the west side airfield, ATCT Site 2's stormwater flows are likely to be directed to existing storm drainage structures southwest of Runway 13-31. These existing storm sewer inlets cross under Runway 13-31 and drain to an existing stormwater detention pond east f Runway 13. Stormwater mitigation, as required by the City of New Braunfels Drainage and Erosion Control Design Manual, will be satisfied by on-site detention as generally depicted in the Appendix B exhibits.

Due to the proximity of the ATCT Site 2 tower to the existing ASOS, this system will require relocation if this site is selected. Relocation of the ASOS along with utility extensions to the proposed infield relocation area are included in the cost estimate.

V. ATCT SITE 3

Site Location and Access: This site is located adjacent to the existing Terminal Building, ATCT, and airfield electrical vault, and accessed via an existing drive connecting to FM 758. Access to the new 400 square yard parking lot is via a 140' driveway connecting to the existing Terminal Building driveway that connects to FM 758.

Utilities: Because this area is mostly developed, access to needed utilities is available with short service runs. ATCT Site 3 is located in close proximity to electric and telecom utilities serving the existing Terminal and ATCT. ATCT Site 3 is also located in close proximity to the airfield electrical vault. These utilities and structures may conflict with clear areas required by the FAA.

Conveyance and mitigation of drainage flows is an important issue on the Airport. Based on the general topography of the west side airfield, Site 3's stormwater flows are likely to be directed to an existing storm drainage ditch that flows to and then alongside FM 758. Stormwater mitigation, as required by the City of New Braunfels Drainage and Erosion Control Design Manual, will be satisfied by on-site detention as generally depicted in the Appendix B exhibits.

KSA is aware of clear space issues with the adjacent fence line along the access taxiway to the Alpha hangar facility and clear space issues with the adjacent airfield electrical vault. Due to limitations from the adjacent taxiway object free area, relocation of the fence and utilities are not included in the cost estimate. Additionally, the proposed ATCT Site 3 is located behind the existing ATCT tower; therefore, removal of the existing tower facility is included in the cost estimate for this site.

Table 1 – Utility Service Connection Summary

UTILITY SERVICE CONNECTION	SITE IDENTIFICATION		
	Site 1	Site 2	Site 3
6" PVC Water	1,704 LF	3,568 LF	256 LF
8" PVC Sewer	10 LF	45 LF	85 LF
Communications in 4" Conduit (PVC)	1,690 LF	215 LF	10 LF
3-Phase Electrical in 4" Conduit (PVC)	1,685 LF	3,350 LF	10 LF

VI. COMPARATIVE SITE COST ESTIMATES

Conceptual construction cost estimates were developed for Sites 1, 2, and 3 for civil site improvements and do not include the cost for the tower building. Table 2 presents the total estimated cost for each site for comparison purposes. The primary differences in cost between each site include the difference in utility service and driveway lengths, relocation of existing utilities and airport

equipment, and the demolition of the existing ATCT. Each total estimated cost includes a 15% construction contingency. For more detailed cost estimates for each site, see Appendix C: Engineer's Conceptual Opinion of Probable Construction Cost.

Table 2 – Site & Utility Cost Estimate

	SITE IDENTIFICATION		
	Site 1	**Site 2**	**Site 3**
Total Estimated Cost for Site and Utility Improvements	$1,160,360	$1,208,560	$982,065

APPENDIX A

UTILITY OVERVIEW EXHIBITS

EXISTING FUEL AREA

ENTRANCE DR

TAXIWAY A

TAXIWAY A

TAXIWAY B

TAXIWAY D

TAXIWAY E

RPZ 500 X 1010 X 1700

WIND CONE

13

31

ASOS

PROPOSED ATCT 2
N:13806579.81
E:2270877.17
LAT: N29° 42' 32.53"
LONG:W98° 02' 50.77"

RUNWAY 17-35 5364' X 100'

TAXIWAY E

WIND CONE

TAXIWAY F

EXISTING TERMINAL

FM 758

PROPOSED ATCT 3
N:13802681.44
E:2273745.54
LAT: N29° 41' 53.70"
LONG: W98° 02' 18.60"

PROPOSED ATCT 1
N:13804802.46
E:2270633.08
LAT: N29° 42' 14.95"
LONG: W98° 02' 53.70"

17

35

RPZ 500 X 1010 X 1700

KSA

LAST SAVED BY: AFLEISCHMANN

EXISTING FUEL AREA

ENTRANCE DR

TAXIWAY B

TAXIWAY A

TAXIWAY A

RPZ 500 X 1010 X 1700

TAXIWAY D

TAXIWAY E

WIND CONE

13

31

ASOS

PROPOSED ATCT 2
N:13806579.81
E:2270877.17
LAT: N29° 42' 32.53"
LONG:W98° 02' 50.77"

RUNWAY 17-35 5364' X 100'

TAXIWAY E

WIND CONE

TAXIWAY F

EXISTING TERMINAL

FM 758

PROPOSED ATCT 3
N:13802681.44
E:2273745.54
LAT: N29° 41' 53.70"
LONG: W98° 02' 18.60"

PROPOSED ATCT 1
N:13804802.46
E:2270633.08
LAT: N29° 42' 14.95"
LONG: W98° 02' 53.70"

17

35

RPZ 500 X 1010 X 1700

1-PHASE OE

3-PHASE OE

1-PHASE UE

3-PHASE UE

KSA

LAST SAVED BY: AFLEISCHMANN

EXISTING FUEL AREA

ENTRANCE DR

TAXIWAY A

TAXIWAY A

TAXIWAY B

TAXIWAY D

TAXIWAY E

WIND CONE

RPZ 500 X 1010 X 1700

13

31

ASOS

PROPOSED ATCT 2
N:13806579.81
E:2270877.17
LAT: N29° 42' 32.53"
LONG:W98° 02' 50.77"

RUNWAY 17-35 5364' X 100'

TAXIWAY E

WIND CONE

TAXIWAY F

EXISTING TERMINAL

FM 758

PROPOSED ATCT 3
N:13802681.44
E:2273745.54
LAT: N29° 41' 53.70"
LONG: W98° 02' 18.60"

FUTURE NBU SEWER LINE

PROPOSED ATCT 1
N:13804802.46
E:2270633.08
LAT: N29° 42' 14.95"
LONG: W98° 02' 53.70"

17

35

RPZ 500 X 1010 X 1700

KSA

LAST SAVED BY: AFLEISCHMANN

EXISTING FUEL AREA

ENTRANCE DR

TAXIWAY B

TAXIWAY A

TAXIWAY A

RPZ 500 X 1010 X 1700

TAXIWAY D

TAXIWAY E

WIND CONE

13

31

ASOS

PROPOSED ATCT 2
N:13806579.81
E:2270877.17
LAT: N29° 42' 32.53"
LONG:W98° 02' 50.77"

RUNWAY 17-35 5364' X 100'

TAXIWAY E

WIND CONE

TAXIWAY F

EXISTING TERMINAL

FM 758

PROPOSED ATCT 3
N:13802681.44
E:2273745.54
LAT: N29° 41' 53.70"
LONG: W98° 02' 18.60"

