

Environmental Assessment

Glass Mountain 480-foot Guyed Telecommunications Tower Approximately 27 Miles Northeast of Marathon, Brewster County, Texas

June 2, 2010

Project No. 90107018

Prepared for:

Permian Basin Regional Planning Commission

Prepared by:

Terracon Consultants, Inc.
San Antonio, Texas

June 2, 2010

Mr. Barney Welch
Permian Basin Regional Planning Commission
2910 La Force Boulevard
Midland, Texas 79706

Re: Draft Environmental Assessment
Glass Mountain Tower
Approximately 27 miles northeast of Marathon,
Brewster County, Texas
Prudent Project Number: 90107018

Dear Mr. Welch:

Terracon has conducted a Draft Environmental Assessment and FCC NEPA Checklist of the proposed project with respect to the expected environmental impacts associated with grant funds issued by the Public Safety Interoperable Communications (PSIC) Grant Program, administered by the National Telecommunications and Information Administration (NTIA) of the U.S. Department of Commerce. The PSIC Grant Program is to assist State, local, tribal, and nongovernmental agencies in developing interoperable communications as they leverage newly available spectrum in the 700-800 megahertz (MHz) band. As a condition of the PSIC Grant Program, PSIC grantees must comply with all relevant Federal legislation.

In addition, to the PSIC screening any new tower construction is required to undergo FCC NEPA Land Use screening in accordance with 47 CFR Section 1.1307 (a) (1) through (8), to determine whether any of the listed FCC special interest items would be significantly affected if a tower structure and/or antenna and associated equipment control cabinets were constructed at the proposed site location.

The findings of this Draft Environmental and FCC NEPA Checklist are based on the project location, project type, and construction diagrams provided by the Pecos County Sheriff's Department. Should the project location, project type, and/or construction diagrams be altered, reevaluation of this project will be required. If there are any questions regarding the information presented in this report, please contact our Terracon office at 210-641-2112.

Sincerely,
Terracon Consultants, Inc.

Julio A. Aguilar
Environmental Scientist

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EXECUTIVE SUMMARY

This executive summary is provided for convenience only and should not substitute review of the complete report, including all figures and appendices.

The Proposed Action is identified as the Glass Mountain Tower site. The Glass Mountain Tower is classified as a "New" Transmission and Receiving Site, which consists of the proposed construction of a 480-foot guyed communications tower with associated equipment to be located within an existing 100-foot by 100-foot compound. The total ground-disturbance area is less than 0.25 acres. The area surrounding the proposed Glass Mountain Tower site is mountainous rangeland with three rural residences approximately 0.32 miles northwest of the site. The site consists of a vacant parcel on an existing site containing the remnants of a former communications tower which was destroyed in an ice storm. A vicinity map of the area and photographs of the site and surrounding area are in the appendices of this report.

The proposed Glass Mountain Tower site is located at 30° 23' 33.9" N Latitude, 103° 8' 9.6" W Longitude (NAD83) approximately 27 miles northeast of Marathon, Texas as shown on the USGS Hess Canyon, Texas *7.5 Minute Series Topographic Map* dated 1983, Figure 2. The Glass Mountain Tower site consists of a proposed 480-foot guyed telecommunication tower, within an existing 100-foot by 100-foot compound. The proposed telecommunication compound will house: one 12-foot by 16-foot equipment shelter, a stand-alone emergency backup generator and associated propane tank, and control utility board as shown in Figure 3.

The proposed Glass Mountain Tower site will be located on mountainous rangeland of the Glass Mountains in Brewster, County. The existing utilities located on site will be used for power. An existing gravel access road will be used for site access for construction and operational maintenance. Figure 4 shows the aerial photograph of the project site location.

The proposed site will allow for the following:

- Increased coverage area for emergency responders connected through the system
- Updated equipment to support new frequencies to improve and expand voice and data coverage
- Facilitate reliable interoperable communications among first responder organizations
- Enhanced security and facility control

The Proposed Action will not involve any of the unusual risks or impacts to sensitive areas identified in Section 4. Therefore, the Proposed Action would warrant the issuance of a FONSI.

In addition, to the Public Safety Interoperable Communications (PSIC) Grant Program screening, any new tower construction is required to undergo FCC NEPA Land Use screening in accordance with 47 CFR Section 1.1307 (a) (1) through (8), to determine whether any of the listed FCC special interest items would be significantly affected if a tower structure and/or antenna and associated equipment control cabinets were constructed at the proposed site location.

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Based upon the available data gathered for this Environmental Assessment (EA), there does not appear to be evidence that would suggest National Environmental Policy Act (NEPA) environmental concerns exist for the Proposed Action. No FCC special interest items were identified.

SECTION 1 - INTRODUCTION

This Environmental Assessment (EA) provides a review of the potential environmental impacts associated with grant funds issued by the Public Safety Interoperable Communications (PSIC) Grant Program, administered by the National Telecommunications and Information Administration (NTIA) of the U.S. Department of Commerce. The PSIC Grant Program is to assist State, local, tribal, and nongovernmental agencies in developing interoperable communications as they leverage newly available spectrum in the 700-800 megahertz (MHz) band. As a condition of the PSIC Grant Program, PSIC grantees must comply with all relevant Federal legislation, including the National Environmental Policy Act (NEPA). Given the height and guy-wired structure of the proposed Glass Mountain tower, this project requires a site-specific EA under the PSIC Grant Program.

The NTIA has specified that PSIC-funded projects must be used for projects that would improve communications in areas at high risk for natural disasters and in urban and metropolitan areas at high risk for threats of terrorism, and should include pre-positioning or securing of interoperable communications for immediate deployment during emergencies or major disasters. Investments that received PSIC funding range from large-scale infrastructure build-outs such as tower construction to governance-related initiatives, but not limited to multijurisdictional strategic planning.

Brewster County, Texas is located in the western portion of the State of Texas containing the Glass Mountains. In 2008, the U.S. Census Bureau estimated Brewster County's population estimated to be 9,331. The county has a land area of 6,129.61 square miles.

The proposed Glass Mountain Tower site is located approximately 27 miles northeast of Marathon, Texas at 30° 23' 33.9" N Latitude and 103° 8' 9.6" W Longitude (NAD83) (Figure 1), shown on the USGS Hess Canyon, Texas *7.5 Minute Series Topographic Map* dated 1983, shown in Figure 2. The Glass Mountain Tower site consists of a proposed 480-foot guyed telecommunication tower and associated equipment to be located within an existing 100-foot by 100-foot compound. The proposed telecommunication compound will include: one 12-foot by 16-foot equipment shelter, a standalone emergency backup generator and associated propane tank, and control utility board as shown in Figure 3.

The Glass Mountain Tower site is located on mountainous rangeland within the area of West Texas known as the Glass Mountains. The proposed project will utilize existing utilities for power located within the existing compound. An existing gravel access road will be used for site access for construction and operational maintenance. Figure 4 shows the aerial photograph of the project site location.

Pecos County Sheriff's Department is proposing a new 800-MHz radio trunking system, to be located in Brewster County. Trunking systems share multiple frequencies with many users. In conventional systems, a frequency is dedicated to a group of users, and when those users are

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not using the frequency, the channel is idle and its potential airtime is wasted. Trunking systems allow these users to share the same group of frequencies. The proposed Glass Mountain Tower site will be a part of a trunking system associated with other towers in the neighboring counties of Terrell, Crane, Upton and Reeves.

Purpose and Need

The purpose of the Proposed Action is to meet current radio system coverage and future coverage needs of Brewster and nearby surrounding counties. The Purpose of the PSIC Grant Program is to improve interoperability and reliability in the nation's communications and information systems infrastructure by assisting public safety agencies in performing the following:

- Conducting Statewide or regional planning and coordination
- Supporting the design and engineering of interoperable emergency communications systems
- Supporting the acquisition or deployment of interoperable communications equipment or systems
- Establishing and implementing a strategic technology reserve to pre-position or secure interoperable communications in advance so they may be immediately deployed in an emergency or major disaster

The proposed project will replace a former communications tower which was destroyed in an ice storm. The existing system does not meet the present coverage and security needs of Brewster and surrounding counties. The existing facility does not provide options for expansion of the radio system coverage. Therefore, the proposed Glass Mountain tower site location will provide the following:

- Increased coverage area for emergency responders connected through the system
- Updated equipment to support new frequencies to improve and expand voice and data coverage
- Facilitate reliable interoperable communications among first responder organizations
- Enhanced security and facility control
- Use cost-effective measures, via leasing agreements and systems sharing

SECTION 2 - PROPOSED ACTION

The Proposed Action is construction of a new transmission and receiving telecommunications facility at the Glass Mountain tower site. The Glass Mountain Tower project is classified as a “New” Transmission and Receiving Site under the PSIC Grant Program. The Proposed Action consists of a 480-foot guyed wire telecommunications tower within a 100-foot by 100-foot fenced compound with associated equipment. The total ground disturbance area is less than 0.25 acres. The area surrounding the proposed undertaking is vacant, mountainous rangeland located in the Glass Mountains of the Stockton Plateau in Brewster County, Texas.

The proposed tower site is located at 30-23-33.9 N latitude and -103-8-9.6 W longitude approximately 27 miles northeast of Marathon, Brewster County, Texas (Figure 1), as shown on the USGS Hess Canyon, *Texas 7.5 Minute Series Topographic Map* dated 1983 (Figure 2). The site consists of vacant land with remnants of a former communications tower which was destroyed in an ice storm. The new structure will utilize the former communication tower footprint. A gravel access road will be used for site access for construction and operational maintenance. The proposed telecommunications compound will include: one 12-foot by 16-foot equipment shelter, a standalone emergency backup generator, associated propane tank, and control utility board as shown in Figure 3.

The proposed project will be located on privately owned property. The existing utilities for power will be extended from nearby overhead electrical transmission lines to allow for easy access. An aerial photograph showing the site location is included (Figure 4).

The proposed Glass Mountain Tower site will allow for the following:

- Increased coverage area for emergency responders connected through the system
- New technology which will support frequencies which improve/expand voice and/or data coverage
- Improve communications among security/emergency organizations

- Enhance security and facility control
- Use cost-effective measures, via leasing agreements and systems sharing

Alternatives

Several project alternatives were investigated during the facility selection process as discussed below:

Proposed Action – Glass Mountain Tower Site (Preferred Action)

The proposed tower site is located within an existing 100-foot by 100-foot fenced compound of vacant land with remnants of a former communications tower previously destroyed in an ice

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storm. The area surrounding the proposed undertaking is vacant, mountainous rangeland land located in the Glass Mountains of the Stockton Plateau in Brewster County, Texas. The proposed tower site is located at 30-23-33.9 N latitude and -103-8-9.6 W longitude approximately 27 miles northeast from the town of Marathon, Texas (Figure 1).

The new structure will utilize the former communication tower footprint and a gravel access road will be used for site access for construction/operational maintenance. Ground-disturbing activities, which will take place for approximately one week, will consist of vegetation clearing, grading, and digging with the use of a dozer, using a pier drill rig for the base and footings, and the use of a mobile crane for erecting the tower. The proposed telecommunications compound will include: one 12-foot by 16-foot equipment shelter, a standalone emergency backup generator, associated propane tank, and control utility board.

The proposed site topography provides natural height resulting in enhanced coverage with the proposed 480-foot guyed tower. This greatly reduces the retrofitting that would be required otherwise. The proposed site also provides for additional future expansion to help minimize the number of new towers needed. Ingress and egress would be more conducive to maintenance and future expansion construction work. The proposed site will enhance facility and facility control, reliable interoperable communications, and significant increased coverage for security and emergency service entities.

No Action

The No Action alternative would not meet the current radio system coverage requirements causing serious limitation on security and emergency response, funding for interoperable communications and information systems infrastructure would not be released, and infrastructure would neither be developed nor enhanced. Ongoing maintenance activities would continue using the current funding sources; however, no new activities would be funded with PSIC grant funding. It is assumed that the project proposed for PSIC grant funding would not go forward with any alternative funding sources.

The No Action Alternative will serve as the baseline for assessing the impacts of the other alternatives. The No Action Alternative would not address the needs for Brewster County and surrounding areas.

Alternatives Considered But Not Carried Forward

Multiple alternatives were examined to determine the range of reasonable alternatives to implement the Proposed Action. The existing facility, alternative would require significant structural retrofitting and/or repair of the existing tower partially destroyed during an ice storm and other equipment upgrades. The proposed site provides a technically appropriate area to locate this facility. Within this area, an extremely limited number of sites from which to choose were available to pursue.

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Consideration of existing tower locations in the area and accounting for the future needs of Brewster County and surrounding areas did not meet the pre-screen requirements: increase coverage area for emergency responders, new technology which will support frequencies which improve/expand voice and/or data coverage, improve communications among security/emergency organizations, enhance security and facility control, and use cost-effective measures, via leasing agreements and systems sharing. Therefore, these alternative locations were considered but not carried forward.

SECTION 3 – EXISTING ENVIRONMENT

This section describes the existing environment that may be affected by implementing the Proposed Action and serves as a baseline from which to identify and evaluate potential impacts. The description of the affected environment focuses on those resource areas that are potentially subject to impacts resulting from the Proposed Action. Aspects of the existing environment described in this section focus on 11 major resource areas that encompass the natural, human, and built environments. The 11 resource areas are noise, air quality, geology and soils, water resources, biological resources, historic and cultural, land use, aesthetic and visual, infrastructure, socioeconomic resources, and human health and safety.

Resource 1 – Noise

Noise is defined as unwanted sound that interferes with normal human activities or wildlife behavior, or may otherwise diminish environmental quality (EPA, 1974). Noise can come from a number of sources and at varying frequencies and may be continuous or intermittent, persistent or occasional. Noise and sound share the same physical aspects; however, noise is generally considered a disturbance, whereas sound is defined as a particular auditory effect produced by a given source (e.g., a motor running). How sound is interpreted, as either pleasant (e.g., birdsong) or unpleasant (e.g., jackhammer), depends upon the listener's current activity, past experience, and attitude toward the source. The measurement and perception of sound involve two physical characteristics: intensity and frequency. Intensity is a measure of the strength or magnitude of the sound vibrations and is expressed in terms of pressure. The higher the sound pressure, the more intense is the perception of that sound. The frequency of the sound is the number of times per second the sound oscillates. Sirens and screeches typify high frequency sounds, whereas low frequency sounds are characterized as a rumble or roar (EPA, 1974). The sound pressure range that can be detected comfortably by the human ear is extremely large and covers an intensity scale from 1 to 100,000,000 (EPA, 1974). Because of this wide range of sound intensity, representation using a linear index becomes difficult. As a result, a unit of A-weighted decibels (abbreviated dB or sometimes dBA)—a logarithmic measure of the magnitude of a sound as the average person hears it—is normally utilized. Humans do not hear very low or very high frequencies nearly as well as they hear middle frequencies. Using an A-weighting corrects these relative inefficiencies of the human ear at low or higher frequencies.

Existing Conditions

In a typical day, most people are exposed to sound levels of 50 to 70 dBA. The project site is located in a mountainous rangeland of the Glass Mountains located in Brewster County, which more than likely, will exhibit sound levels well below 50 dBA. A gravel road used for access to and from the three rural residences located approximately 0.32 miles northwest of the site would produce the typical noise level associated with the area.

Resource 2 – Air Quality

Air quality is measured by the concentration of various pollutants in the atmosphere, usually expressed in units of parts per million (ppm) or micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). Acceptable levels for six criteria pollutants in ambient air have been established as National Ambient Air Quality Standards (NAAQS). These standards were set by the federal Environmental Protection Agency (EPA) for the maximum levels of air pollutants that can exist in the outdoor air without unacceptable effects on human health or the public welfare. The six criteria air pollutants include carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), sulfur dioxide (SO₂), particulate matter (PM₁₀ and PM_{2.5}), and lead (Pb). PM₁₀ and PM_{2.5} are acronyms for particulate matter consisting of particles smaller than 10 and 2.5 micrometers, respectively.

Existing Conditions

According to the Texas Commission on Environmental Quality (TCEQ), Brewster County is classified as in attainment and currently meets NAAQS for all six criteria pollutants. The proposed project meets established NAAQS, air permits are not required for new construction or refitting construction for telecommunication towers that include the following activities: building a road, preparing land to erect a tower, temporary small-scale ground disturbance typically associated with new and refitting tower construction.

Resource 3 – Geology and Soils

Geological resources are described as the geology, soils, and topography that characterize an area. The geology of an area refers specifically to the surface and near-surface materials of the earth and the processes that formed those materials. These resources are typically described in terms of regional or local geology, including mineral resources, earth materials, soil resources, and topography.

Descriptions of these resource areas include bedrock or sediment type and structure, unique geologic features, depositional or erosional environment, and age or history. Mineral resources include usable geological materials that have some economic or academic value. Soil resources include the unconsolidated, terrestrial materials overlying the bedrock or parent material and are typically described by their complex type, slope, and physical characteristics.