PROPOSED ATCT 1
N:13804802.46
E:2270633.08
LAT: N29° 42' 14.95"
LONG: W98° 02' 53.70"

17

35

RPZ 500 X 1010 X 1700

KSA

LAST SAVED BY: AFLEISCHMANN

EXISTING FUEL AREA

ENTRANCE DR

TAXIWAY B

TAXIWAY A

TAXIWAY A

RPZ 500 X 1010 X 1700

TAXIWAY D

TAXIWAY E

WIND CONE

13

31

ASOS

PROPOSED ATCT 2
N:13806579.81
E:2270877.17
LAT: N29° 42' 32.53"
LONG:W98° 02' 50.77"

RUNWAY 17-35 5364' X 100'

TAXIWAY E

WIND CONE

TAXIWAY F

EXISTING TERMINAL

FM 758

PROPOSED ATCT 3
N:13802681.44
E:2273745.54
LAT: N29° 41' 53.70"
LONG: W98° 02' 18.60"

PROPOSED ATCT 1
N:13804802.46
E:2270633.08
LAT: N29° 42' 14.95"
LONG: W98° 02' 53.70"

17

35

RPZ 500 X 1010 X 1700

KSA

LAST SAVED BY: AFLEISCHMANN

APPENDIX B

ATCT SITE RELOCATION, UTILITIES, AND ACCESS EXHIBITS

400' 0 400' 800'

GRAPHIC SCALE IN FEET

LEGEND

W W	EXISTING WATERLINE
1-PHASE OE	EXISTING OVERHEAD ELECTRIC LINE (SINGLE PHASE)
3-PHASE OE	EXISTING OVERHEAD ELECTRIC LINE (3-PHASE)
1-PHASE UE	EXISTING UNDERGROUND ELECTRIC LINE (SINGLE PHASE)
3-PHASE UE	EXISTING UNDERGROUND ELECTRIC LINE (3-PHASE)
S S	EXISTING SEWER LINE
COMM	EXISTING COMMUNICATIONS LINE
	STORM DRAIN PIPE
	STORM DRAIN STRUCTURE
	EXISTING DRAINAGE FLOW
W	PROPOSED WATERLINE
ELEC	PROPOSED ELECTRIC LINE
S	PROPOSED SEWER LINE
COMM	PROPOSED COMMUNICATIONS LINE
	PROPOSED DRAINAGE POND
	PROPOSED DRAINAGE FLOW
	FUTURE AIRPORT LAYOUT (ULT.)
	POTENTIAL LOCATION CONFLICT

24" SEWER LINE

INSET A

OFA

PROP. 1,704 LF 6" WATERLINE

FUTURE TERMINAL BUILDING

PROP. 1,685 LF 3-PHASE ELECTRIC LINE

PROP. DRAINAGE FLOW

PROP. 1,690 LF COMMUNICATIONS LINE

PROP. ACCESS ROAD

PROP. 1,675 LF SEWER LINE

12" WATERLINE

3-PHASE OE ELECTRIC LINE

EXISTING SWALE FLOW

SAUR LN

NBU TO ABANDON AND RELOCATE EXISTING SEWER LINE

OBSTRUCTION FREE

SECURITY FENCE

TRASH RECEPTACLE PAD

PARKING

FIRE TRUCK TURNAROUND

PROP. DRAINAGE FEATURE

POWERED SLIDING GATE

FIRE HYDRANT

INSET A
SCALE: 1" = 20'

LAST SAVED BY: AFLEISCHMANN

KSA

200' 0 200' 400'

GRAPHIC SCALE IN FEET

LEGEND

W W	EXISTING WATERLINE
1-PHASE OE	EXISTING OVERHEAD ELECTRIC LINE (SINGLE PHASE)
3-PHASE OE	EXISTING OVERHEAD ELECTRIC LINE (3-PHASE)
1-PHASE UE	EXISTING UNDERGROUND ELECTRIC LINE (SINGLE PHASE)
3-PHASE UE	EXISTING UNDERGROUND ELECTRIC LINE (3-PHASE)
S S	EXISTING SEWER LINE
COMM	EXISTING COMMUNICATIONS LINE
	STORM DRAIN PIPE
	STORM DRAIN STRUCTURE
	EXISTING DRAINAGE FLOW
W	PROPOSED WATERLINE
ELEC	PROPOSED ELECTRIC LINE
S	PROPOSED SEWER LINE
COMM	PROPOSED COMMUNICATIONS LINE
	PROPOSED DRAINAGE POND
	PROPOSED DRAINAGE FLOW
	FUTURE AIRPORT LAYOUT (ULT.)

EXISTING STORM DRAINAGE

PROP. DRAINAGE FLOW

PROP. ACCESS ROAD

24" SEWER LINE

PROP. 1,700 LF 8" SEWER LINE

INSET A

SINGLE PHASE OE ELECTRIC LINE

PROP. 3,568 LF 6" WATERLINE

FUTURE AIRPORT DEVELOPMENT

PROP. 3,350 LF 3-PHASE ELECTRIC LINE

1" LATERAL SERVICE WATERLINE

WESTMEYER RD

18" WATERLINE

3-PHASE OE ELECTRIC LINE

SAUR LN

NBU TO ABANDON AND RELOCATE EXISTING SEWER LINE

PROP. 215 LF COMMUNICATIONS LINE

FIRE HYDRANT

POWERED SLIDING GATE

SECURITY FENCE

PARKING

TRASH RECEPTACLE PAD

PROP. DRAINAGE FEATURE

OFA

INSET A
SCALE: 1" = 20'

KSA

LAST SAVED BY: AFLEISCHMANN

400' 0 400' 800'

GRAPHIC SCALE IN FEET

LEGEND

W W	EXISTING WATERLINE
1-PHASE OE	EXISTING OVERHEAD ELECTRIC LINE (SINGLE PHASE)
3-PHASE OE	EXISTING OVERHEAD ELECTRIC LINE (3-PHASE)
1-PHASE UE	EXISTING UNDERGROUND ELECTRIC LINE (SINGLE PHASE)
3-PHASE UE	EXISTING UNDERGROUND ELECTRIC LINE (3-PHASE)
S S	EXISTING SEWER LINE
COMM	EXISTING COMMUNICATIONS LINE
	STORM DRAIN PIPE
	STORM DRAIN STRUCTURE
	EXISTING DRAINAGE FLOW
W	PROPOSED WATERLINE
ELEC	PROPOSED ELECTRIC LINE
S	PROPOSED SEWER LINE
COMM	PROPOSED COMMUNICATIONS LINE
	PROPOSED DRAINAGE POND
	PROPOSED DRAINAGE FLOW
	FUTURE AIRPORT LAYOUT (ULT.)
	POTENTIAL LOCATION CONFLICT

FUTURE HANGAR DEVELOPMENT

INSET A

EXISTING SWALE FLOW

8" SEWER LINE

12" WATERLINE

EXISTING TERMINAL BUILDING

PROP. ACCESS ROAD

3-PHASE OE ELECTRIC LINE

SINGLE PHASE OE ELECTRIC LINE

PROP. DRAINAGE FEATURE

EXISTING HANGARS

FUTURE HANGAR DEVELOPMENT

FM 758

PROP. 256 LF 6" WATERLINE

FIRE HYDRANT

POWERED SLIDING GATE

OBSTRUCTION FREE AREA

SECURITY FENCE

PROP. 85 LF 8" SEWER LINE

ATCT

OFA

PROP. 10 LF COMMUNICATIONS LINE

PROP. 10 LF 3-PHASE ELECTRIC LINE

TRASH RECEPTACLE PAD

UTILITY CONFLICT IDENTIFIED: LIKELY SOLUTION IS THE RELOCATION AND BURIAL OF ELECTRIC AND COMMUNICATION LINES.

INSET A
SCALE: 1" = 20'

KSA

LAST SAVED BY: AFLEISCHMANN

APPENDIX C

SITE & UTILITY ECOPCC

New Braunfels National Airport
ATCT Siting Study - Site 1
Opinion of Probable Site & Utility Construction Costs
June 2024

Item No.	Spec. No.	Description	Units	Estimated Quantities		Estimated Unit Price	Subtotal
Site 1 Item 1: Mobilization and Site Preparation							
S1 - 1.01	FAA C-100	Contractor Quality Control Program (CQCP)	LS	1	$	15,000.00	$15,000.00
S1 - 1.02	FAA C-102	Stabilized Construction Exit (Staging and Storage)	EA	1	$	5,000.00	$5,000.00
S1 - 1.03	FAA C-102	Storm Water Pollution Prevention Plan (SWPPP)	LS	1	$	8,000.00	$8,000.00
S1 - 1.04	FAA C-105	Mobilization	LS	1	$	74,700.00	$74,700.00
S1 - 1.05	TxDOT 100	Clearing and Grubbing	SY	8,600	$	2.00	$17,200.00
S1 - 1.06	KSA 105	Preparation of the Safety Plan Compliance Document	LS	1	$	5,000.00	$5,000.00
						Subtotal:	**$124,900.00**
						15% Contingencies:	**$18,735.00**
						Total w/ Contingencies:	**$143,635.00**
Site 1 Item 2: Utility Service and Associated Improvements							
S1 - 2.01	TxDOT 618	Cable in Conduit (PVC)(4")	LF	1,690	$	18.00	$30,420.00
S1 - 2.02	TxDOT 628	3-Phase Electrical in Conduit (PVC)(6")	LF	1,685	$	25.00	$42,125.00
S1 - 2.03	TxDOT 618	Telephone in Conduit (PVC)(4")	LF	1,690	$	18.00	$30,420.00
S1 - 2.04	TxDOT 7049	Water Main (PVC)(C-900)(6")(Open Cut)	LF	1,704	$	65.00	$110,760.00
S1 - 2.05	TxDOT 7049	Fire Hydrant Assembly	EA	1	$	8,000.00	$8,000.00
S1 - 2.06	TxDOT 7049	Tapping Valve and Valve (6"X12")	EA	1	$	3,500.00	$3,500.00
S1 - 2.07	TxDOT 7049	Gate Valve (6")	EA	2	$	3,000.00	$6,000.00
S1 - 2.08	TxDOT 7249	SDR-35 PVC Sewer (8")(Open Cut)	LF	1,675	$	70.00	$117,250.00
S1 - 2.09	TxDOT 7249	SDR-35 PVC Sewer (24")(Open Cut)	LF	200	$	125.00	$25,000.00
S1 - 2.10	TxDOT 7249	Sewer Manhole (Pre-Cast)(4FT Dia)	EA	3	$	12,000.00	$36,000.00
S1 - 2.11	TxDOT 7249	Connect Existing Sewer Line	EA	1	$	2,500.00	$2,500.00
S1 - 2.12	NBU-100	NBU Service Fees (Estimated)	LS	1	$	50,000.00	$50,000.00
						Subtotal:	**$461,975.00**
						15% Contingencies:	**$69,300.00**
						Total w/ Contingencies:	**$531,275.00**
Site 1 Item 3: Pavement and Associated Improvements							
S1 - 3.01	TxDOT 247	FL BS (Comp in Place)(TY A GR 1)(12")	SY	6,085	$	25.00	$152,125.00
S1 - 3.02	TxDOT 260	Lime (Hydrated Line)(Slurry)(%)	TON	85	$	225.00	$19,125.00
S1 - 3.03	TxDOT 260	Lime Treatment (Mix Existing Material & New Base)(12")(6%)	SY	6,515	$	6.00	$39,090.00
S1 - 3.04	TxDOT 340	D-GR HMA (Meth) TY-D SAC-B PG70-22 (2")	TON	595	$	135.00	$80,325.00
S1 - 3.05	TxDOT 531	Class A Concrete (3,000 PSI)(Sidewalk)(4")	SY	55	$	120.00	$6,600.00
						Subtotal:	**$297,265.00**
						15% Contingencies:	**$44,590.00**
						Total w/ Contingencies:	**$341,855.00**
Site 1 Item 4: Miscellaneous Site Work							
S1 - 4.01	FAA F-162	6' Chain-Link Security Fence w/ 3-Strand Barbed Wire	LF	605	$	55.00	$33,275.00
S1 - 4.02	FAA F-162	Vehicle Gate and Operator (Electric Sliding)	EA	1	$	30,000.00	$30,000.00
S1 - 4.03	TxDOT 164	Seed or Sod Disturbed Areas	SY	3,150	$	5.00	$15,750.00
S1 - 4.03	TxDOT 421	Detention Excavation & Concrete Discharge Structure	EA	1	$	18,000.00	$18,000.00
S1 - 4.04	TxDOT 636	Handicap Accessible Sign	EA	1	$	750.00	$750.00
S1 - 4.05	TxDOT 666	Refl Pav Mrk TY II (W)(Solid)(6")	LF	215	$	6.00	$1,290.00
S1 - 4.06	TxDOT 668	Prefab Pav Mrk TY C (W)(Symbol)(Handicap)	EA	1	$	800.00	$800.00
S1 - 4.07	TxDOT 600	Site Lighting	LS	1	$	25,000.00	$25,000.00
						Subtotal:	**$124,865.00**
						15% Contingencies:	**$18,730.00**
						Total w/ Contingencies:	**$143,595.00**
						Subtotal Items 1-4:	**$1,009,005.00**
						15% Contingency:	**$151,355.00**
						TOTAL of All Items (including contingency):	**$1,160,360.00**

New Braunfels National Airport
ATCT Siting Study - Site 2
Opinion of Probable Site & Utility Construction Costs
June 2024