Soil resources also include prime and unique farmlands, which are protected under the Farmland Protection Policy Act of 1981 (FPPA) (P.L. 97-98, 7 U.S. C. §4201). The FPPA applies to prime and unique farmlands and those that are State and local importance. “Prime farmland” is defined as land that has the best combination of physical and chemical characteristics for successfully producing crops. “Unique” farmland is defined as land that is used for the production of certain high-value crops, such as citrus, tree nuts, olives and fruits. The Act requires Federal agencies to examine the potentially adverse effects to these resources before approving any action that would irreversibly convert farmlands to nonfarm uses. This

examination is done in consultation with Natural Resources Conservation Service (NRCS) of the U.S. Department of Agriculture (USDA).

Existing Conditions

The Proposed Action is located on the geologic formation identified as the Cathedral Mountain Formation consisting of siliceous shale, chert, interbedded limestone and small-pebble conglomerate, yellow, orange; weathers pink and red; thickness 1,600 feet as shown in Figure 5. The soil composition of the Glass Mountain Tower site are listed as Altuda-Rock outcrop complex which consists of well drained, very cobbly silt loam, cobbly silty clay loam, bedrock as shown in Figure 6. These soils are on mountains, scarps on ridges on rims on calderas. Slopes range from 20 to 70 percent (*Soil Survey of Pecos County, on-line*, [Http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx](http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx), published by the USDA)

This area of Brewster County lies in the Trans-Pecos Chihuahuan Montane Woodlands Ecoregion, with High Plains to the far northeast and Edwards Plateau to the far east/northeast. Parts of this region are some of the hottest and driest in the state. Vegetation in the Trans-Pecos Ecoregion includes desert grassland, desert scrub, salt basins, sand hills, and rugged plateaus to wooded mountain slopes. The area is predominantly desert-scrub grasslands are interspersed with montane forests of pinyon pine, ponderosa pine and oak. A mountain system south rim might include juniper, Texas madrone and pine species, while the desert immediately surrounding it might contain bush and ocotillo. Land use in the region is mostly rangeland with short grasses and low desert-scrub.

Resource 4 – Water Resources

Water resources are streams, lakes, rivers, and other aquatic habitats in an area and include surface water, groundwater, wetlands, floodplains, coastal resources, and wild and scenic rivers. Water resources-such as lakes, rivers, streams, creeks, canals, and drainage ditches-make up the surface hydrology of a given watershed. The term “waters of the United States” applies only to surface waters (including rivers, lakes, estuaries, coastal waters, and wetlands) used for commerce, recreation, industry, sources of fishing, and other purposes.

The Safe Drinking Water Act (SDWA) provides for the protection of public health by regulating the U.S. public drinking water supply (P.L. 93–23, 42 U.S.C. §300f). The SDWA aims to protect drinking water and its sources (e.g., rivers, lakes, reservoirs, springs, and groundwater wells) and authorizes EPA to establish national health-based standards for drinking water to protect against naturally occurring and man-made contaminants. Every public water system in the United States is protected by the SDWA. Under Section 1424(e) the SDWA prohibits Federal agencies from funding actions that would contaminate a sole-source aquifer or its recharge area. Any federally funded project (including those that are partially federally funded) with the potential to contaminate a designated sole-source aquifer is subject to review by EPA. EPA’s

regulations implementing the SDWA requirements are found in 40 CFR 141–149. Federal SDWA groundwater protection programs are generally implemented at the State level.

The Clean Water Act (CWA), as amended, is the primary Federal law in the United States regulating water pollution (P.L. 92–500, 33 U.S.C. §1251). The CWA regulates water quality of all discharges into “waters of the United States.” Both wetlands and “dry washes” (channels that carry intermittent or seasonal flow) are considered “waters of the United States.” Administered by EPA, the CWA protects and restores water quality using both water quality standards and technology-based effluent limitations. The EPA publishes surface water quality standards and toxic pollutant criteria at 40 Code of Federal Regulations (CFR) Part 131.

The CWA also established the National Pollution Discharge Elimination System (NPDES) permitting program (Section 402) to regulate and enforce discharges into waters of the United States. The NPDES permit program focuses on point-source outfalls associated with industrial wastewater and municipal sewage discharges. Congress has delegated to many States the responsibility to protect and manage water quality within their legal boundaries by establishing water quality standards and identifying waters not meeting these standards. States also manage the NPDES system.

The Coastal Zone Management Act of 1972 (CZMA) (16 U.S.C. §1451) provides States with the authority to determine whether activities of governmental agencies are consistent with federally approved State Coastal Zone Management Plans (CZMP). The intent of the CZMA is to prevent any additional loss of living marine resources, wildlife, and nutrient-enriched areas; alterations in ecological systems; and decreases in undeveloped areas available for public use.

Federal statutes, executive orders (EO), State statutes, and State agency regulations and directives protect water quality and the beneficial uses of water resources. EO 11988 (Floodplain Management) and EO 11990 (Protection of Wetlands) mandate the control of activities that indirectly influence water quality.

EO 11988 (Floodplain Management) requires Federal agencies to determine whether a Proposed Action would occur within a floodplain and to take action to minimize occupancy and modification of floodplains. A floodplain is defined as the lowlands and flat areas adjoining inland and coastal waters, including flood-prone areas of offshore islands. At a minimum, areas designated as floodplains are susceptible to 100year floods.

Existing Conditions

Water resources are inherently site-specific resources. According to the USGS Hess Canyon, Texas *7.5 Minute Series Topographic Map* dated 1983 (Figure 2), EPA Region 6 Map of Sole Source Aquifers (U.S. Environmental Protection Agency) (Figure 7), and the Federal Emergency Management Agency (FEMA) *Rate Map* Community Panel 480040275B (Figure 8), the Proposed Action is located in a mountainous area approximately 5,588 feet above mean

sea level with no indications of wetlands, floodplains, coastal management zones, and wild or scenic rivers noted in the reviewed databases and maps.

Annual rainfall in this area is approximately 15 inches per year.

The nearest water body is a livestock tank located approximately 600 feet southwest of the site. Creeks approximately 1,000 feet south and 2,000 feet west of the proposed site were identified in the USGS Topographic Map (Figure 2); however, these creeks were not visible in the recent 2006 aerial photograph (Texas Natural Resources Information System Website, Figure 4).

The closest aquifer is the Capitan Reef Aquifer, which are the remains of a vast reef that surrounded the Delaware Basin approximately 1.5 miles northwest of the proposed project. Water quality tends to be poor for municipal or irrigation use. The exception in water quality is located on and near areas where the reef is exposed to the surface in the Guadalupe and Glass Mountains.

Resource 5 - Biological Resources

Biological resources are animals, plants, and associated habitats that are native to an area, including threatened or endangered species. In general, biological resources can include native and introduced (non-native) plants that comprise the various habitats. Animals present in such habitats, and natural areas help support these plant and wildlife populations. Protected or sensitive biological resources include plant and animal species listed as threatened or endangered by U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), or a State. The following section describes categories of biological resources such as threatened and endangered species, wildlife, along with habitat and wetlands.

The Endangered Species Act (ESA) (16 U.S.C. §1531) requires Federal agencies to conserve endangered species by listing endangered and threatened species of plants and animals and designating the critical habitat for animal species. The ESA defines an endangered species as any species in danger of extinction throughout all or a significant area of its range and a threatened species as any species likely to become endangered in the near future. Under Section 7 of the ESA, Federal agencies, in consultation with USFWS or NMFS, must ensure their actions are not likely to jeopardize the continued existence of any endangered or threatened species (i.e., a listed species) or to result in the destruction or adverse modification of critical habitat, defined as a specific geographic area that is essential for the conservation of a threatened or endangered species and that may require special management and protection (USFWS, 2007). USFWS and NMFS are responsible for compiling official lists of threatened and endangered species. If a Proposed Action may adversely affect a listed species or critical habitat, the Federal agency must prepare a Biological Assessment (BA) and initiate a formal consultation with USFWS or NMFS. After reviewing the BA, USFWS or NMFS prepares a Biological Opinion stating whether the Proposed Action is likely to jeopardize the continued existence of a listed species or cause the destruction or adverse modification of critical habitat.

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The purpose of the consultation process is to ensure avoidance and minimization of potential adverse impacts on listed species or critical habitats. Formal consultation is not required if the Federal agency determines, and USFWS or NMFS concurs in writing, that the Proposed Action is not likely to adversely affect listed species. In addition, the ESA prohibits all persons subject to U.S. jurisdiction, including Federal agencies, from, among other things, "taking" endangered or threatened species. The "taking" prohibition includes any harm or harassment, and applies in the United States and on the high seas.

The Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. §703) was first enacted to implement the 1916 convention between the United States and Great Britain for the protection of birds migrating between the U.S. and Canada, offering much-needed protection to many bird species during a time when commercial trade in birds and their feathers was popular. The statute makes it unlawful to pursue, hunt, take, capture, kill or sell birds listed in the statute as "migratory birds", and does not discriminate between live or dead birds and also grants full protection to any bird parts including feathers, eggs and nests. The MBTA is the primary law that affirms or implements the nation's commitment to four international conventions (with Canada, Japan, Mexico, and Russia) for the protection of a shared migratory bird resource. Each convention protects selected species of birds that are common to both countries (e.g., they occur in both countries at some point during their annual life cycle). The potential impact to property owners can exist when migratory birds seek respite within trees or on buildings considered private property.

EO 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds) strengthens the protection of migratory birds and their habitats by directing Federal agencies to take certain actions that implement the MBTA. Specifically, Federal agency actions that have, or are likely to have, a measurable negative effect on migratory bird populations require development and implementation of an Memorandum of Understanding (MOU) with USFWS that promotes the conservation of migratory bird populations. The EO and MOUs are the regulatory basis for conservation actions or renewal of contracts, permits, delegations, or other third-party agreements associated with migratory birds. MOUs established under EO 13186 are published in the *Federal Register*.

USFWS's Division of Migratory Bird Management established several initiatives in the past decade to research collisions of birds with communication towers. In 1999, USFWS established the Communication Tower Working Group, composed of government, industry, and academic groups to study and determine tower construction approaches that prevent bird strikes.

EO 11990 (Protection of Wetlands) requires Federal agencies to provide leadership and take action to minimize the destruction, loss, or degradation of wetland habitat and to preserve and enhance the natural and beneficial values of wetland habitats in carrying out the agency's responsibilities. Wetland habitats generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds.

Existing Conditions

The Proposed Action is on a portion of vacant land located within a former communication tower foot print in a mountainous rangeland area. A visual inspection of the site revealed no burrows, nests, wetlands, coastal areas or signs of potential habitat of threatened or endangered species.

A desktop review was conducted of the USFWS Division of Endangered Species and Texas Parks and Wildlife County lists Website of Special Species. Thirteen threatened or endangered species were identified by USFWS in Brewster County, including three bird species: black-capped Vireo (*Vireo atricapilla*), northern aplomado falcon (*Falcon femoralis septentrionalis*), southwestern willow flycatcher (*Empidonax traillii extimus*); two fish: Big Bend gambusia (*Gambusia gaigei*), Rio Grande silvery minnow (*Hybognathus amarus*); one mammal: Mexican long-nosed bat (*Leptonycteris nivalis*); and seven flowering plants: Davis' green pitaya (*Echinocereus viridiflorus var. davisii*), Nellie cory cactus (*Coryphantha minima*), Terlingua Creek cat's-eye (*Cryptantha crassipes*), bunched cory cactus (*Coryphantha ramillosa*), Chisos Mountain hedgehog Cactus (*Echinocereus chisoensis var. chisoensis*), Hinckley oak (*Quercus hinckleyi*), and Lloyd's Mariposa cactus (*Echinomastus mariposensis*). Three candidate species were identified by the USFWS in Brewster County, including one flowering plant: Guadalupe Mountain fescue (*Festuca ligulata*); one mollusk: Texas hornshell (*Popenaias popeii*); and one bird species: yellow-billed Cuckoo (*Coccyzus americanus*).

Additionally, the Texas legislature enacted a state Endangered Species Act; and authorized the Texas Parks and Wildlife Department (TPWD) to generate a list of species threatened or endangered with state-wide extinction. Unlike the Federal Act, the State law makes no provision for habitat protection or regulation of indirect "takes", but does out-law killing or maiming individuals of listed species and regulates other aspects such as trade and transportation. Therefore, these species are typically only a development constraint if they are identified on site and will be directly impacted. The TPWD maintains a directory of State and Federally listed threatened and endangered (T&E) species by county; 139 additional State listed T&E species were identified as having some probability of occurrence in Brewster County. Most of these species were excluded from detailed analysis because their preferred habitats (i.e., coastal environments, large forests, steep slopes, grassy plains and valleys, freshwater habitats, etc.) were not present within the proposed project site or subject area. The full list of species and preferred habitat is provided (Appendix B).

According to the GeoSearch Special Status Species Report information obtained through the TPWD, one T&E species, the Agave Glomeruliflora (*Chisos Agave*) was reported to have six to twenty known occurrences within one half mile of the site. The Agave Glomeruliflora is not federally listed, has rare state status with no regulatory listing status. The species was first observed in 1947 and last observed in 1957. None of the known occurrences were traced to a specific location.

Preferred habitats for these species were compared to the proposed site, and none of the

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preferred habitats were identified. It is anticipated that the proposed tower and equipment compound will not have an effect to listed or proposed protected species or critical habitats.

Brewster County is located within a portion of the Central Flyway for migratory birds. Fall and spring migrants use the region for temporary stops during travel between the northern and southern hemispheres. Best management practices should be implemented for avoiding harassment and harm to migratory birds during construction activities. Impacts on migratory birds could be expected as a result of collision with operating towers, antennae, and other tall structures, particularly during periods of low visibility and as a result of tower lighting that might be distracting to some species. The probability of collision is difficult to determine programmatically due to the range of variables that affect the potential for collision and the lack of conclusive data on the causes of collision.

Resource 6 - Historic and Cultural Resources

Historic and cultural resources are sites, structures, buildings, districts, or objects, associated with important historic events or people, demonstrating design or construction associated with a historically significant movement, or with the potential to yield historic or prehistoric data, that are considered important to a culture, a subculture, or a community for scientific, traditional, religious, or any other reason (NPS, 2008). Typically, historic and cultural resources are subdivided into the following categories:

- **Archaeological resources.** This includes prehistoric or historic sites where human activity has left physical evidence of that activity but few aboveground structures remain standing.
- **Architectural resources.** This includes buildings or other structures or groups of structures that are of historic or aesthetic significance.
- **Native resources.** These include resources of traditional, cultural, or religious significance to a Native American Tribe, Native Hawaiian, or Native Alaskan organization.

There are multiple Federal regulations that protect historic and cultural resources. The National Historic Preservation Act of 1966 (NHPA) (P.L. 89-665, 16 U.S.C. §470) directs the Federal Government to consider the effects of its actions on historic and cultural resources under Section 106 through a four-step compliance process. It is noteworthy, however, that the law does not necessarily mandate preservation but does mandate a carefully considered decision making process. The four steps of the Section 106 compliance process are the following:

1. **Establish whether the Proposed Action constitutes an undertaking.** Per 36 CFR 800.16, an undertaking is an action funded in whole or in part under the direct or indirect jurisdiction of a Federal agency. If the Proposed Action is an undertaking, the appropriate State Historic Preservation Office (SHPO) or Tribal Historic Preservation

Office (THPO) and other consulting parties (stakeholders) are identified.

2. **Identify National Register-listed or eligible properties.** Eligible historic properties in the geographic area of the Proposed Action are identified and evaluated for significance, including properties potentially eligible or listed with the National Register of Historic Places (NRHP) that may be affected by the Proposed Action.
3. **Assess affects of Proposed Action on eligible historic properties.** If the assessment determines no historic properties or no adverse effect to eligible historic properties, the SHPO/THPO and other consulting parties are informed, and the compliance process stops at this step. If the assessment determines actual or potential adverse effect to eligible historic properties, the SHPO/THPO and other consulting parties are notified through a letter and supporting documentation.
4. **Resolve adverse effects to eligible historic properties through consultation with the SHPO/THPO and Advisory Council on Historic Preservation (ACHP), as necessary.**

Existing Conditions

As the project is located at 5,588 feet elevation on Glass Mountain, minimal structures are located in the area. Historic, cultural, or tribal resources were not identified within a 1.5-mile area of potential effect of the Proposed Action based on a review of information available from NRHP, the Texas SHPO, and the Texas Archaeological Site Files. The Texas Historic Commission – Site Atlas is shown in Figure 9.

Resource 7 - Aesthetic and Visual Resources

Effects to aesthetic and visual resources deal broadly with the extent to which development contrasts with the existing environment, architecture, historic or cultural setting, or land use, and the determination of effects is a judgment that must be made by a qualified professional. Visual resources are the natural and man-made features that give an area its visual character. Visual resources generally refer to the urban environment, whereas aesthetic resources typically include impacts to natural and scenic areas.

Visual resources are inherently difficult to assess, because they involve subjectivity. Often communities, historical societies, and their corresponding jurisdictional agencies are the arbiters of visual effects resulting from the Proposed Action.