Item No.	Spec. No.	Description	Units	Estimated Quantities		Estimated Unit Price	Subtotal
Site 2 Item 1: Mobilization and Site Preparation							
S1 - 1.01	FAA C-100	Contractor Quality Control Program (CQCP)	LS	1	$	15,000.00	$15,000.00
S1 - 1.02	FAA C-102	Stabilized Construction Exit (Staging and Storage)	EA	1	$	5,000.00	$5,000.00
S1 - 1.03	FAA C-102	Storm Water Pollution Prevention Plan (SWPPP)	LS	1	$	8,000.00	$8,000.00
S1 - 1.04	FAA C-105	Mobilization	LS	1	$	77,800.00	$77,800.00
S1 - 1.05	TxDOT 100	Clearing and Grubbing	SY	3,080	$	2.50	$7,700.00
S1 - 1.06	KSA 105	Preparation of the Safety Plan Compliance Document	LS	1	$	5,000.00	$5,000.00
						Subtotal:	**$118,500.00**
						15% Contingencies:	**$17,780.00**
						Total w/ Contingencies:	**$136,280.00**
Site 2 Item 2: Utility Service and Associated Improvements							
S1 - 2.01	TxDOT 618	Cable in Conduit (PVC)(4")	LF	215	$	18.00	$3,870.00
S1 - 2.02	TxDOT 628	3-Phase Electrical in Conduit (PVC)(6")	LF	3,350	$	25.00	$83,750.00
S1 - 2.03	TxDOT 618	Telephone in Conduit (PVC)(4")	LF	215	$	18.00	$3,870.00
S1 - 2.04	TxDOT 7049	Water Main (PVC)(C-900)(6")(Open Cut)	LF	3,568	$	65.00	$231,920.00
S1 - 2.05	TxDOT 7049	Fire Hydrant Assembly	EA	1	$	8,000.00	$8,000.00
S1 - 2.06	TxDOT 7049	Tapping Valve and Valve (6"X12")	EA	1	$	3,500.00	$3,500.00
S1 - 2.07	TxDOT 7049	Gate Valve (6")	EA	2	$	3,000.00	$6,000.00
S1 - 2.08	TxDOT 7249	SDR-35 PVC Sewer (8")(Open Cut)	LF	60	$	70.00	$4,200.00
S1 - 2.09	TxDOT 7249	Connect Existing Sewer Line	EA	1	$	2,500.00	$2,500.00
S1 - 2.10	NBU-100	NBU Service Fees (Estimated)	LS	1	$	50,000.00	$50,000.00
						Subtotal:	**$397,610.00**
						15% Contingencies:	**$59,650.00**
						Total w/ Contingencies:	**$457,260.00**
Site 2 Item 3: Pavement and Associated Improvements							
S1 - 3.01	TxDOT 247	FL BS (Comp in Place)(TY A GR 1)(12")	SY	3,800	$	25.00	$95,000.00
S1 - 3.02	TxDOT 260	Lime (Hydrated Line)(Slurry)(%)	TON	60	$	225.00	$13,500.00
S1 - 3.03	TxDOT 260	Lime Treatment (Mix Existing Material & New Base)(12")(6%)	SY	4,670	$	6.00	$28,020.00
S1 - 3.04	TxDOT 340	D-GR HMA (Meth) TY-D SAC-B PG70-22 (2")	TON	353	$	135.00	$47,655.00
S1 - 3.05	TxDOT 531	Class A Concrete (3,000 PSI)(Sidewalk)(4")	SY	45	$	120.00	$5,400.00
						Subtotal:	**$189,575.00**
						15% Contingencies:	**$28,440.00**
						Total w/ Contingencies:	**$218,015.00**
Site 2 Item 4: Miscellaneous Site Work							
S1 - 4.01	FAA F-162	6' Chain-Link Security Fence w/ 3-Strand Barbed Wire	LF	565	$	55.00	$31,075.00
S1 - 4.02	FAA F-162	Vehicle Gate and Operator (Electric Sliding)	EA	1	$	30,000.00	$30,000.00
S1 - 4.03	TxDOT 164	Seed or Sod Disturbed Areas	SY	2,630	$	5.00	$13,150.00
S1 - 4.04	TxDOT 421	Detention Excavation & Concrete Discharge Structure	EA	1	$	18,000.00	$18,000.00
S1 - 4.05	TxDOT 636	Handicap Accessible Sign	EA	1	$	750.00	$750.00
S1 - 4.06	TxDOT 666	Refl Pav Mrk TY II (W)(Solid)(6")	LF	240	$	6.00	$1,440.00
S1 - 4.07	TxDOT 668	Prefab Pav Mrk TY C (W)(Symbol)(Handicap)	EA	1	$	800.00	$800.00
S1 - 4.08	TxDOT 600	Site Lighting	LS	1	$	25,000.00	$25,000.00
S1 - 4.09		ASOS Relocation and Utility Extensions	LS	1	$	225,000.00	$225,000.00
						Subtotal:	**$345,215.00**
						15% Contingencies:	**$51,790.00**
						Total w/ Contingencies:	**$397,005.00**
						Subtotal Items 1-4:	$1,050,900.00
						15% Contingency:	$157,660.00
						TOTAL of All Items (including contingency):	**$1,208,560.00**

END OF ATCT SITING REPORT

Airport Code: **BAZ**

Submitted to the FAA by the City of New Braunfels

APPENDIX B | AGENCY COORDINATION LETTERS (THC)

Kerri Smith

From: noreply@thc.state.tx.us
Sent: Tuesday, April 2, 2024 7:06 PM
To: Kerri Smith; reviews@thc.state.tx.us
Subject: New Braunfels National Airport ATCT 1

TEXAS HISTORICAL COMMISSION
real places telling real stories

Re: Project Review under Section 106 of the National Historic Preservation Act and/or the Antiquities Code of Texas
THC Tracking #202407006
Date: 04/02/2024
New Braunfels National Airport ATCT 1 (Permit 31616)
2333 FM 758
New Braunfels,TX

Description: New Braunfels National Airport is doing a siting study on three possible locations for a new air traffic control tower. This is ATCT 1.

Dear Kerri Smith:
Thank you for your submittal regarding the above-referenced project. This response represents the comments of the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission (THC), pursuant to review under Section 106 of the National Historic Preservation Act and the Antiquities Code of Texas.

The review staff, led by Justin Kockritz and Mary Galindo, has completed its review and has made the following determinations based on the information submitted for review:

Above-Ground Resources

- No historic properties are present or affected by the project as proposed. However, if historic properties are discovered or unanticipated effects on historic properties are found, work should cease in the immediate area; work can continue where no historic properties are present. Please contact the THC's History Programs Division at 512-463-5853 to consult on further actions that may be necessary to protect historic properties.

Archeology Comments

- No historic properties affected. However, if cultural materials are encountered during construction or disturbance activities, work should cease in the immediate area; work can

continue where no cultural materials are present. Please contact the THC's Archeology Division at 512-463-6096 to consult on further actions that may be necessary to protect the cultural remains.

- THC/SHPO concurs with information provided.
- This draft report is acceptable. To facilitate review and make project information and final reports available through the Texas Archeological Sites Atlas, we appreciate submission of tagged pdf copies of the final report including one restricted version with all site location information (if applicable), and one public version with all site location information redacted; an online abstract form submitted via the abstract tab on eTRAC; and survey area shapefiles submitted via the shapefile tab on eTRAC. For questions on how to submit these please visit our video training series at: https://www.youtube.com/playlist?list=PLONbbv2pt4cog5t6mCqZVaEAx3d0MkgQC Please note that these steps are required for projects conducted under a Texas Antiquities Permit.

We look forward to further consultation with your office and hope to maintain a partnership that will foster effective historic preservation. Thank you for your cooperation in this review process, and for your efforts to preserve the irreplaceable heritage of Texas. If the project changes, or if new historic properties are found, please contact the review staff. If you have any questions concerning our review or if we can be of further assistance, please email the following reviewers: justin.kockritz@thc.texas.gov, Mary.Galindo@thc.texas.gov.

This response has been sent through the electronic THC review and compliance system (eTRAC). Submitting your project via eTRAC eliminates mailing delays and allows you to check the status of the review, receive an electronic response, and generate reports on your submissions. For more information, visit http://thc.texas.gov/etrac-system.

Sincerely,

for Bradford Patterson
Chief Deputy State Historic Preservation Officer

Please do not respond to this email.

Accession Number: TARL_____

TEXAS ARCHEOLOGICAL RESEARCH LABORATORY
THE UNIVERSITY OF TEXAS AT AUSTIN • 1 UNIVERSITY STATION, #R7500 • AUSTIN, TX 78712

GOVERNMENTAL AGENCY CURATION AGREEMENT

This letter documents the placement of archeological collections (specimens and/or records) from:
The New Braunfels National Airport
(Submitting Governmental Agency)

with the Texas Archeological Research Laboratory (TARL), The University of Texas at Austin, for the following:

GENERAL INFORMATION

Project Number / Name: 050097/New Braunfels National Airport Proposed ATCT 1 Location
Agency / Company: Sphere 3 Environmental, Inc.
Dates of Investigation: 2/20/2024
Permit Number(s) / Expiration: TAC Permit 31616/2-16-2026 PI: James Belew
Landowner on permit: New Braunfels National Airport
Sponsor on permit: New Braunfels National Airport
Area / County(ies) / Site Number(s): On the New Braunfels National Airport in Guadalupe County
(attach addt. sheets if needed, listed by county and site number)

Description of Materials: Project records

Date material received on site:
(to be supplied by TARL)

As the designated curatorial repository, TARL will manage the collection in accordance with applicable federal and state regulations (36CFR, Part 79 and the Texas Historical Commission rules and Collections Management Policy), as well as the terms of any cooperative or contractual agreements. TARL is acknowledged as holding these materials in trust; however, actual ownership of the specimens and records rests with the State of Texas or the submitting governmental entity noted above.

Signature of Authorized Agent of Sub. Govt. Agy.	Signature of Authorized Agent of Sub. Arch.
	James S. Belew
Print name Authorized Agent of Sub. Govt. Agy.	Print name Authorized Agent of Sub. Arch.
	P.I. and Principal Archeologist
Title	Title
	Sphere 3 Environmental, Inc.
Company / Agency	Company / Agency
	4/3/2024
Date	Date
Address:	Address:
	1501 Bill Owens Parkway
	Longview, TX 75604

Kerri Smith

From: noreply@thc.state.tx.us
Sent: Tuesday, April 2, 2024 7:10 PM
To: Kerri Smith; reviews@thc.state.tx.us
Subject: New Braunfels National Airport ATCT 2

TEXAS HISTORICAL COMMISSION
real places telling real stories

Re: Project Review under Section 106 of the National Historic Preservation Act and/or the Antiquities Code of Texas
THC Tracking #202407010
Date: 04/02/2024
New Braunfels National Airport ATCT 2 (Permit 31615)
2333 FM 758
New Braunfels,TX

Description: New Braunfels National Airport is doing a siting study on three possible locations for a new air traffic control tower. This is ATCT 2.

Dear Kerri Smith:
Thank you for your submittal regarding the above-referenced project. This response represents the comments of the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission (THC), pursuant to review under Section 106 of the National Historic Preservation Act and the Antiquities Code of Texas.

The review staff, led by Justin Kockritz and Mary Galindo, has completed its review and has made the following determinations based on the information submitted for review:

Above-Ground Resources

- No historic properties are present or affected by the project as proposed. However, if historic properties are discovered or unanticipated effects on historic properties are found, work should cease in the immediate area; work can continue where no historic properties are present. Please contact the THC's History Programs Division at 512-463-5853 to consult on further actions that may be necessary to protect historic properties.

Archeology Comments

- No historic properties affected. However, if cultural materials are encountered during construction or disturbance activities, work should cease in the immediate area; work can

continue where no cultural materials are present. Please contact the THC's Archeology Division at 512-463-6096 to consult on further actions that may be necessary to protect the cultural remains.

- THC/SHPO concurs with information provided.
- This draft report is acceptable. To facilitate review and make project information and final reports available through the Texas Archeological Sites Atlas, we appreciate submission of tagged pdf copies of the final report including one restricted version with all site location information (if applicable), and one public version with all site location information redacted; an online abstract form submitted via the abstract tab on eTRAC; and survey area shapefiles submitted via the shapefile tab on eTRAC. For questions on how to submit these please visit our video training series at: https://www.youtube.com/playlist?list=PLONbbv2pt4cog5t6mCqZVaEAx3d0MkgQC Please note that these steps are required for projects conducted under a Texas Antiquities Permit.

We look forward to further consultation with your office and hope to maintain a partnership that will foster effective historic preservation. Thank you for your cooperation in this review process, and for your efforts to preserve the irreplaceable heritage of Texas. If the project changes, or if new historic properties are found, please contact the review staff. If you have any questions concerning our review or if we can be of further assistance, please email the following reviewers: justin.kockritz@thc.texas.gov, Mary.Galindo@thc.texas.gov.

This response has been sent through the electronic THC review and compliance system (eTRAC). Submitting your project via eTRAC eliminates mailing delays and allows you to check the status of the review, receive an electronic response, and generate reports on your submissions. For more information, visit http://thc.texas.gov/etrac-system.

Sincerely,

for Bradford Patterson
Chief Deputy State Historic Preservation Officer

Please do not respond to this email.

Accession Number: TARL_____

TEXAS ARCHEOLOGICAL RESEARCH LABORATORY
THE UNIVERSITY OF TEXAS AT AUSTIN • 1 UNIVERSITY STATION, #R7500 • AUSTIN, TX 78712

GOVERNMENTAL AGENCY CURATION AGREEMENT

This letter documents the placement of archeological collections (specimens and/or records) from:
The New Braunfels National Airport
(Submitting Governmental Agency)

with the Texas Archeological Research Laboratory (TARL), The University of Texas at Austin, for the following:

GENERAL INFORMATION

Project Number / Name: 050097/New Braunfels National Airport Proposed ATCT 2 Location
Agency / Company: Sphere 3 Environmental, Inc.
Dates of Investigation: 2/20/2024
Permit Number(s) / Expiration: TAC Permit 31615/2-16-2026 PI: James Belew
Landowner on permit: New Braunfels National Airport
Sponsor on permit: New Braunfels National Airport
Area / County(ies) / Site Number(s): On the New Braunfels National Airport in Guadalupe County
(attach addt. sheets if needed, listed by county and site number)

Description of Materials: Project records

Date material received on site:
(to be supplied by TARL)

As the designated curatorial repository, TARL will manage the collection in accordance with applicable federal and state regulations (36CFR, Part 79 and the Texas Historical Commission rules and Collections Management Policy), as well as the terms of any cooperative or contractual agreements. TARL is acknowledged as holding these materials in trust; however, actual ownership of the specimens and records rests with the State of Texas or the submitting governmental entity noted above.