There are no Federal statutory or regulatory requirements for visual resources and aesthetics. State, regional, or local requirements may apply. If the landscape were cultural or historic, or part of a National Historic Landmark, the impacts would need to be reviewed under NHPA Section 106. Similarly, potential visual impacts on scenic byways would need to be assessed

under the National Scenic Byways Program (P.L. 105–178, 23 U.S.C. §162) and laws concerning State-designated scenic byways. Consultation with the National Park Service may be required for potential impacts on the visual resources in State and national parks. Potential visual impacts for outdoor recreation sites and facilities covered by Section 6(f) of the Land and Water Conservation Fund Act (LWCFA) (P.L. 88–578, 16 U.S.C. §460) may need to be reviewed.

Existing Conditions

The project site is located at 5,588 feet elevation on Glass Mountain. No unique viewsheds related to national or state designated scenic byways, cultural or historic resources, or National Historic Landmarks were identified based on a desktop database and file review of the Texas Historic Commission – Site Atlas at the proposed site or within 1.5 miles as shown in Figure 9.

Resource 8 - Land Use

The term “land use” refers to real property classifications that indicate either natural conditions or the types of human activity that occur, or are permitted, on a parcel. There is no nationally recognized convention or uniform terminology for describing land use categories; definitions are typically promulgated at the local level in the form of zoning ordinances. As a result, the meanings of land use descriptions and definitions vary among jurisdictions.

Land use plans are usually established to ensure that development proceeds in an orderly fashion, encouraging compatible uses for adjacent land. There are many tools used in the planning process, including master plans, geospatial databases, and zoning ordinances. A master plan is generally written by a county or municipality to provide a long-term strategy for growth and development. The foremost factor affecting land use is compliance and compatibility with master plans and zoning regulations. Other relevant factors include existing land use at project sites, the types of land uses on adjacent properties and their proximity to a Proposed Action, the duration of a proposed activity, and project permanence as a change in land use.

Existing Conditions

In general it is expected that siting of the Proposed Action would not impose an incompatible land use on the area. The Proposed Action is located on vacant, mountainous rangeland in the Glass Mountains. According to the Brewster County Appraisal District there is no zoning listed for the area. Therefore, no significant impact would occur related to general land use compatibility with the site.

Resource 9 - Infrastructure

Infrastructure consists of the systems and physical structures that enable a population in a specified area to function. Infrastructure by definition includes a broad array of facilities (e.g.,

utility systems, streets, highways, railroads, airports, buildings and structures, and other manmade facilities). Individuals, businesses, governmental entities, and virtually all relationships between these groups depend upon this infrastructure for their most basic needs, as well as for critical and advanced needs (e.g., emergency response and health care).

Infrastructure is entirely man-made, with a high correlation between the type and extent of infrastructure and the degree to which an area is characterized as “developed.” An essential component of economic growth to an area is the availability of infrastructure and its capacity to support growth. The infrastructure components to be discussed in this section include utilities (electricity and communications), solid waste, and the transportation network.

Public utilities can be privately or publicly owned. Public utilities are often governed by a Public Utilities Commission that regulates the rates and services of a public utility. In recent years, several laws have been passed focusing on energy conservation and production. The Energy Policy Act of 2005 (P.L. 109– 58) provides tax incentives and loan guarantees for energy production of various types. The Energy Independence and Security Act of 2007 (P.L. 110– 140) expanded the production of renewable fuels and contains provisions for energy efficiency, smart grid, and carbon dioxide and incentives for plug-in hybrid electric vehicles to assist the electric power industry's efforts to reduce greenhouse gas emissions.

Regulations governing communications infrastructure include Part 17 Construction, Marking, and Lighting of Antenna Structures of the FCC regulations (47 CFR Chapter 1), which prescribes procedures for antenna structure registration and requires the Federal Aviation Administration (FAA) to conduct an aeronautical study of the navigation air space to determine appropriate tower marking and lighting requirements to achieve safe air space. Before the FCC authorizes the construction of new antenna structures or alteration in the height of existing antenna structures, an FAA determination of “no hazard” may be required. FAA notification is required for any new construction greater than 200 feet above the ground, and near an airport runway (taller than 100:1 for a horizontal distance of 20,000 feet, 50:1 for a horizontal distance of 10,000 feet, and 25:1 for a horizontal distance of 5,000 feet of a heliport). By checking the heights of proposed antennae and their proximity to airports, the FCC's TOWAIR software system assists in determining if FAA notification is required. The FAA can vary marking and lighting recommendations when requested, provided that aviation safety is not compromised. In all cases, safe aviation conditions around the tower are the FCC's primary concern, and safety concerns dictate the marking and lighting requirements. Navigation air space, which starts at 200 feet above the ground, decreases in elevation in close proximity to airports; the minimum height for required marking or lighting would decrease in these areas.

Existing Conditions

The Proposed Action area has a combination of utilities (electricity, communications, and potable water) along with few, yet adequate transportation network of roads available in the area. Access to the site can be obtained by use of a gravel road to the northwest and Highway

385 approximately 12 miles south of the site. No airports are located within 5 miles of the Proposed Action.

Resource 10 - Socioeconomic Resources

Socioeconomics comprise the basic attributes and resources associated with the human environment, including demographic, economic, and social assets of a community. Demographics focus on population trends and age. Economic metrics provide information on employment trends and industries. Housing, infrastructure, and services are also influenced by socioeconomic factors.

EO 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations) directs agencies to address environmental and human health conditions in minority and low-income communities. Environmental justice addresses the disproportionate and adverse effects of a Federal action on low-income or minority populations. The intent of EO 12898 and related directives and regulations is to ensure that low-income and minority populations do not bear a disproportionate burden of negative effects resulting from Federal actions. The general purposes of EO 12898 are the following:

- To focus the attention of Federal agencies on human health and environmental conditions in minority communities and low-income communities, with the goal of achieving environmental justice
- To foster nondiscrimination in Federal programs that substantially affect human health or the environment
- To give minority communities and low-income communities greater opportunities for public participation in, and access to, public information on matters relating to human health and the environment.

Existing Conditions

With regard to socioeconomic conditions of the proposed site, the Proposed Action area is not located in low-income or minority area. Land area for Brewster County is 6,192 square miles with a population estimated at approximately 9,480 (U.S. Census Bureau). The site is primarily mountainous rangeland and three rural residences are located approximately 0.32 miles northwest of the site. The nearest town is located approximately 27 miles southwest of the tower site.

Resource 11 - Human Health and Safety

A safe environment is one in which there is no danger (or an optimally reduced, potential) for death, serious bodily injury or illness, or property damage. Human health and safety addresses workers' health and safety, and public safety during demolition and construction activities and during subsequent operations of those facilities. Construction site safety is largely a matter of

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adherence to regulatory requirements imposed for the benefit of employees and implementation of operational practices that reduce risks of illness, injury, death, and property damage. The health and safety of onsite military and civilian workers are safeguarded by numerous regulations designed to comply with standards issued by Occupational Safety and Health Administration (OSHA), EPA, and State agencies. These standards specify the amount and type of training required for industrial workers, the use of protective equipment and clothing, engineering controls, and maximum exposure limits for workplace stressors.

Existing Conditions

The Proposed Action would require construction activities on a portion of a vacant, mountainous rangeland in the Glass Mountains. Construction and ground-disturbing activities would take place for approximately one week and would include vegetation clearing, grading, and digging with the use of a dozer, using a pier drill rig for the base and footings, and the use of a mobile crane for erecting the tower. The remnant tower will be reclaimed by the land owner. No PSIC funds will be used for the disposition of the remnant tower.

SECTION 4 - ENVIRONMENTAL CONSEQUENCES

Resource 1 - Noise

Noise analyses typically evaluate potential changes to the existing noise environment that would result from implementation of a Proposed Action.

Proposed Action

Construction-Related Impacts - Because of construction-related activities, there would be a temporary increase in localized noise generated during the Glass Mountain Tower construction activities. Construction activities for new infrastructure may result in short-term, negligible adverse impacts. Noise from the construction activities will vary depending on the distance from the source of the noise. The noise levels generated by construction equipment would vary substantially depending on the type of equipment used, operations schedule, and condition of the project area. In addition to daily variations in construction activities, major construction for new infrastructure would be accomplished in several different stages, with each stage having a specific equipment mix for the work to be accomplished. The use of heavy equipment during construction activities may result in short-term minor adverse impacts on the noise environment, especially if noise-sensitive populations are adjacent to a proposed site. Typically, construction-related noise generation would last only for the duration of construction activities and occur during normal working hours (i.e., 7:00 a.m. to 5:00 p.m.), when noise is tolerated better because of the masking effect of background noise, with equipment being shut off when not in use. Evening noise levels would likely drop to ambient noise levels of the project area.

Therefore, it is anticipated that noise impacts from the Proposed Action construction activities would be temporary and would not exceed typical noise levels. Noise levels dBA at 50 feet from the source would be no greater than 85 dBA for no more than four to six continuous hours per day over a 10 to 35 day period. Construction-related noise impacts from the Glass Mountain Tower project would not be significant.

Operations-Related Impacts - After construction has concluded, the ambient noise level would return to its normal level. Temporary noise could be generated by climate control such as heating and air conditioning equipment or backup generators at the project site. Backup generators included in the Proposed Action provide electric power to communications equipment as needed. Electric generators at transmitting and receiving sites are typically powered by either diesel or spark ignition such as propane or natural gas engines. Noise from backup generators is primarily composed of engine noise and exhaust noise.

The Glass Mountain Tower site will have a typical 7-kilowatt (kW) backup generator fueled by a 250 gallon propane tank which will noise levels less than 86 dbA from 23 feet from the source. The backup generator is not expected to cause the ambient noise levels to increase. It is anticipated that the use of the generator would be limited and would only occur during

equipment maintenance and testing as a backup for primary power equipment and during interruption of the primary (grid) power supply. It can be estimated that the Glass Mountain Tower generator would be operated for approximately 12 to 16 hours per year, based on manufacturer maintenance instructions and public safety agency standard operating procedures (SOP).

Because of the occasional and intermittent operation of the backup generator, the Proposed Action is not anticipated to cause adverse long-term impacts or measurably increase the ambient noise levels. Impacts to ambient noise levels resulting from the Proposed Action would not exceed typical operating noise levels and would be short-term. Therefore, there would be no significant long-term noise impacts.

No Action Alternative

Under the No Action Alternative, there would be no renovations to the existing facility, nor would any new construction occur. No adverse impacts on the ambient noise environment would occur under the No Action Alternative.

Resource 2 - Air Quality

Impacts to air quality can come from a variety of sources located at transmitting and receiving sites. During construction, sources of new emissions include construction vehicles and equipment and fugitive dust emissions resulting from ground-disturbing activities and demolition.

Operations-related impacts to air quality from transmitting and receiving sites would occur as a result of the operation of backup generators, which burn fossil fuels.

Proposed Action

Construction-Related Impacts - Air quality impacts during construction would originate from emission of construction vehicles, equipment, and fugitive dust stirred up during ground disturbing activities. Both would be temporary and of limited duration. Air quality impacts from construction activities vary depending on the construction activity, where the construction would occur, and the distance from the source of the emission.

The use of heavy equipment during construction activities may result in short-term minor adverse impacts on air quality on and near the proposed site. Typically, construction-related air quality impacts would last only for the duration of construction activities and occur during normal working hours (i.e., 7:00 a.m. to 5:00 p.m.), and would not result in increases in criteria air pollutants greater than exceedance levels. Construction activities at the Glass Mountain tower site would be for no more than four to six continuous hours per day and will take place during an approximately one week time frame. Therefore, it is anticipated that short-term negligible

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adverse impacts would be expected as a result of construction activities. There would be no significant impact to air quality from construction activities from the Proposed Action.

The minor emissions from construction can be further reduced or mitigated through the use of best management practices (BMP). BMPs for dust control include spraying water to minimize dust, limiting the area of uncovered soil to the minimum needed for each activity, siting of staging areas to minimize fugitive dust, using a soil stabilizer (chemical dust suppressor), mulching, using a temporary gravel cover, limiting the number and speed of vehicles on the site, and covering trucks hauling dirt. BMPs for construction vehicle and equipment emissions include limiting vehicle idling time, using low or ultra-low sulfur fuel (including biodiesel), conducting proper vehicle maintenance, and using electric- instead of gas-powered tools. The Glass Mountain Tower will utilize these BMPs during construction activities and will also use locally available products and materials to reduce transportation-related emissions.

In addition the Glass Mountain Tower will require less than 0.25 acres ground disturbance which is unlikely to result in any exceedance of air quality standards, regulated release of Hazardous Air Pollutants (HAP), or in more than a *de minimis* increase in emissions. The Proposed Action would have no significant impact to air quality from construction related activities.

Operations-Related Impacts - After the construction activities have concluded, the ambient air quality level would return to its normal level. Implementation of this Proposed Action would not result in the long-term operation of significant emission-generating sources, nor would it significantly increase or alter the existing levels of ambient air quality levels. The Glass Mountain Tower site will utilize a typical 7-kilowatt (kW) backup generator fueled by propane. The backup generator will be certified to meet the Nonroad Standards set by the EPA (40 CFR §§ 89 and 90) for nonroad engines (manufacturers build and certify the generators to these standards and have models ready to purchase). The Glass Mountain Tower backup generators will only operate during an emergency (“lights out”) or for testing or maintenance being performed on the generator. Federal regulations limit the use of backup generators to 500 hours per year. Backup generators would not be expected to cause the ambient air quality levels to increase because of their limited operation as emergency power sources. The backup generator fueled by propane will generate fewer emissions than other types of fuels (such as diesel, gasoline or jet fuel). It can be estimated that the Glass Mountain Tower generator would be operated for approximately 12 to 16 hours per year, based on manufacturer maintenance instructions and public safety agency SOPs. The use of the backup generator is not expected to result in increases in criteria air pollutants greater than defined exceedance levels. Therefore, it is not anticipated that any adverse long term impacts on the ambient air quality level would occur. There would be no significant impact to air quality from operations activities.

No Action Alternative

Under the No Action Alternative, there would be no renovations to the existing facility, nor would there be, any new construction. There would be no increase in air quality impacts from the No Action Alternative.

Resource 3 - Geology and Soils

Impacts to geology and soils may result from ground disturbing activities, such as excavation, grading, backfilling, trenching, and other activities.

Proposed Action

Construction-Related Impacts - Soil erosion and runoff may occur from the Glass Mountain Tower construction site as a result of ground-disturbing activities, such as vegetation clearing, grading, and digging with the use of a dozer, using a pier drill rig for the base and footings, and the use of a mobile crane for erecting the tower. The ground-disturbing activities will take place for approximately one week. Preparation of a stormwater pollution prevention plan may be necessary. The Proposed Action is located on the geologic formation identified as the Cathedral Mountain Formation consisting of siliceous shale, chert, interbedded limestone and small-pebble conglomerate, yellow, orange; weathers pink and red; thickness 1,600 feet as shown in Figure 5. The soil composition of the Glass Mountain Tower site are listed as Altuda-Rock outcrop complex which consists of well drained, very cobbly silt loam, cobbly silty clay loam, bedrock as shown in Figure 6. These soils are on mountains, scarps on ridges on rims on calderas. Slopes range from 20 to 70 percent.

Based on a review of the USDA Natural Resources Conservation Service Web Soil Survey, the soil types at the project site are not defined as prime or unique. Ground disturbing activities for the Proposed Action are not located on a unique geologic formation. There would be no significant impact to geology or soil from construction-related activities such as vegetation clearing, grading, and digging with the use of a dozer, using a pier drill rig for the base and footings, and the use of a mobile crane for erecting the tower

Operations-Related Impacts - The operation of the Glass Mountain Tower site would not involve any ground-disturbing activities or other activities that would affect geology and soils. There would be no impacts to geology and soils, including prime and unique farmlands.

No Action Alternative

Under the No Action Alternative, there would be no ground disturbing activities or renovations to the existing facility, nor would there be any new construction. There would be no impact to geology and soils as a result of the No Action Alternative.

Resource 4 - Water Resources

Impacts to water resources can result from several types of activities and procedures that would be in use at transmitting and receiving sites. Impacts would typically result from erosion caused by site runoff, direct contamination by chemicals used in the surrounding area that would be washed into a water body or absorbed into the water table, and building directly in or adjacent to a water resource such as a wetland. The use of erosion-control BMPs to reduce impacts is common practice and may improve water quality at a site. Development in floodplains poses a hazard both to human safety from flood events and to natural resources from the disruption of natural hydrologic patterns.

Proposed Action

Surface Water and Groundwater

Construction-Related Impacts - Potential water quality impacts from construction may result from erosion and runoff resulting from soil disturbance for material storage, site access, site preparation, or road and driveway construction. Vehicle and equipment washing could also increase sediment reaching nearby streams. Pesticides or herbicides used to stimulate re-vegetation of areas cleared during construction also have the potential to contaminate nearby waters. All these activities would be temporary and of limited scope.

Water quality impacts from construction activities would vary depending on the construction equipment used, soils where the construction would occur, and the distance between the project site and the receiving waters. Considering that there are no nearby water resources 0.40 miles from the proposed site and the relatively limited size of the Glass Mountain Tower footprint of less than 0.25 acres ground disturbance, construction activities are unlikely to result in a significant amount of erosion.