Signature of Authorized Agent of Sub. Govt. Agy.	Signature of Authorized Agent of Sub. Arch.
	James S. Belew
Print name Authorized Agent of Sub. Govt. Agy.	Print name Authorized Agent of Sub. Arch.
	P.I. and Principal Archeologist
Title	Title
	Sphere 3 Environmental, Inc.
Company / Agency	Company / Agency
	4/3/2024
Date	Date
Address:	Address:
	1501 Bill Owens Parkway
	Longview, TX 75604

Kerri Smith

From: noreply@thc.state.tx.us
Sent: Tuesday, April 2, 2024 7:15 PM
To: Kerri Smith; reviews@thc.state.tx.us
Subject: New Braunfels National Airport ATCT 3

TEXAS HISTORICAL COMMISSION
real places telling real stories

Re: Project Review under Section 106 of the National Historic Preservation Act and/or the Antiquities Code of Texas
THC Tracking #202407015
Date: 04/02/2024
New Braunfels National Airport ATCT 3 (Permit 31606)
2333 FM 758
New Braunfels,TX

Description: New Braunfels National Airport is doing a siting study on three possible locations for a new air traffic control tower. This is ATCT 3.

Dear Kerri Smith:
Thank you for your submittal regarding the above-referenced project. This response represents the comments of the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission (THC), pursuant to review under Section 106 of the National Historic Preservation Act and the Antiquities Code of Texas.

The review staff, led by Justin Kockritz and Mary Galindo, has completed its review and has made the following determinations based on the information submitted for review:

Above-Ground Resources

- No historic properties are present or affected by the project as proposed. However, if historic properties are discovered or unanticipated effects on historic properties are found, work should cease in the immediate area; work can continue where no historic properties are present. Please contact the THC's History Programs Division at 512-463-5853 to consult on further actions that may be necessary to protect historic properties.

Archeology Comments

- No historic properties affected. However, if cultural materials are encountered during construction or disturbance activities, work should cease in the immediate area; work can

continue where no cultural materials are present. Please contact the THC's Archeology Division at 512-463-6096 to consult on further actions that may be necessary to protect the cultural remains.

- THC/SHPO concurs with information provided.
- This draft report is acceptable. To facilitate review and make project information and final reports available through the Texas Archeological Sites Atlas, we appreciate submission of tagged pdf copies of the final report including one restricted version with all site location information (if applicable), and one public version with all site location information redacted; an online abstract form submitted via the abstract tab on eTRAC; and survey area shapefiles submitted via the shapefile tab on eTRAC. For questions on how to submit these please visit our video training series at: https://www.youtube.com/playlist?list=PLONbbv2pt4cog5t6mCqZVaEAx3d0MkgQC Please note that these steps are required for projects conducted under a Texas Antiquities Permit.

We look forward to further consultation with your office and hope to maintain a partnership that will foster effective historic preservation. Thank you for your cooperation in this review process, and for your efforts to preserve the irreplaceable heritage of Texas. If the project changes, or if new historic properties are found, please contact the review staff. If you have any questions concerning our review or if we can be of further assistance, please email the following reviewers: justin.kockritz@thc.texas.gov, Mary.Galindo@thc.texas.gov.

This response has been sent through the electronic THC review and compliance system (eTRAC). Submitting your project via eTRAC eliminates mailing delays and allows you to check the status of the review, receive an electronic response, and generate reports on your submissions. For more information, visit http://thc.texas.gov/etrac-system.

Sincerely,

for Bradford Patterson
Chief Deputy State Historic Preservation Officer

Please do not respond to this email.

Accession Number: TARL_____

TEXAS ARCHEOLOGICAL RESEARCH LABORATORY
THE UNIVERSITY OF TEXAS AT AUSTIN • 1 UNIVERSITY STATION, #R7500 • AUSTIN, TX 78712

GOVERNMENTAL AGENCY CURATION AGREEMENT

This letter documents the placement of archeological collections (specimens and/or records) from:

The New Braunfels National Airport
(Submitting Governmental Agency)

with the Texas Archeological Research Laboratory (TARL), The University of Texas at Austin, for the following:

GENERAL INFORMATION

Project Number / Name: 050097/New Braunfels National Airport Proposed ATCT 3 Location
Agency / Company: Sphere 3 Environmental, Inc.
Dates of Investigation: 2/20/2024
Permit Number(s) / Expiration: TAC Permit 31606/2-14-2026 PI: James Belew
Landowner on permit: New Braunfels National Airport
Sponsor on permit: New Braunfels National Airport
Area / County(ies) / Site Number(s): On the New Braunfels National Airport in Guadalupe County
(attach addt. sheets if needed, listed by county and site number)

Description of Materials: Project records

Date material received on site:
(to be supplied by TARL)

As the designated curatorial repository, TARL will manage the collection in accordance with applicable federal and state regulations (36CFR, Part 79 and the Texas Historical Commission rules and Collections Management Policy), as well as the terms of any cooperative or contractual agreements. TARL is acknowledged as holding these materials in trust; however, actual ownership of the specimens and records rests with the State of Texas or the submitting governmental entity noted above.

Signature of Authorized Agent of Sub. Govt. Agy.	Signature of Authorized Agent of Sub. Arch.
	James S. Belew
Print name Authorized Agent of Sub. Govt. Agy.	Print name Authorized Agent of Sub. Arch.
	P.I. and Principal Archeologist
Title	Title
	Sphere 3 Environmental, Inc.
Company / Agency	Company / Agency
	4/3/2024
Date	Date
Address:	Address:
	1501 Bill Owens Parkway
	Longview, Texas 75604

APPENDIX C | PUBLIC INVOLVEMENT AND COMMENTS

New Braunfels National Airport (NBNA)
Airport Traffic Control Tower (ATCT) Replacement
Draft Environmental Assessment (EA) Comments
August 5, 2025

As a local pilot flying out of NBNA since the early 2000's and a frequent visitor to the current ATCT, I support the decision to replace the existing tower as quickly as possible.

The rapidly deteriorating physical condition of the ACTC both internally and externally creates a challenging working environment for the local controllers in a fast-paced non-radar environment and significant maintenance costs to the Airport. On certain low visibility days, the controllers cannot visually see aircraft on the ground that are departing Runway 13 at Taxiway B or aircraft approaching Runways 13 and 17, requiring multiple pilot position reports at critical phases of flight.