The minor erosion and runoff from the Glass Mountain Tower construction can be further reduced or mitigated through the use of BMPs. BMPs for erosion control include silt fencing or straw bales to control erosion, limiting the area of uncovered soil to the minimum needed for each activity, siting of staging areas to minimize erosion, replanting as soon as practicable, mulching, using temporary gravel cover, and limiting the number and speed of vehicles on the site.

Chemical, physical, or biological effects to water resources are not expected to result in the violation of water quality standards and criteria as none are located in the area. There would be no significant impact to water quality from construction activities of the Glass Mountain Tower site.

Operations-Related Impacts - Operations-related impacts would be limited to erosion that occurs before the site is fully re-vegetated or during refueling of the backup generator. The use of pesticides or herbicides also has the potential to contaminate nearby waters.

BMPs from the construction stage would be continued until the site is fully re-vegetated. A spill plan will be developed and followed to guide the required response in the event of a spill if required. Chemical, physical, or biological effects to water resources are not expected to result in the violation of water quality standards and criteria as none are present in the area. There would be no significant impact to water quality from operations activities.

Floodplains

The proposed site is located 5,588 feet elevation on Glass Mountain. According to the Flood Insurance Rate Map (FIRM) and information from American Flood Research, Inc., Brewster County is located in Panel 275 of 1625, Community-Panel Number 4800840275B, the proposed site is not located in a special flood hazard area (Figure 8). The Proposed Action is not located within the 500-year floodplain, and there would be no impact to floodplains.

No Action Alternative

Under the No Action Alternative, there would be no renovations to existing facility, nor would there be, any new construction. There would be no risk of soil erosion or runoff from construction-related activities, nor would there be, a risk of hazardous spills or other consequences from pesticides or fertilizers used to re-vegetate a disturbed site as no construction activities will occur. Therefore, there would be no impacts to either water resources or floodplains from the No Action Alternative.

Resource 5 - Biological Resources

Impacts to biological resources can result from several activities, including construction activities such as demolition, grading, excavation, and construction that could alter or destroy habitat, either temporarily or permanently. In addition, the continued presence of human activity on a smaller scale could result in behavioral impacts to certain animal species that could affect feeding and reproductive patterns and habits.

Proposed Action

Wildlife, Wildlife Habitat, and Vegetation

Construction-Related Impacts - Short- and long-term minor to moderate adverse impacts on wildlife, habitats, and vegetation would be expected as a result of construction-related activities for the Glass Mountain Tower under the Proposed Action. Construction activities for new infrastructure can result in the disturbance of habitats and wildlife. Since the Glass Mountain Tower site is situated in a sparsely vegetated, mountainous rangeland environment located within an existing former communication tower foot-print, it would be expected to have less potential for adverse impacts on native vegetation.

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Construction-related activities will have a slight impact on wildlife, habitat, and vegetation at the Glass Mountain Tower project site due to clearing and grading of areas in preparation of new infrastructure construction. Short- or long-term minor impacts would largely be localized to the immediate project area. The introduction of invasive vegetation into disturbed areas and surrounding areas may result in long-term impacts to the native plant community at project site and surrounding area. Generally, the significance of vegetation loss associated with the Glass Mountain Tower project is not considered to be significant as the area is sparsely vegetated.

Construction-related activities may reduce, alter, or fragment habitat; introduce invasive species; disrupt natural behavior; and injure or cause mortality to wildlife. The overall impact of construction-related activities on wildlife populations would depend on the type and amount of wildlife habitat that would be disturbed, the nature of the disturbance such as permanent or temporary and the wildlife that occupy the project site and surrounding area. Construction-related activities may result in mortality of some less mobile species such as reptiles, amphibians, and small mammals. Construction-related activities may affect local wildlife by disturbing normal behavioral activities such as foraging, mating, and nesting. Wildlife will usually not forage, mate, or nest in areas where construction related activities are occurring. These impacts are usually temporary, as wildlife avoid construction areas and re-colonize the site when work ends. The Glass Mountain Tower site includes construction and installation of a 480-foot guyed tower that would include slight grading for the towers concrete slab, small prefabricated equipment shelter pad and anchor pads (ground disturbance of less than 0.25 acres).

Federal and State listed T&E species were identified as having some probability of occurrence in Brewster County. Most of these species were excluded from detailed analysis because their preferred habitats (i.e., coastal environments, large forests, steep slopes, grassy plains and valleys, freshwater habitats, etc.) were not present within the proposed project site or subject area. The full list of species and their preferred habitat is provided (Appendix B).

Preferred habitats for the species identified in the threatened and endangered species list were compared to the habitat at the proposed Site; none of the preferred habitats were identified with a potential to be found on the existing Glass Mountain Tower site. According to a previous response from USFWS, if after completing a habitat evaluation, and or any necessary surveys, a "no effect" determination is made, then no contact or coordination with the USFWS is necessary.

Terracon contacted the U.S. Fish and Wildlife Service Austin Ecological Services Office to inquire about the current policies and applicability of the previous response that was received regarding submission of information for telecommunication projects in which the consultant has made a "no effect" determination. Mrs. Charlotte Kucera, U.S. Fish and Wildlife Service Austin Ecological Services Office Biologist, stated that the response previously received is valid. Ms. Kucera stated that if the consultant has made a "no effect" determination, then submittal of information regarding the proposed telecommunication project is not required (Appendix B).

It is anticipated that the proposed tower and equipment compound will not have an effect to listed or proposed protected species or critical habitats.

Operations-Related Impacts - Routine maintenance activities at the Glass Mountain Tower site would include mowing around associated site buildings and possibly along access roads. Mowing and pest control in these areas would maintain vegetation in early successional stages of community development and may prevent reestablishment of some plant species. Similarly, operations practices at the Glass Mountain Tower site may lead to habitat degradation and mortality of some wildlife species such as amphibians and small mammals.

Following the completion of site development, potentially adverse impacts on wildlife species sensitive to disturbance could result from temporary noise generated by climate control such as heating and air conditioning equipment or the backup generator at the project site. This temporary and low level, but recurring, disturbance might exclude wildlife species or promote colonization by tolerant species.

Operations-related activities will not have an effect to listed or proposed protected species or critical habitats as none are present.

Migratory Birds

Construction-Related Impacts - Short- and long-term minor to moderate adverse impacts on migratory birds could occur as a result of construction-related activities from the Glass Mountain Tower site. Impacts to migratory birds could occur during erection of towers, antennae and the use of portable cranes. Construction-related activities occurring along migratory bird pathways would be expected to have more potential for adverse impacts on migratory birds than activities in non-migratory areas.

Construction-related impacts would be expected to have no significant impact on migratory birds as the use of equipment such as cranes to erect towers would be used during limited periods and are short-term impacts.

Operations-Related Impacts - Long-term minor to moderate adverse impacts on migratory birds could be expected from the Glass Mountain Tower site due to its location in Brewster County which is within a portion of the Central Flyway for migratory birds. Impacts on migratory birds could be expected as a result of collision with operating towers, antennae, and other tall structures, particularly during periods of low visibility and as a result of tower lighting that might be distracting to some species. The probability of collision is difficult to determine programmatically because of the range of variables that affect the potential for collision and the lack of conclusive data on the causes of collision.

Adverse impacts on birds resulting from collision generally occur during foggy or low cloud conditions at lighted towers supported by guy wires and present greater collision risk than

freestanding towers or buildings. The Glass Mountain Tower is a 480-foot guyed tower. Variables such as structure height above surrounding trees, design, lighting, seasons, adjacent land features, and migratory patterns would affect the potential and degree of adverse impacts on migratory birds.

Threatened and Endangered Species

Construction-Related Impacts - Construction-related activities may potentially adversely affect threatened and endangered species by potentially reducing, altering, or fragmenting available habitat; introducing invasive species; causing injury or mortality to wildlife; noise; and causing behavioral impacts.

The Glass Mountain Tower site is a 480-foot guyed tower and requires less than 0.25 acres in total ground disturbance. A preliminary review using the U.S. Fish and Wildlife Service Threatened and Endangered Species System website was conducted to identify listed and proposed candidates for threatened and endangered species, as well as critical habitats that may be located on or near the proposed site. Based on this review, the black-capped Vireo (*Vireo atricapilla*), northern aplomado falcon (*Falcon femoralis septentrionalis*), southwestern willow flycatcher (*Empidonax traillii extimus*), Mexican long-nosed bat (*Leptonycteris nivalis*), Davis' green pitaya (*Echinocereus viridiflorus var. davisii*), Nellie cory cactus (*Coryphantha minima*), Terlingua Creek cat's-eye (*Cryptantha crassipes*), bunched cory cactus (*Coryphantha ramillosa*), Chisos Mountain hedgehog Cactus (*Echinocereus chisoensis var. chisoensis*), Hinckley oak (*Quercus hinckleyi*), Guadalupe Mountain fescue (*Festuca ligulata*), Texas hornshell (*Popenaias popeii*), yellow-billed Cuckoo (*Coccyzus americanus*), Lloyd's Mariposa cactus (*Echinomastus mariposensis*), Big Bend gambusia (*Gambusia gaigei*), and Rio Grande silvery minnow (*Hybognathus amarus*) were identified (Appendix B).

Habitats for the species identified in the threatened and endangered species were compared to the habitat at the proposed site; none of the habitats were identified with potential to be found on the Glass Mountain Tower site. The proposed project would have no effect on protected species or their habitats. According to a previous response from USFWS, if after completing a habitat evaluation, and or any necessary surveys, a "no effect" determination is made, then no contact or coordination with the USFWS is necessary.

Terracon contacted the U.S. Fish and Wildlife Service Austin Ecological Services Office to inquire about the current policies and applicability of the previous response that was received regarding submission of information for telecommunication projects in which the consultant has made a "no effect" determination. Mrs. Charlotte Kucera, U.S. Fish and Wildlife Service Austin Ecological Services Office Biologist, stated that the response previously received is valid. Ms. Kucera stated that if the consultant has made a "no effect" determination, then submittal of information regarding the proposed telecommunication project is not required (Appendix B). USFWS concurrence with the conclusions of the EA that the Proposed Action has no effect on protected species or their habitats as none are present is assumed.

Operations-Related Impacts - Following the completion of site development, operations-related impacts to protected species from the Glass Mountain Tower is not expected to occur as none are present in the area. Overall, operations-related impacts would be expected to have no effect on threatened and endangered species.

Wetlands

Construction-Related Impacts - Since no wetland habitat was observed at the project site or surrounding area (Figure 10), construction-related impacts would be expected to have no impact on wetland habitats.

Operations-Related Impacts - Routine maintenance activities on the Glass Mountain Tower site would include mowing and pest control around the tower site infrastructure and possibly along access roads. Since no wetland habitat was observed at the project site (Figure 10), operations-related impacts would be expected to have no impact on wetland habitats.

No Action Alternative

Under the No Action Alternative, there would be no renovations to the existing facility, nor would there be, any new construction. No significant impacts on vegetation and wildlife, migratory birds, threatened and endangered species, or wetlands would occur under the No Action Alternative.

Resource 6 - Historic and Cultural Resources

Impacts to historic and cultural resources can occur both from physical disturbance of historic properties and from aesthetic changes to a historic property or its viewshed. To determine the nature of impacts to historic properties, as defined under the NHPA, consultation with the relevant State SHPO, or THPO, are required.

Proposed Action

Construction-Related Impacts - Construction-related impacts to historic and cultural resources at and near the Glass Mountain Tower site were assessed to determine if temporary impacts to viewsheds and present risk of permanent impact or harm to historic properties, primarily through ground-disturbing activities.

Consultation with the Texas SHPO was conducted to determine whether the construction of the Glass Mountain Tower and installation associated antennae, microwave links, and infrastructure may generate any short-term or long-term indirect impacts to historic and cultural resources and within the viewshed of any historic and cultural resources. Information available on the Texas SHPO website indicated no state-surveyed historic places were located within the APE. A public notice was listed in the "Alpine Avalanche" on September 17, 2009 to allow for public comments

on the effect of the proposed project on historic properties within the viewshed of the proposed tower (Appendix C-Section 106). No comments pertaining to the public notice were received.

FCC Form 620 with attachments was submitted to the SHPO on October 23, 2009. A response dated November 13, 2009 indicated that the SHPO concurred with the recommendations and determined that the proposed project should have no effect on properties listed, no further evaluation is required and the project may proceed (Appendix C – Section 106).

Operations-Related Impacts - Operation of the Glass Mountain Tower site would not typically require any ground-disturbing activities; therefore, it is expected that there would be no impact to archaeological resources. Based on correspondence with the SHPO/THPO, no adverse impacts would occur.

No Action Alternative

Under the No Action Alternative, there would be no renovations to the existing facility, nor would there be, any new construction. Therefore, there would be no impact to historic and cultural resources resulting from the No Action Alternative.

Resource 7 - Aesthetic and Visual Resources

Potential impacts on aesthetic and visual resources are likely to be greater in more natural (rural) settings than commercial or residential settings (urban and suburban) where development is more common. Impacts on aesthetic and visual resources may be short- or long-term, depending on whether the impact is related to construction activities or the feature that is being constructed.

Proposed Action

Construction-Related Impacts - Under the Proposed Action, impacts on aesthetics and visual resources from construction-related activities would include the clearing and grading of land, the construction of infrastructure necessary to operate the transmitting and receiving site, and the construction of the specific sites' facilities. The degree of visual disturbance depends on the mountainous rangeland area, project-specific construction activities, and each viewer's perception. The tower cannot be viewed from the nearest major roadway which is approximately 12 miles southeast of the site. Short-term impacts on aesthetic and visual resources resulting from construction-related activities would likely have no significant impact.

Operations-Related Impacts - Features that might create a permanent contrast with the existing environment would include the 480-foot guyed tower and building associated with the Glass Mountain Tower site. An existing overhead electrical transmission line pole located on site will be used for power. The long-term impacts resulting from the permanent placement of the Glass Mountain Tower site would likely have no significant impact.

No Action Alternative

Under the No Action Alternative, there would be no renovations to the existing facility, nor would there be any new construction. There would be no impact to aesthetic or visual resources resulting from the No Action Alternative.

Resource 8 - Land Use

Impacts to land use can occur when incompatible land uses are placed adjacent to one another. PSIC-funded transmitting and receiving projects would not be compatible with all land use types and should be carefully sited, in accordance with local master plans, planning initiatives, local zoning, and coastal land use restrictions. Transmitting and receiving sites are most compatible with industrial, commercial, or public and quasi-public land uses, such as utilities, because of the basic intended function of these sites and the associated activities by which their operation is characterized. Compatibility with land use planning is derived from the function or purpose such as operation of the site; construction activities do not have any substantive bearing on impacts to land use planning. Therefore, only impacts from operations will be discussed in this section.

Proposed Action

General Land Use Compatibility for the Glass Mountain Tower site would not be compatible with all types of land uses. In general it is expected that siting of Proposed Action would be compatible with existing land use plans and zoning at and adjacent to the proposed site and would not impose an incompatible land use on an area. Commercial, industrial, and some public and quasi-public facilities, such as airports and utilities, would be compatible, because infrastructure and activities are similar to those associated with transmitting and receiving sites. The Glass Mountain Tower site is located in a rural area within an existing foot print of a former communications tower. According to the Brewster County Appraisal District there is no zoning associated with the site.

The Proposed Action is located in a rural area of mountainous, rangeland within an existing communications tower foot-print of the Glass Mountains. The proposed site is not located in a coastal zone or coastal barrier resources. No local zoning rules prohibit the Proposed Action. Therefore, no significant impact would occur related to general land use compatibility with the Glass Mountain Tower site.

No Action Alternative

Under the No Action Alternative, there would be no renovations to the existing facility, nor would there be, any new construction. Therefore, there would be no impacts to general land use compatibility, coastal zone, or coastal barrier resources resulting from the No Action Alternative.

Resource 9 - Infrastructure

Impacts to infrastructure are typically observed as disruptions in service and utilities, either short- or long-term, resulting from increases in demand that may overwhelm the capacity of the local area to absorb them. Engagement in a planning process to ensure that system capacity will be able to meet projected increases in demand is the most effective way to avoid impacts to infrastructure, although resources may not always be available to implement upgrades.

Proposed Action

Utilities

Construction-Related Impacts – The Glass Mountain Tower project, which is located in a rural area of mountainous rangeland within an existing communications tower foot print of the Glass Mountains. Construction-related activities would require additional short-term electric and communication services from available utility networks. The Proposed Action will utilize the existing electrical power lines located on site. Construction-related impacts are not expected to lead to major shortages in supply, nor are they expected to require major changes to the system. Impacts to utilities would not be significant.

During construction-related activities, precautions would be taken to avoid damage to existing utility lines. All potential modifications to utility services would be evaluated. Coordination with potentially affected local and regional utility service providers would occur to avoid unnecessary damage or interruption of service. There would be no significant impact to utility services from construction-related activities with the Glass Mountain Tower site.

Operations-Related Impacts - The Proposed Action would not be expected to cause noticeable impacts to local utility services across all category types. Operations impacts are not expected to lead to major shortages in supply, nor are they expected to require major changes to the services. There would be no significant impact to utility services from operations-related activities of the Glass Mountain Tower site.

Transportation Network

Construction-Related Impacts - For the Glass Mountain Tower site construction-related activities, heavy equipment and materials that may be needed for site access and site preparation would not pose a significant impact to the transportation network. Construction of the Proposed Action may require numerous truck trips to haul materials to the project site. The number of construction-related trips and the frequency and duration of impacts would be dependent on the location, nature, and scale of the project. Since the Glass Mountain Tower site is a 480-foot guyed tower, the surface impact less than 0.25 acres in size; a significant amount of construction related traffic is not required to complete the project.

Potential impacts to transportation are expected to be low, provided appropriate planning and implementation actions are taken. Existing roads would be used to the maximum extent possible. There would be no significant impact to transportation networks from construction-related activities.

Operations-Related Impacts - Due to limited footprint of the Glass Mountain Tower site, less than 0.25 acres, approximately one trip per month by light-duty vehicles and/or personal vehicles will be required. Transportation activities during operations would not be expected to cause noticeable impacts to local transportation networks. There would be no significant impact to transportation networks from operations-related activities.

No Action Alternative

Under the No Action Alternative, there would be no renovations to the existing facility, nor, would there be any new construction. There would be no impact to utilities or the transportation network resulting from the No Action Alternative.

Resource 10 - Socioeconomic Resources

Impacts to socioeconomic resources are assessed in terms of the effects of expenditures on the overall local economy and the impact of in-migration on demographics, employment, the availability of housing, and the ability of a jurisdiction to provide services such as education and public safety. In addition, disproportionate impacts to low-income or minority populations would result in adverse environmental justice impacts.

Proposed Action

The implementation of PSIC-funded project may result in increase in jobs as a result of the construction of the Glass Mountain Tower site, but the increase is not expected to be significant in Brewster County, Texas. Although increase in employment would be expected as a result of the implementation of PSIC-funded project, increases are not expected to be significant. There would, therefore, be no expected in-migration and therefore no impacts expected to demographics, the supply of housing, or other local entities to provide public services.

The potential for impacts on minority and low-income populations would be based on the evaluation of specific site characteristics. The site is located in a vacant, mountainous rangeland area and the nearest town is located approximately 27 miles southwest of the site.

No Action Alternative

Under the No Action Alternative, there would be no renovations to the existing facility, nor would there be, any new construction. Under this alternative, there would be no increase in economic activity and job creation related to implementation of the project. Therefore, there would be no

PSIC-related impacts to demographics, the availability of housing, the availability of services, or environmental justice.

Resource 11 - Human Health and Safety

Impacts to human health and safety can come from a wide range of activities. Workplace and construction site safety can adversely impact health and safety, as well as the generation, handling, storage, use, or disposal of hazardous or toxic materials.

Proposed Action

Construction-Related Impacts - Under the Proposed Action, there would be a slight increase in workplace safety hazards during the construction phase of Glass Mountain Tower site because of the nature of construction work and the increased intensity of work at the proposed site. The impact of this increase would not be significant. Work areas surrounding construction activities would be fenced, and appropriate signs would be posted to further minimize safety risks. In addition, implementation of worker safety rules, derived from OSHA safety and health standards, will establish a uniform set of safety practices and procedures to protect workers. Construction-related impacts to human health and safety impacts would not be significant.

Operations-Related Impacts - Under the Proposed Action, fuels needed to power backup generators would be stored on site in above-ground or vaulted tanks, to minimize the risk of soil contamination in the event of a leak. BMPs for the handling, storage, use, and disposal of fuels such as propane would include regular monitoring and inspection of tanks for leaks. A 7kw backup generator and 250 gallon propane tank will be on site for use during a power outage.

The Glass Mountain Tower site would be fenced, and access would be restricted to authorized personnel to minimize risks to human health and safety. There would be no significant adverse impacts to human health and safety resulting from operation of Glass Mountain Tower site under the Proposed Action.

The implementation of Proposed Action would enable public safety agencies to improve interoperable communications and communicate more effectively in an emergency or crisis situation. This would result in an operations-related beneficial impact to human health and safety.

No Action Alternative

Under the No Action Alternative, there would be no renovations to the existing facility, nor would there be any new construction. Current interoperability interruption would continue, compromising the ability of first responders to respond effectively and rapidly to emergency situations. There could be adverse impacts to human health and safety as a result of the No Action Alternative.

SECTION 5 - FINDINGS AND CONCLUSIONS

Findings

The Proposed Action will require construction of a new transmitting and receiving site involving a telecommunications tower over 200 feet and ground-disturbance totaling less than 0.25 acres of slight grading.

The Proposed Action will not involve any unusual risks or impacts to sensitive areas identified in Section 4. The No Action Alternative could result in adverse impacts to human health and safety. Therefore, the Proposed Action would warrant the issuance of a FONSI for this Proposed Action.

In accordance with 47 CFR Section 1.1307 (a) (1) through (8), an evaluation has been made to determine whether any of the listed FCC special interest items would be significantly affected if a tower structure and/or antenna and associated equipment control cabinets were constructed at the proposed site location. No FCC special interest items were identified.

The FCC NEPA Checklist is included (Appendix D). The checklist has been completed based on information contained in this report.

Consequences of the Proposed Action

The Proposed Action would not have a significant impact on any resource area for those projects falling within the 11 resource parameters described in the EA. The Proposed Action would have beneficial impact on human health and safety, because it would enable countywide improvements to public safety interoperable communications.

Consequences of the No Action Alternative

Under the No Action Alternative, no interoperable communications capability would occur. Existing interruption in public safety interoperable communications would persist, resulting in an adverse impact to human health and safety.

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LIST OF PREPARERS

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S. Lorraine Norwood, M.A., R.P.A, Terracon Consulting Engineers and Scientist

FIGURES

Figure 1: Vicinity Map

Figure 2: Topographic Map

Figure 3: Site Plan

Figure 4: Aerial Map

Figure 5: Geologic Map

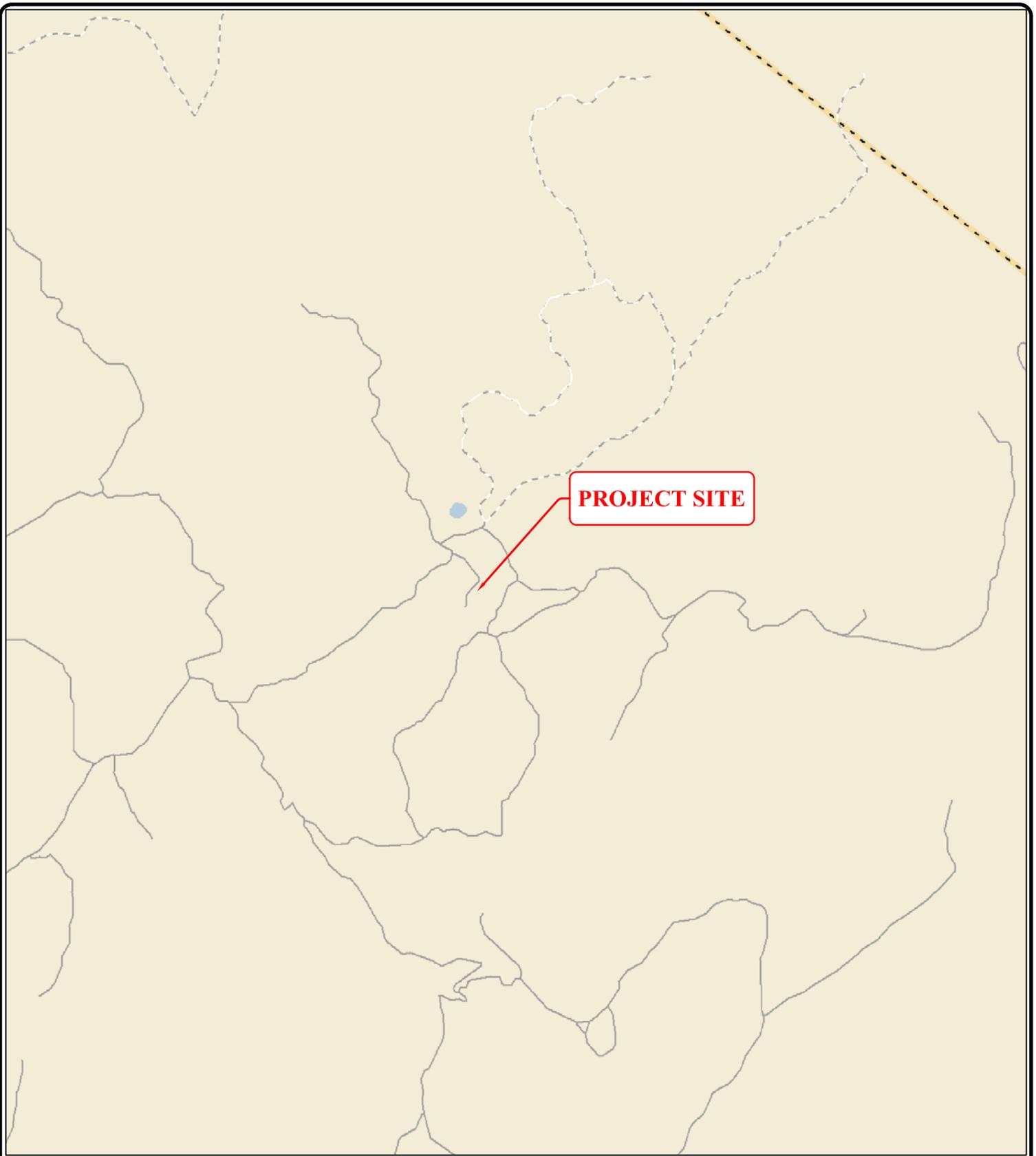
Figure 6: Soils Map

Figure 7: Sole Source Aquifer Map

Figure 8: FEMA Map

Figure 9: Historic Sites Map

Figure 10: Wetland Map



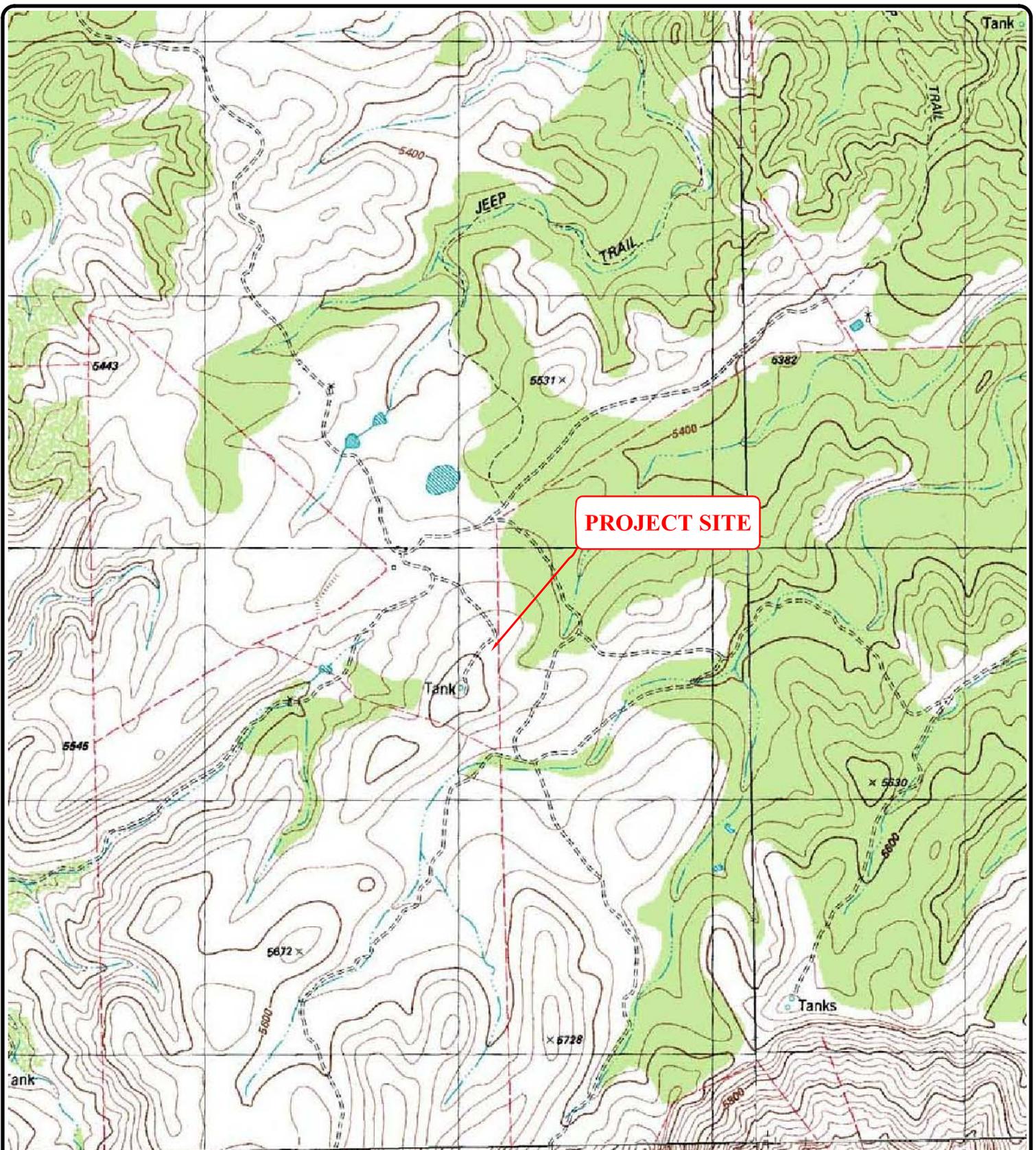
SOURCE: DELORME STREET ATLAS USA 2008.



VICINITY MAP
GLASS MOUNTAIN TOWER SITE
APPROXIMATELY 27 MILES NORTHEAST OF
MARATHON, BREWSTER COUNTY, TEXAS

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| | | Project No. | 90107018 |
| | | Scale: | NOT TO SCALE |
| | | Drawn By: | JAA |
| | | Figure No. | 1 |

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 AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES



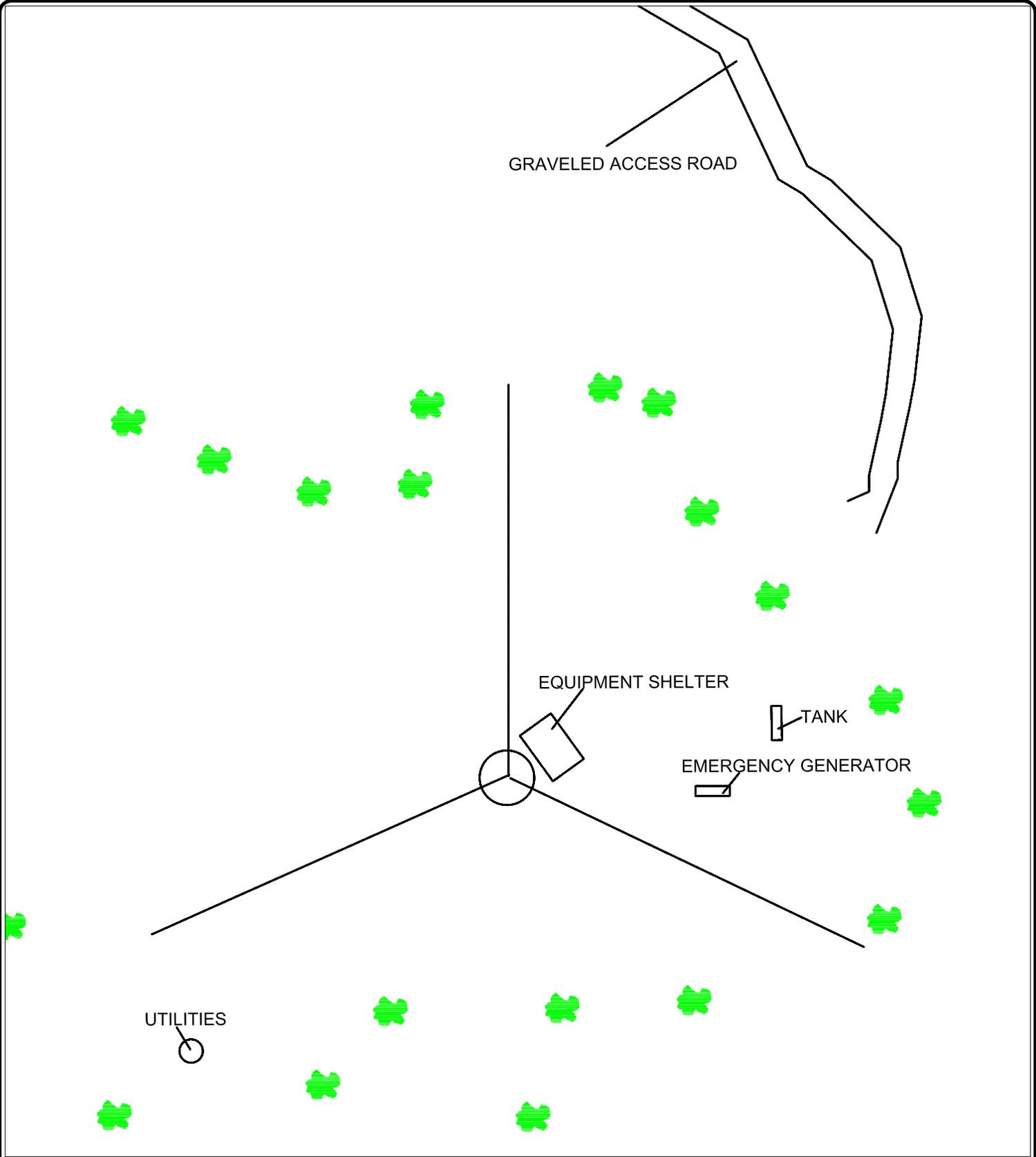
SOURCE: U.S.G.S. 7.5 MINUTE TOPOGRAPHIC QUADRANGLE MAP OF HESS CANYON, TEXAS.