As the new ACTC scheduled for completion in 2027 is primarily funded by a specific FAA grant at minimal expense to the City of New Braunfels, I request that consideration for the installation of FAA Weather cameras connected to their national reporting network be installed at the same time. This local cost is minimal compared to the cost of the new ACTC. With recent technological advances, online access to real time weather pictures via these cameras are available to the pilot in the cockpit, on the ground prior to departure and at home over the Internet for flight planning. This would be a cost-e ective safety consideration for this project.

David Slaughter
AOPA Airport Support Network Volunteer
Email: dslaughter765@gmail.com
Phone: 210-306-9699

NEW BRAUNFELS Herald-Zeitung

Reporting the life story of New Braunfels since 1852

Affidavit of Publication

P. O. BOX 311328
New Braunfels TX 78131
830-625-9144

STATE OF TEXAS
COUNTY OF COMAL

Jo Aguirre, being duly sworn, says:

That she is Designee of the *NEW BRAUNFELS HERALD-ZEITUNG*, a daily newspaper of general circulation, printed and published in New Braunfels, Comal County, Texas; that the publication, a copy of which is attached hereto, was published in the said newspaper on the following dates:
07/16/2025, 07/30/2025

That said publication was regularly issued and circulated on those date.

Jo Aguirre, Classified Manager

Subscribed to and sworn to me this
4th day of August, 2025

Brandi L. Ramirez, Billing Clerk, Comal County, Texas

My commission expires: September 27, 2025

BRANDI L. RAMIREZ
Notary Public, State of Texas
Comm. Expires 09-27-2025
Notary ID 131296676

Acct #89393 Ad #1334151

KSA Engineers
Michael Mitchell
8866 Synergy Drive
Mc Kinney, TX 75070

will not knowingly accept any advertising for real estate which is in violation of the law. All persons are hereby informed that all dwellings advertised are available on an equal opportunity basis.

Check Out all the GREAT services local people from our community provide in the Business & Service Directory!!

Notice of a Draft Environmental Assessment (EA) for New Braunfels National Airport (BAZ) Airport Traffic Control Tower Replacement

The City of New Braunfels has prepared a Draft Environmental Assessment (EA) pursuant to Title 40, Code of Federal Regulations 1506.6(b). The Draft EA has been prepared to evaluate the potential environmental impacts of the proposed BAZ Airport Traffic Control Tower (ATCT).

The City of New Braunfels, is proposing to replace the existing ATCT at BAZ. The Proposed Action is to replace the BAZ ATCT with a modern ATCT providing uninterrupted air traffic control service. The existing BAZ ATCT is almost 20 years old and is beyond its useful design life and does not have the ability to accommodate upgrades to the latest air traffic control technologies, lacks personnel space requirements and modern amenities, and exhibits physical problems such as maintenance-intensive deficient mechanical appurtenances (e.g. heating and ventilation, plumbing).

The BAZ ATCT Draft EA will evaluate the existing environment and analyze any anticipated environmental consequences of the proposed alternatives, including the Proposed Action, at a site-specific level. TxDOT Aviation and the Federal Aviation Administration (FAA) are the lead federal agencies to ensure compliance with the National Environmental Policy Act (NEPA) of 1969, as amended under 42 United States Code (U.S.C) § 4321 et seq.

Public Review:

A Public Meeting will be held should there be interest from the public regarding this EA. The location and time for that meeting will be updated where copies of the EA are available for public review if there is interest. Copies of the EA are available for review at the following locations:

New Braunfels National Airport Terminal Building (hardcopy)
2333 FM 758, New Braunfels, TX 78130

The City of New Braunfels City Hall (hardcopy)
550 Landa Street, New Braunfels, TX 78130

City of New Braunfels Website – Airport (electronic)
https://newbraunfels.gov/3488/Airport

Public Comments:

The public may submit comments to Michael Mitchell, Project Manager, KSA at mmitchell@ksaeng.com. This public review period begins July 16th, 2025 for a duration of 30 days. To be considered, all comments must be received by 5:00 PM on Friday August 15, 2025.

*** Before including your address, phone number, email address, or other personal information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so. ***

're have a "come as you
d. You do not have to
urself up to approach
it wear your heart.
is Holy and just. He
be in the presence
out He forgives it. He
veryone to come to
d finds no joy in judg-
e who choose not to
f their sins and follow

could an all-loving
tence someone to Hell
ity, you ask? The truth
oes not. We condemn
s to Hell. The free will
given us can be a bless-
curse. Pray you choose
roverbs 9:10, "The fear
ord is the beginning of
, and knowledge of the
ie is understanding."
is timeless. He offers love and mercy as a gift to humankind. We only have to say "yes" to His Son and believe in Him. Surrender to Jesus as He surrendered Himself for you, and follow Him. His crucifixion, death, and resurrection offer a lifetime warranty. Please consider this eternal offer as if your life depended on it.

John 3:16-17, "16 For God so loved the world that he gave his one and only Son, that whoever believes in him shall not perish but have eternal life. 17 For God did not send his Son into the world to condemn the world, but to save the world through him."

The Cross was not the end. It was the beginning.

Peace, love, grace, and mercy to you and yours always.

Gov. Cuomo "was able
peech to combine the
s of the various eth-
of New York, using the
e of those folks." Car-
l the younger Cuomo
same quality."
ew Cuomo – channel-
inston Churchill's 1937
that politicians "ex-
fail; they hope to rise
must defeat Zohran
ni, who beat him in
nocratic primary.
way different job from
overnor," Carney said.
Cuomo would be bet-
ayor than being gover-
was a good governor
der during COVID.
me he's a product of
w York environment.
nportant in commu-
at the local level. It's
t from leading at the
el, where he had to
nicate with people in
and Syracuse."

editors, "People never thought I'd get interested in potholes. But there's something about a pothole. It's immediate, it's real, and you can fix it for very little."

Moving from governor to mayor, as Cuomo is trying to do, or from the House to governor to mayor, as Carney has done, may seem like downward mobility. But consider this: Three presidents once were mayors – Andrew Johnson (Greenville, Tennessee), Grover Cleveland (Buffalo) and Calvin Coolidge (Boston). And as Carney might tell you, move one step lower to New Castle County commissioner, and you'll find that title in the resume of one of his Delaware neighbors: Joe Biden.

But forget the White House. Think instead of what Brown told me in the lobby of an Oakland hotel 26 years ago: "Can the president really get

it all ply for and maintain a federal grant, Smith tance. There were $5.6 billion dollars in re- munities than federal dollars," Smith said.

FIEDS

25-9144
.com

Equal Housing Notice

ence, limitation, or discrimination because of race, color, religion, sex, handicap, familial status, or national origin, or intention to make any such preference, limitation, or discrimination." We will not knowingly accept any advertising for real estate which is in violation of the law. All persons are hereby informed that all dwellings advertised are available on an equal opportunity basis.