DIAGRAM IS FOR GENERAL LOCATION ONLY,
AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

**1983 TOPOGRAPHIC MAP
GLASS MOUNTAIN TOWER SITE
APPROXIMATELY 27 MILES NORTHEAST OF
MARATHON, BREWSTER COUNTY, TEXAS**

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| | Project No. | 90107018 |
| | Scale: | 1 : 2,000' |
| | Drawn By: | JAA |
| | Figure No: | 2 |



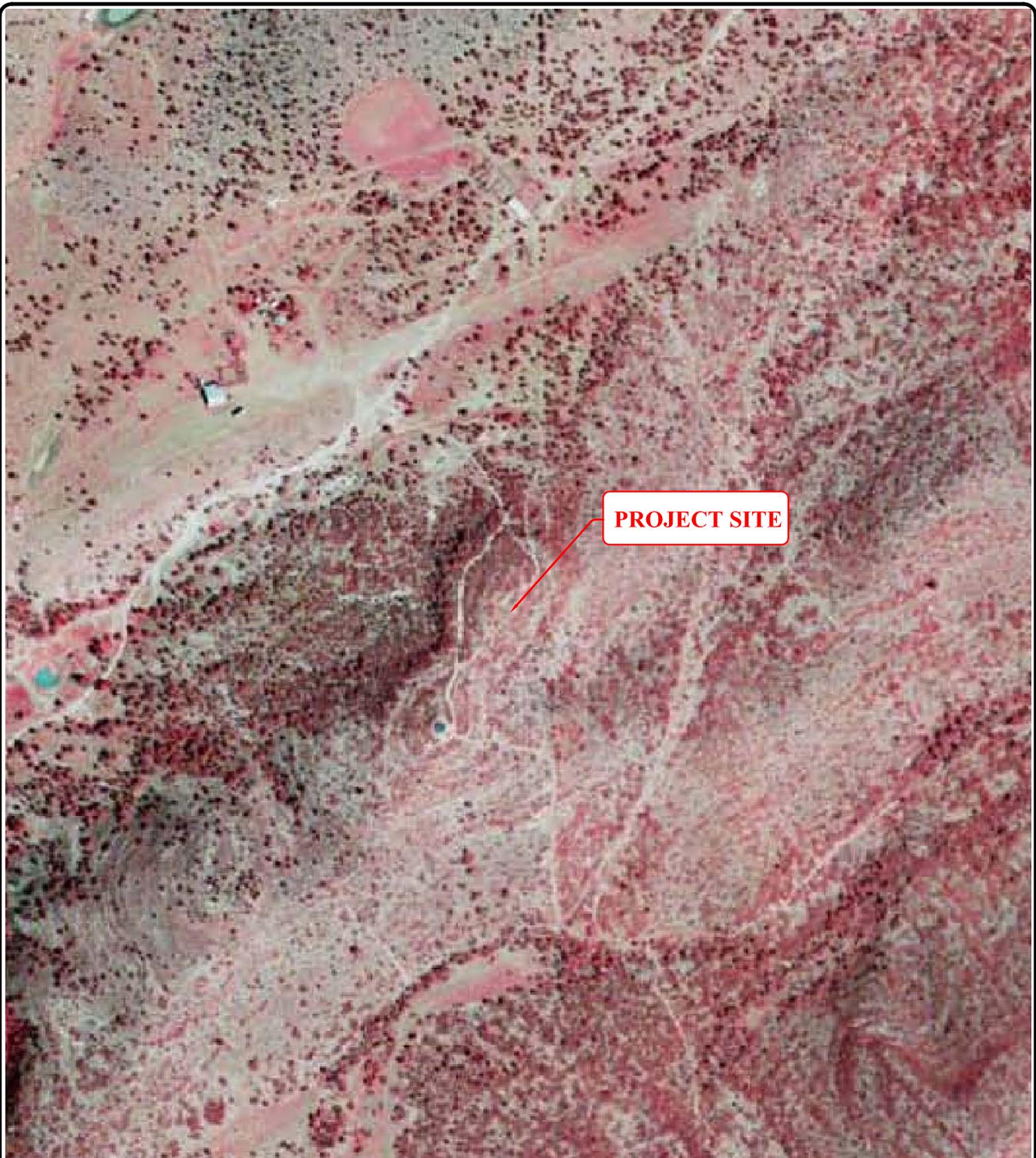
LEGEND

 - SCRUB BRUSH



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| SITE DIAGRAM GLASS MOUNTAIN TOWER SITE APPROXIMATELY 27 MILES NORTHEAST OF MARATHON, BREWSTER COUNTY, TEXAS | |
| | Project No. 90107018 |
| | Scale: NOT TO SCALE |
| | Drawn By: JAA |
| | Figure No. 3 |

DIAGRAM IS FOR GENERAL LOCATION ONLY,
AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES



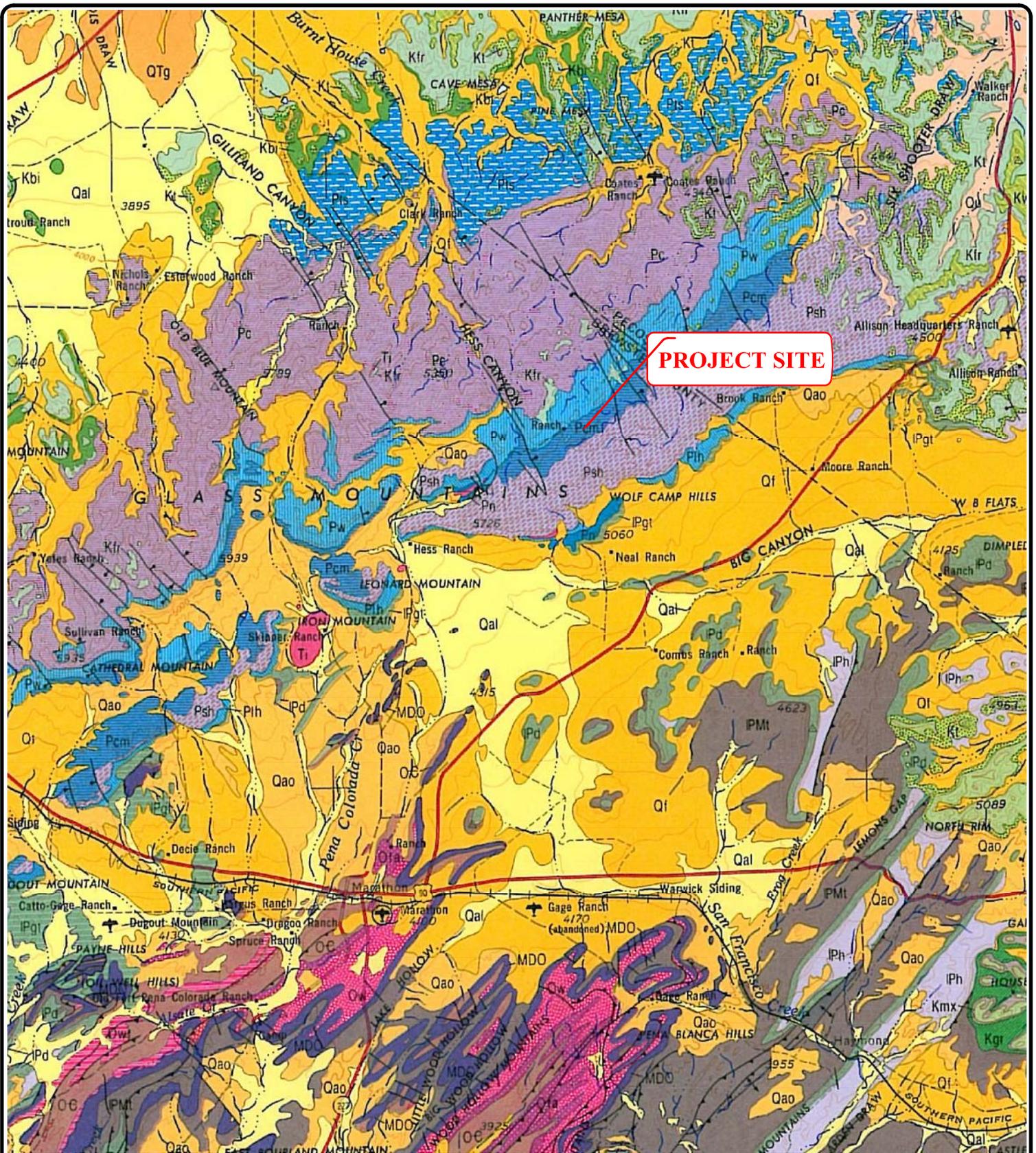
SOURCE: USDA 2006



**AERIAL PHOTOGRAPH
GLASS MOUNTAIN TOWER SITE
APPROXIMATELY 27 MILES NORTHEAST OF
MARATHON, BREWSTER COUNTY, TEXAS**

DIAGRAM IS FOR GENERAL LOCATION ONLY,
AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

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| Project No. | 90107018 |
| Scale: | NOT TO SCALE |
| Drawn By: | JAA |
| Appendix: | 4 |



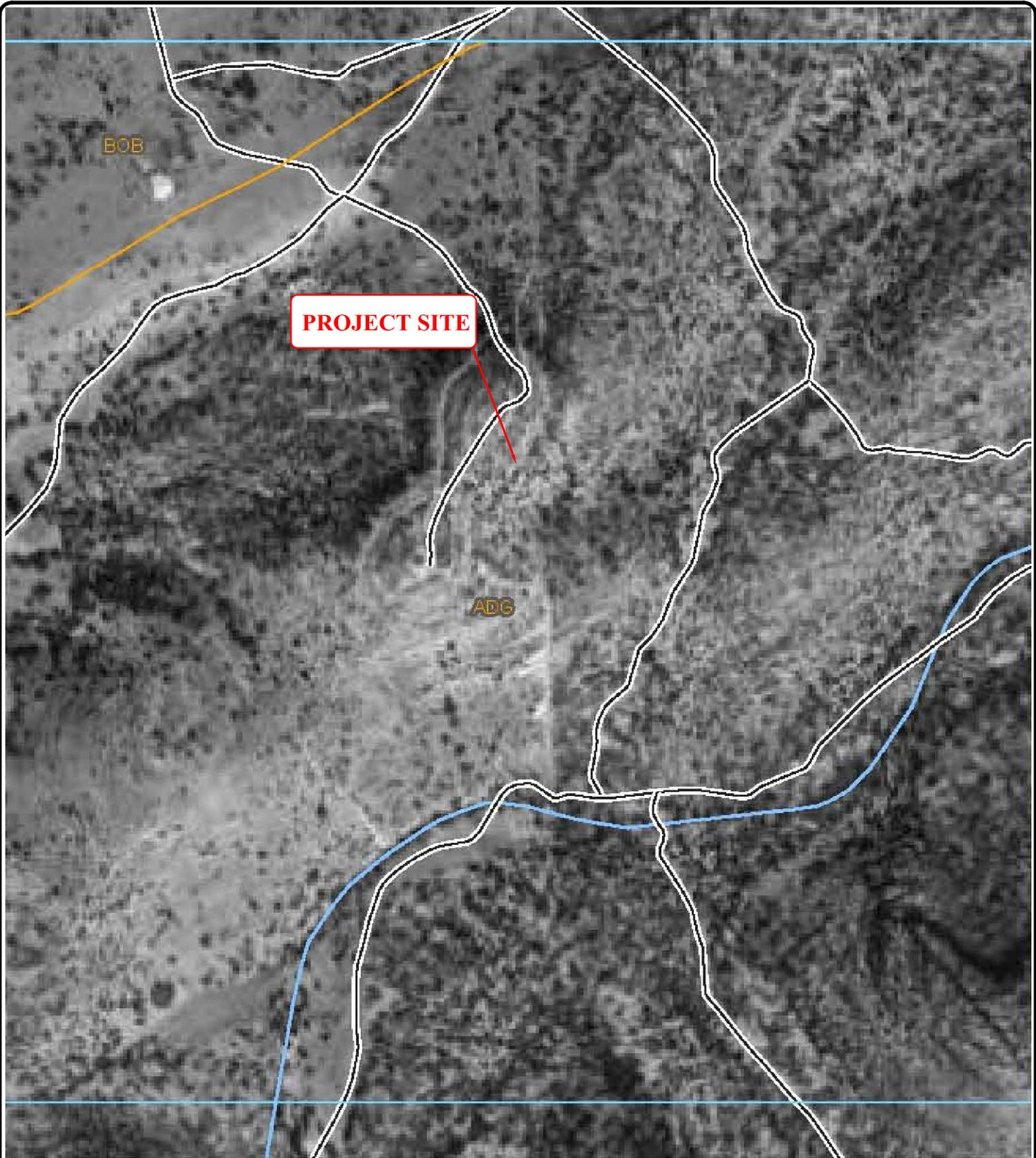
SOURCE: THE UNIVERSITY OF TEXAS AT AUSTIN
 BUREAU OF ECONOMIC GEOLOGY, GEOLOGIC ATLAS
 OF TEXAS, FORT STOCKTON SHEET. REVISED 1994.



DIAGRAM IS FOR GENERAL LOCATION ONLY,
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GEOLOGIC MAP
GLASS MOUNTAIN TOWER SITE
APPROXIMATELY 27 MILES NORTHEAST OF
MARATHON, BREWSTER COUNTY, TEXAS

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| | Project No. | 90107018 |
| | Scale: | NOT TO SCALE |
| | Drawn By: | JAA |
| | Appendix: | 5 |



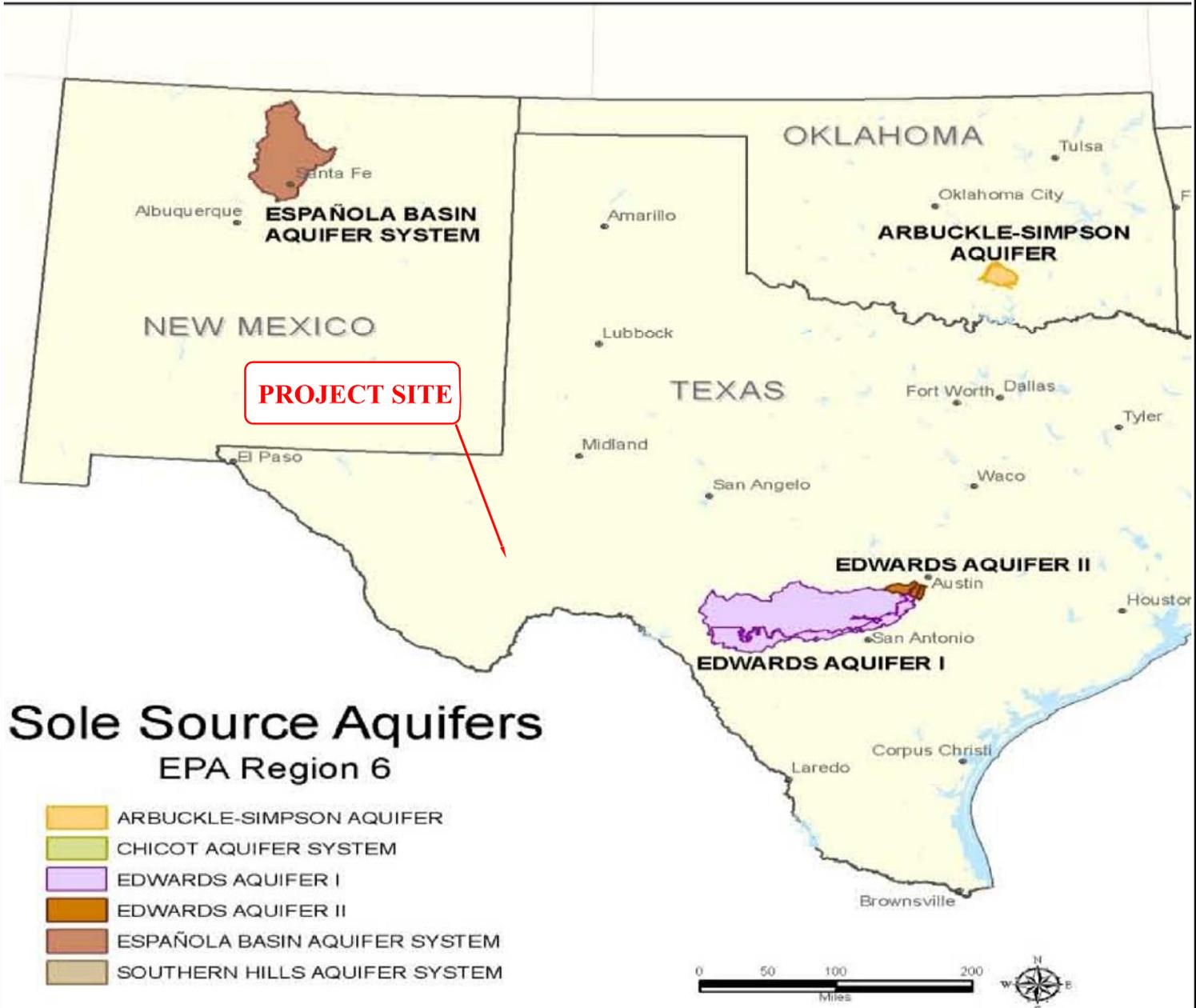
SOURCE: USDA NATURAL RESOURCE CONSERVATION SERVICE WEB SOIL SURVEY.