AUTOMOTIVE

Cars

2007 Buick Lacrosse
$3,100. Needs new water pump and thermostat. Has new battery! Still runs! Text only **830-318-9909**
627 Creek Dr, NB

ANNOUNCEMENTS

Legal Notices

Legal Notices | Legal Notices | Legal Notices | Legal Notices | Legal Notices | Legal Notices

Notice of a Draft Environmental Assessment (EA) for New Braunfels National Airport (BAZ) Airport Traffic Control Tower Replacement

The City of New Braunfels has prepared a Draft Environmental Assessment (EA) pursuant to Title 40, Code of Federal Regulations 1506.6(b). The Draft EA has been prepared to evaluate the potential environmental impacts of the proposed BAZ Airport Traffic Control Tower (ATCT).

The City of New Braunfels, is proposing to replace the existing ATCT at BAZ. The Proposed Action is to replace the BAZ ATCT with a modern ATCT providing uninterrupted air traffic control service. The existing BAZ ATCT is almost 20 years old and is beyond its useful design life and does not have the ability to accommodate upgrades to the latest air traffic control technologies, lacks personnel space requirements and modern amenities, and exhibits physical problems such as maintenance-intensive deficient mechanical appurtenances (e.g. heating and ventilation, plumbing).

The BAZ ATCT Draft EA will evaluate the existing environment and analyze any anticipated environmental consequences of the proposed alternatives, including the Proposed Action, at a site-specific level. TxDOT Aviation and the Federal Aviation Administration (FAA) are the lead federal agencies to ensure compliance with the National Environmental Policy Act (NEPA) of 1969, as amended under 42 United States Code (U.S.C) § 4321 et seq.

Public Review:

A Public Meeting will be held should there be interest from the public regarding this EA. The location and time for that meeting will be updated where copies of the EA are available for public review if there is interest. Copies of the EA are available for review at the following locations:

New Braunfels National Airport Terminal Building (hardcopy)
2333 FM 758, New Braunfels, TX 78130

The City of New Braunfels City Hall (hardcopy)
550 Landa Street, New Braunfels, TX 78130

City of New Braunfels Website – Airport (electronic)
https://newbraunfels.gov/3488/Airport

Public Comments:

The public may submit comments to Michael Mitchell, Project Manager, KSA at mmitchell@ksaeng.com. This public review period begins July 16th, 2025 for a duration of 30 days. To be considered, all comments must be received by 5:00 PM on Friday August 15, 2025.

*** Before including your address, phone number, email address, or other personal information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so. ***

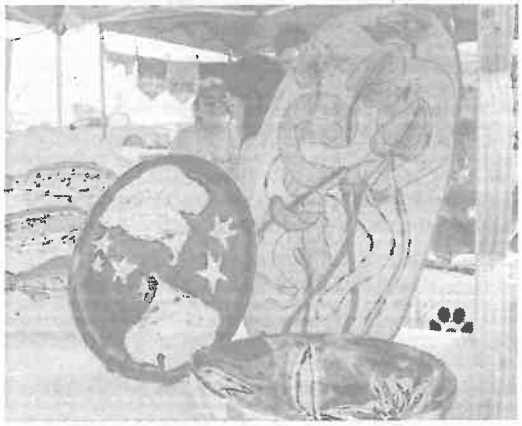
by local nature. Many of her pieces feature plants and animals that can be found in Comal County.

Overall, the goal of the festival was to bring people who love coffee and community together, a goal Rosales said was reached.

"It was pretty great, like-minded individuals sharing a love for the same thing," Rosales said. "The vibe on Saturday was unmatchable. I don't think I could have asked for more."

Rosales plans to make the coffee festival a yearly event, hosting it annually in July. 13 Trees Coffee Haus also regularly holds farmers markets, and a fall festival is in the works, but details have not yet been released.

13 Trees Coffee Haus is located at 1450 W. Klein Road and is open Wednesday through Monday.



e by local artist Madison Stidham is displayed at the 2025. **KAITLYNN HUTCHINS | Herald-Zeitung**

pour the lemonade," Davidson said. "Y'all as a community — everyone in New Braunfels who has come by, supported, commented, liked, electronically donated, actually came here and donated — y'all are the people that made this possible. We just set it up."

RECOVERY

Continued from page 10

they directed reporters to Kerr County officials. The Joint Information Center, a team of county and state employees and volunteers which has been running public communications for the county since the disaster, did not respond to multiple requests last week to clarify how the number was found, but provided the previous, higher number Abbott provided Tuesday.

Recovery teams are thoroughly scouring large debris piles for any people who were swept into the Guadalupe after it swelled in the pre-dawn hours July 4 following heavy rain. Those efforts have been hindered further by continued rain and flooding in areas already impacted by the initial floods, pausing searches across the Hill Country.

The devastating flood is already one of the deadliest natural disasters in recent Texas history. The 1900 hurricane in Galveston claimed over 8,000 lives and the 1921 San Antonio floods killed 215 people. If official estimates that 97 people are still missing is not an overcount, then the final death toll of the Hill Country floods would surpass those of the 1921 floods, potentially making it the second most catastrophic natural disaster in Texas.

An increase in the number of people confirmed dead could partially — but not completely — account for the drop in the number of people missing. A lower estimate in the number of people missing is not uncommon after mass casualty events. In the immediate aftermath of a natural disaster, officials try to nail down who was near scenes of disaster, identify found remains and communicate across agencies. In the wake of intense wildfires in Hawaii in 2023, the estimated number of missing people at one point peaked at 3,000 people, however ultimately the number of those killed was 102.

Initial post-disaster lags in communication have already affected flood search efforts: Travis County officials whittled down their missing persons count from 10 people to four after they realized some people were on both the lists of those missing and those who had been confirmed dead, according to a county spokesperson.

As time goes on a clearer idea of who is unaccounted for should begin to appear, said Lucy Easthope, an international adviser on disaster recovery efforts.

"Certainly, by the end of the first month, you've got a good idea of what you're looking for," Easthope said. "And sometimes in flooding, we've seen the Earth only yield its final death toll some months, and maybe even years, later."

The high number of visitors to the river for the July 4 holiday may also prove another obstacle in nailing down an accurate number, as people along the river in RVs or who didn't check in to hotels may be unaccounted for. President Donald Trump cast doubt on the true number of those still missing during his visit in Kerrville on Friday.

"They're getting that count, but the count that they don't have is how many are still missing, with a lot of lives, a lot of young angels," Trump said.

worked out."

Dependability of federal funds

Matching funds are just one of the barriers communities must overcome to access federal support.

In 2024, more than 100 Texas counties had no hazard mitigation plans – which precluded them from federal disaster grants. In Kerr County, the hardest hit by the July 4 flood, a FEMA funding request for weather said.

It takes a lot of time, effort and patience to get through the process. Crockett applied for the FEMA grant a little over two years ago and is just now starting the physical work.

Furthermore, even communities who have the time, staff and resources to apply aren't guaranteed to actually receive federal support.

"Communities want to do this proactive work, but it's very challenging to access the

quests but FEMA only had $1 billion available, Smith said. Many of those dollars went to populous counties, such as Harris County, rather than smaller, rural communities.

And the future of federal support is uncertain. The BRIC grant was shuttered in April and some applicants who had been approved for funding never saw a dollar.

Texas lawmakers will reconvene for a special legislative session on July 21 with a priority being disaster relief and recovery