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**SOIL SURVEY
GLASS MOUNTAIN TOWER SITE
APPROXIMATELY 27 MILES NORTHEAST OF
MARATHON, BREWSTER COUNTY, TEXAS**

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| | | Project No. 90107018 |
| | | Scale: NOT TO SCALE |
| | | Drawn By: JAA |
| | | Appendix: 6 |



Sole Source Aquifers EPA Region 6

- ARBUCKLE-SIMPSON AQUIFER
- CHICOT AQUIFER SYSTEM
- EDWARDS AQUIFER I
- EDWARDS AQUIFER II
- ESPAÑOLA BASIN AQUIFER SYSTEM
- SOUTHERN HILLS AQUIFER SYSTEM

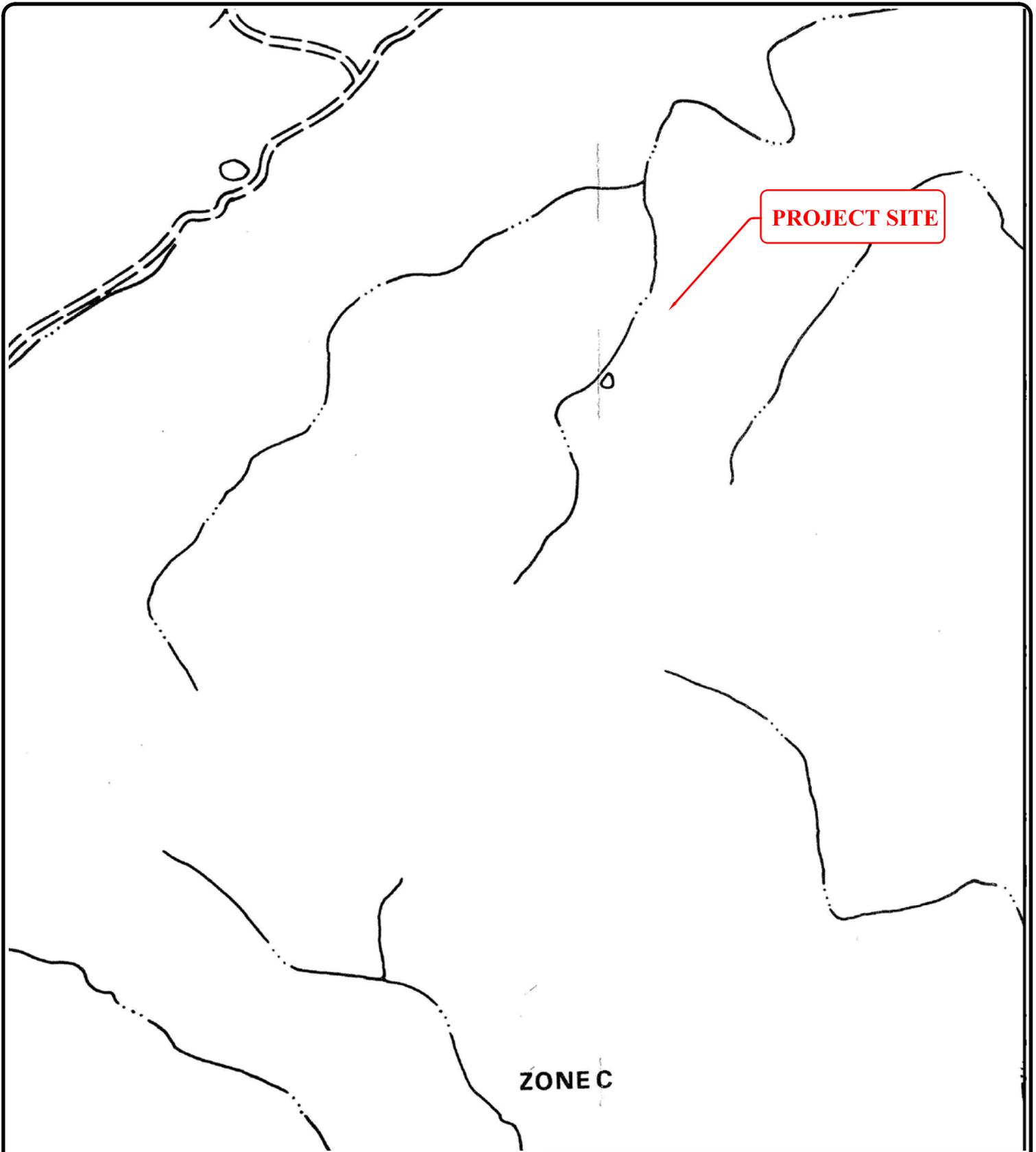
SOURCE: U.S. ENVIRONMENTAL PROTECTION AGENCY



**SOLE SOURCE AQUIFERS EPA REGION 6
GLASS MOUNTAIN TOWER SITE
APPROXIMATELY 27 MILES NORTHEAST OF
MARATHON, BREWSTER COUNTY, TEXAS**

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| | | Project No. | 90107018 |
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| | | Appendix: | 7 |



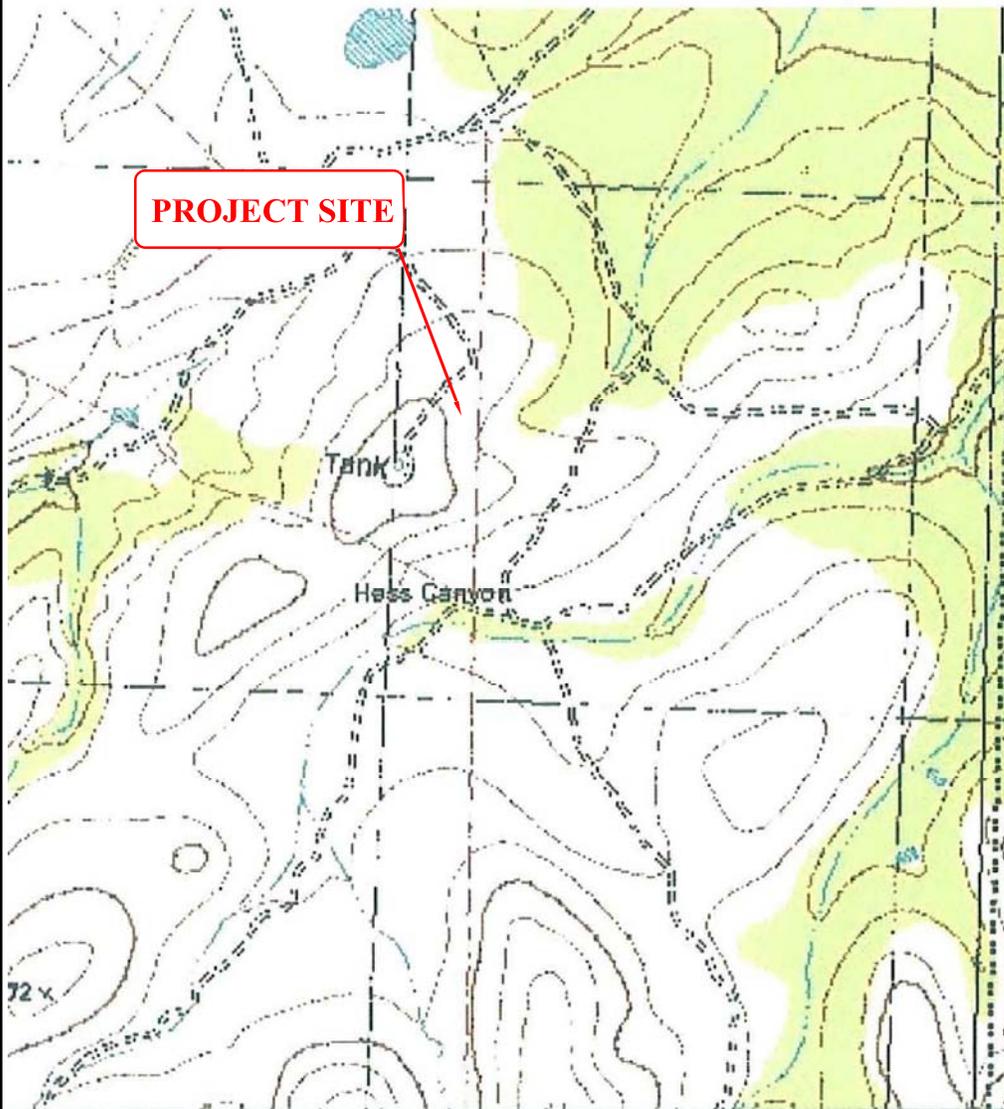
SOURCE: FEMA-FLOOD RATE INSURANCE MAP
 BREWSTER COUNTY, TEXAS. MAP NO. 4800840275B.
 EFFECTIVE DATE: OCTOBER 15, 1985.



**FEMA-FLOODPLAIN MAP
 GLASS MOUNTAIN TOWER SITE
 APPROXIMATELY 27 MILES NORTHEAST OF
 MARATHON, BREWSTER COUNTY, TEXAS**

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| | | Project No. 90107018 |
| | | Scale: NOT TO SCALE |
| | | Drawn By: JAA |
| | | Appendix: 8 |

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PROJECT SITE

- Legend**
- Archeological Site Centroids
 - Archeological Site Boundaries
 - Archeological Site Areas
 - Neighborhood Survey
 - Historical Marker
 - National Register Property
 - National Register District
 - National Register District (address restricted)
 - Archeological Project [linear]
 - Archeological Project [area]
 - Cemetery
 - Shipwreck
 - USGS Quad Grid
 - Counties
 - USGS Topo Data

Historic Sites Atlas - Copyright (C) 1995-2009 Texas Historical Commission 443m

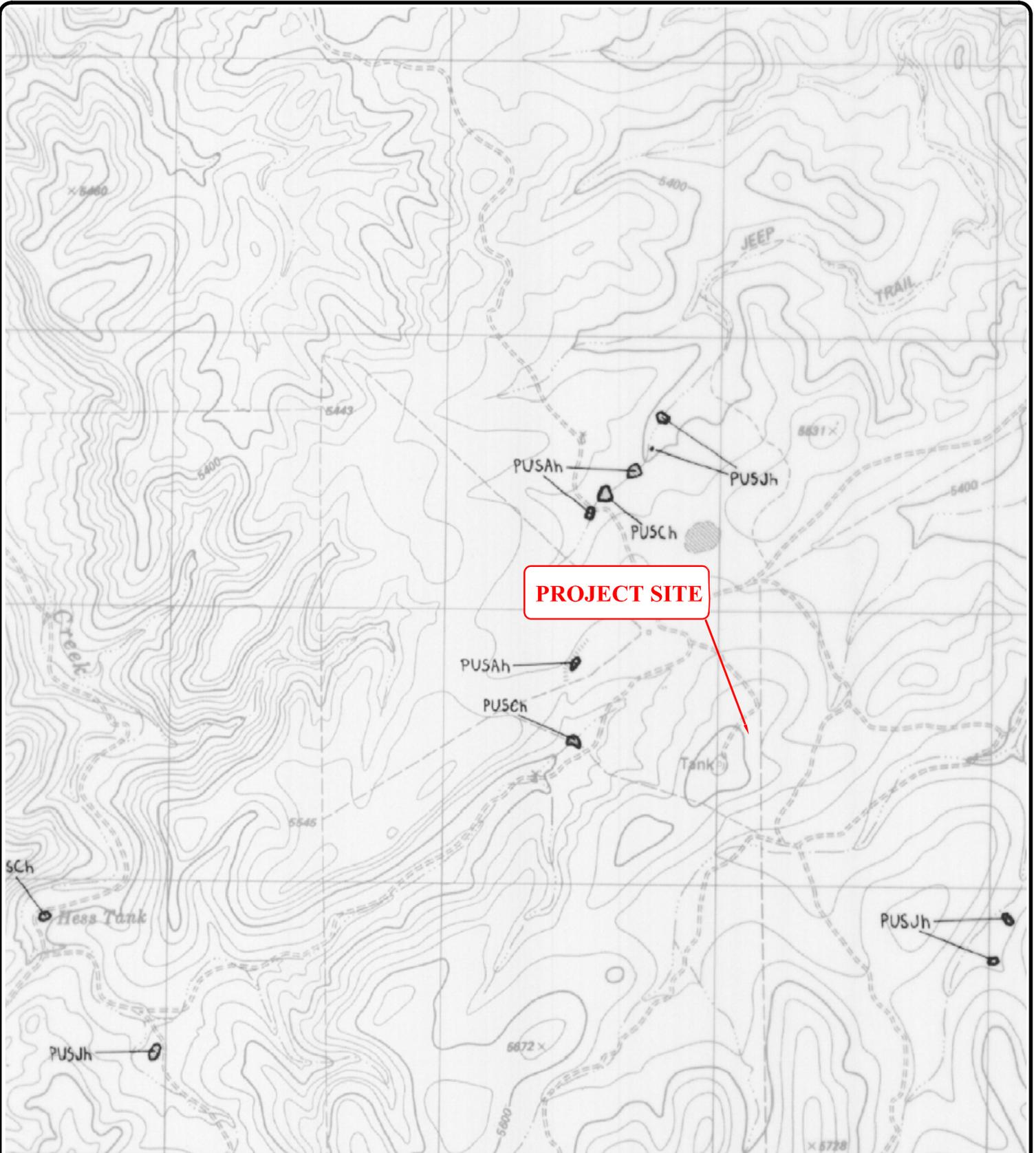
SOURCE: TEXAS HISTORICAL COMMISSION TEXAS HISTORIC SITES ATLAS.



DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

**HISTORIC SITES MAP
GLASS MOUNTAIN TOWER SITE
APPROXIMATELY 27 MILES NORTHEAST OF
MARATHON, BREWSTER COUNTY, TEXAS**

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| | Project No. 90107018 |
| | Scale: NOT TO SCALE |
| | Drawn By: JAA |
| | Appendix: 9 |



SOURCE: NATIONAL WETLANDS INVENTORY U.S. DEPARTMENT OF THE INTERIOR. HESS CANYON, TEXAS, 1994.



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**WETLANDS MAP
GLASS MOUNTAIN TOWER SITE
APPROXIMATELY 27 MILES NORTHEAST OF
MARATHON, BREWSTER COUNTY, TEXAS**

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| | | Project No. 90107018 |
| | | Scale: NOT TO SCALE |
| | | Drawn By: JAA |
| | | Appendix: 10 |

APPENDIX A-Site Photographs



Photo #1 Looking north at site.



Photo #2 Looking north from the site.



Photo #3 Looking east from site.



Photo #4 Looking south from site.



Photo #5 Looking west from site.



Photo #6 Looking southwest from the site.

APPENDIX B- USFWS Documentation

From: Jana_Milliken@fws.gov
Sent: Friday, August 19, 2005 8:43 AM
To: Bole, Barrett W.
Subject: Cell tower reviews

Good morning,

Due to staff and workload constraints, our office will not be responding to these requests unless you have decided your project "may affect" threatened or endangered species. Just because you do not receive anything from us, does not mean we have no objections to the project, we just do not have time to review every one of them. In the future, please do not send projects to us that you have made a "no effect" determination on. The Endangered Species Act regulations do not require USFWS to respond to "no affects". Please specify clearly on the "may affect" projects the nature of the affects and the species affected.

Thanks, Jana

Jana Milliken
Fish and Wildlife Biologist
Austin Ecological Services Office
US Fish & Wildlife Service
10711 Burnet Road, Suite 200
Austin, TX 78758
512-490-0057 ext. 243



6911 Blanco Road
San Antonio, Texas 78216

Record of Communication

| | | | |
|----------------------|--|--------------|---------------|
| Subject: | Tower Sites in the jurisdiction of the U.S. Fish and Wildlife Texas Ecological Field Office in Austin, Texas | Date: | June 24, 2010 |
| Terracon Rep: | Julio A. Aguilar | Time: | 1:20 P.M. |
| Organization: | U.S. Fish and Wildlife Texas Ecological Field Office in Austin, Texas. | Page: | 1 of 1 |
| Contact: | Mrs. Charlotte Kucera | | |
| Title: | U.S. Fish and Wildlife Service Biologist | | |
| Phone Number: | (512) 490-0057 | | |

Conversation:

Terracon contacted the U.S. Fish and Wildlife Service Austin Ecological Services Office to inquire about the current policies and applicability of a previous response that was received regarding submission of information for telecommunication projects in which the consultant has made a "no effect" determination. Mrs. Charlotte Kucera, U.S. Fish and Wildlife Service Austin Ecological Services Office Biologist, stated that the e-mail response previously received is valid. Ms. Kucera stated that if the consultant has made a "no effect" determination, then submittal of information regarding the proposed telecommunication project is not required.



Special Status Species Report

<http://www.geo-search.net/QuickMap/index.htm?DataID=Standard0000011835>

Click on link above to access the map and satellite view of current property

Target Property:

Glass Mountain

Brewster County, Texas 79842

Prepared For:

Terracon Consultants-Midland

Order #: 5139

Job #: 11835

Project #: A4097076

Date: 11/11/2009

TARGET PROPERTY SUMMARY

Glass Mountain

Brewster County, Texas 79842

Centroid County: **Brewster**

Centroid Zipcode: **79842**

Centroid State: **TX**

USGS Quadrangle: **Hess Canyon, TX**

Target Property Geometry: **Point**

Target Property Longitude(s)/Latitude(s):

(-103.136010, 30.392750)

County/Countries Covered:

Brewster (TX)

Zipcode(s) Covered:

Marathon TX: 79842

State(s) Covered:

TX

***Target property is located in Radon Zone 2 (Brewster County, TX). Zone 2 counties have a predicted average indoor radon screening level between 2 and 4 pCi/L.**

Disclaimer - The information provided in this report was obtained from a variety of public sources. GeoSearch cannot ensure and makes no warranty or representation as to the accuracy, reliability, quality, errors occurring from data conversion or the customer's interpretation of this report. This report was made by GeoSearch for exclusive use by its clients only. Therefore, this report may not contain sufficient information for other purposes or parties. GeoSearch and its partners, employees, officers And independent contractors cannot be held liable For actual, incidental, consequential, special or exemplary damages suffered by a customer resulting directly or indirectly from any information provided by GeoSearch.

DATABASE FINDINGS SUMMARY (SOURCE)

| DATABASE | ACRONYM | LOCA- TABLE | UNLOCA- TABLE | SEARCH RADIUS (miles) |
|------------------------|-------------|----------------|------------------|-----------------------------|
| STATE (TX) | | | | |
| MANAGED AREAS | TXMNGDAREAS | 0 | 0 | 1.5000 |
| SPECIAL STATUS SPECIES | TXNDD | 1 | 0 | 1.5000 |
| SUB-TOTAL | | 1 | 0 | |

TOTAL

1 0



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DATABASE FINDINGS SUMMARY (DETAIL)

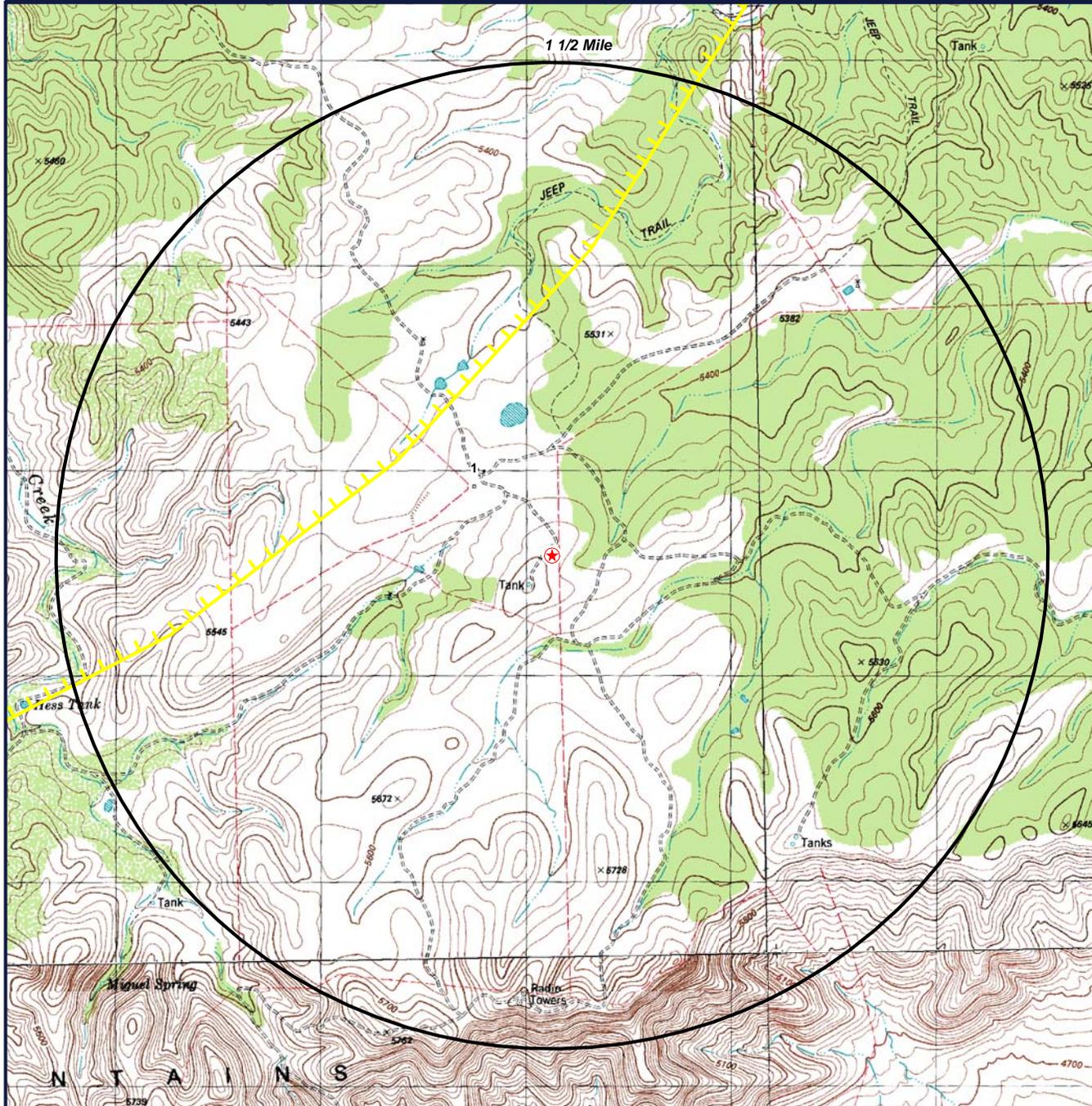
| ACRONYM | Target Property | SEARCH RADIUS (miles) | 1/8 Mile (> TP) | 1/4 Mile (> 1/8) | 1/2 Mile (> 1/4) | 1 Mile (> 1/2) | > 1 Mile | Total |
|-------------------|--------------------|-----------------------------|--------------------|---------------------|---------------------|-------------------|----------|----------|
| STATE (TX) | | | | | | | | |
| TXMNGDAREAS | | 1.500 | 0 | 0 | 0 | 0 | 0 | 0 |
| TXNDD | | 1.500 | 0 | 0 | 0 | 1 | 0 | 1 |
| SUB-TOTAL | | | 0 | 0 | 0 | 1 | 0 | 1 |

| | | | | | | | | |
|-------|--|--|---|---|---|---|---|---|
| TOTAL | | | 0 | 0 | 0 | 1 | 0 | 1 |
|-------|--|--|---|---|---|---|---|---|



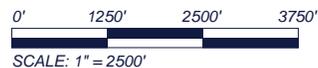
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SPECIAL STATUS SPECIES SITE MAP



-  Target Property (TP)
-  PLANT

**Quadrangle(s): Hess Canyon
Glass Mountain
Brewster County, Texas
79842**



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REPORT SUMMARY OF LOCATABLE SITES

| MAP ID# | DATABASE NAME | SITE ID# | DISTANCE FROM SITE | SITE NAME | ADDRESS | CITY, ZIP CODE | PAGE # |
|---------|---------------|----------|--------------------|----------------------|---------|----------------|--------|
| 1 | TXNDD | 4597 | 0.550 NW | AGAVE GLOMERULIFLORA | | | 1 |



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SPECIAL STATUS SPECIES (TXNDD)

MAP ID# 1

Distance from Property: 0.55 mi. NW

ID NUMBER: 4597

NAME: **AGAVE GLOMERULIFLORA**

COMMON NAME: **CHISOS AGAVE**

FEDERAL STATUS:

SPECIES IS NOT FEDERALLY LISTED

STATE STATUS:

RARE, BUT HAS NO REGULATORY LISTING STATUS

GLOBAL RANK:

IMPERILED GLOBALLY, VERY RARE, TYPICALLY 6 TO 20 VIABLE OCCURRENCES; RANK QUALIFIER DENOTING TAXONOMIC ASSIGNMENT IS QUESTIONABLE

STATE RANK:

IMPERILED IN STATE, VERY RARE, VULNERABLE TO EXTIRPATION, TYPICALLY 6 TO 20 VIABLE OCCURRENCES

TRACKING: **YES**

OCCURRENCE:

LAST OBSERVED: **10/11/1957**

FIRST OBSERVED: **1947**

SURVEYED: **NOT REPORTED**

NOTATIONS: **IN FRUIT; INFREQUENT**



Notes for County Lists of Texas' Special Species



The Texas Parks and Wildlife (TPWD) county lists **include**:

Vertebrates, Invertebrates, and Vascular Plants on the special species lists of the TPWD, Non-game and Rare Species Program, Natural Diversity Database (NDD) (formerly the Biological and Conservation Data System). These special species lists are comprised of all species, subspecies, and varieties that are federally listed; proposed to be federally listed; have federal candidate status; are state listed; or carry a global conservation status indicating a species is imperiled, very rare, vulnerable to extirpation; and some species ranked rare or uncommon.

Colonial Waterbird Nesting Areas and Migratory Songbird Fallout Areas are included on the county lists for coastal counties only.

The TPWD county lists **exclude**:

Natural Plant Communities such as Little Bluestem-Indiangrass Series (native prairie remnant), Water Oak-Willow Oak Series (bottomland hardwood community), Saltgrass-Cordgrass Series (salt or brackish marsh), Sphagnum-Beakrush Series (seepage bog).

Other Significant Features such as non-coastal bird rookeries, comprehensive migratory bird information, bat roosts, bat caves, invertebrate caves, and prairie dog towns.

These lists are not all inclusive for all rare species distributions. The lists were developed and are updated based on field guides, staff expertise, scientific publications, and the TPWD Natural Diversity Database (NDD) (formerly the Biological and Conservation Data System) occurrences data. Historic ranges for some state extirpated species, full historic distributions for some extant species, accidentals and irregularly appearing species, and portions of migratory routes for particular species are not included. Species that appear on county lists do not all share the same probability of occurrence within a county. Some species are migrants or wintering residents only. Additionally, a few species may be historic or considered extirpated within a county.

TPWD includes the Federal listing status for your convenience and makes every attempt to keep the information current and correct. However, the US Fish and Wildlife Service (FWS) is the responsible authority for Federal listing status. The TPWD lists do not substitute for contact with the FWS and federally listed species county ranges may vary from the FWS county level species lists because of the inexact nature of range map development and use.

This information is for your assistance only; due to continuing data updates, **please do not reprint or redistribute the information, instead refer all requesters to our office to obtain the most current information available.**



The Natural Diversity Database



The Texas Parks and Wildlife Department (TPWD), Natural Diversity Database (NDD) (formerly the Biological and Conservation Data System), established in 1983, is the Department's most comprehensive source of information on rare, threatened, and endangered plants and animals, exemplary natural communities, and other significant features. Though it is not all-inclusive, the NDD is constantly updated, providing current or additional information on statewide status and locations of these unique elements of natural diversity.

The NDD gathers biological information from museum and herbarium collection records, peer reviewed publications, experts in the scientific community, organizations, qualified individuals, and on-site field surveys conducted by TPWD staff on public lands or private lands with written permission. TPWD staff botanists, zoologists, and ecologists perform field surveys to locate and verify specific occurrences of high-priority biological elements and collect accurate information on their condition, quality, and management needs.

The NDD can be used to help evaluate the environmental impacts of routing and siting options for development projects. It also assists in impact assessment, environmental review, and permit review.

Given the small proportion of public versus private land in Texas, the NDD does not include a representative inventory of rare resources in the state. Although it is based on the best data publicly available to TPWD regarding rare species, these data cannot provide a definitive statement as to the presence, absence, or condition of special species, natural communities, or other significant features in any area. Nor can these data substitute for on-site evaluation by qualified biologists. The NDD information is intended to assist the user in avoiding harm to species that may occur.

Please use the following citation to credit the source for this county level information:

Texas Parks and Wildlife Department, Wildlife Division, Diversity and Habitat Assessment programs. County Lists of Texas' Special Species. [county name(s) and revised date(s)].

For information on obtaining a project review form or a site-specific review of a project area for rare species, and for updated county lists, please call (512) 912-7011.

BREWSTER COUNTY

BIRDS

| | | Federal Status | State Status |
|---|-------------------------------------|----------------|--------------|
| American Peregrine Falcon | <i>Falco peregrinus anatum</i> | DL | T |
| year-round resident and local breeder in west Texas, nests in tall cliff eyries; also, migrant across state from more northern breeding areas in US and Canada, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands. | | | |
| Arctic Peregrine Falcon | <i>Falco peregrinus tundrius</i> | DL | |
| migrant throughout state from subspecies' far northern breeding range, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands. | | | |
| Baird's Sparrow | <i>Ammodramus bairdii</i> | | |
| shortgrass prairie with scattered low bushes and matted vegetation; mostly migratory in western half of State, though winters in Mexico and just across Rio Grande into Texas from Brewster through Hudspeth counties | | | |
| Black-capped Vireo | <i>Vireo atricapilla</i> | LE | E |
| oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces; requires foliage reaching to ground level for nesting cover; return to same territory, or one nearby, year after year; deciduous and broad-leaved shrubs and trees provide insects for feeding; species composition less important than presence of adequate broad-leaved shrubs, foliage to ground level, and required structure; nesting season March-late summer | | | |
| Common Black-Hawk | <i>Buteogallus anthracinus</i> | | T |
| cottonwood-lined rivers and streams; willow tree groves on the lower Rio Grande floodplain; formerly bred in south Texas | | | |
| Ferruginous Hawk | <i>Buteo regalis</i> | | |
| open country, primarily prairies, plains, and badlands; nests in tall trees along streams or on steep slopes, cliff ledges, river-cut banks, hillsides, power line towers; year-round resident in northwestern high plains, wintering elsewhere throughout western 2/3 of Texas | | | |
| Gray Hawk | <i>Asturina nitida</i> | | T |
| locally and irregularly along U.S.-Mexico border; mature riparian woodlands and nearby semiarid mesquite and scrub grasslands; breeding range formerly extended north to southernmost Rio Grande floodplain of Texas | | | |
| Interior Least Tern | <i>Sterna antillarum athalassos</i> | LE | E |
| subspecies is listed only when inland (more than 50 miles from a coastline); nests along sand and gravel bars within braided streams, rivers; also know to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc); eats small fish and crustaceans, when breeding forages within a few hundred feet of colony | | | |

BREWSTER COUNTY

BIRDS

Federal Status

State Status

Mexican Hooded Oriole

Icterus cucullatus cucullatus

scrub, mesquite; nests in dense trees, or thickets, usually along water courses

Montezuma Quail

Cyrtonyx montezumae

open pine-oak or juniper-oak with ground cover of bunch grass on flats and slopes of semi-desert mountains and hills; travels in pairs or small groups; eats succulents, acorns, nuts, and weed seeds, as well as various invertebrates

Mountain Plover

Charadrius montanus

breeding: nests on high plains or shortgrass prairie, on ground in shallow depression; nonbreeding: shortgrass plains and bare, dirt (plowed) fields; primarily insectivorous

Northern Aplomado Falcon

Falco femoralis septentrionalis

LE

E

open country, especially savanna and open woodland, and sometimes in very barren areas; grassy plains and valleys with scattered mesquite, yucca, and cactus; nests in old stick nests of other bird species

Peregrine Falcon

Falco peregrinus

DL

T

both subspecies migrate across the state from more northern breeding areas in US and Canada to winter along coast and farther south; subspecies (F. p. anatum) is also a resident breeder in west Texas; the two subspecies' listing statuses differ, F.p. tundrius is no longer listed in Texas; but because the subspecies are not easily distinguishable at a distance, reference is generally made only to the species level; see subspecies for habitat.

Prairie Falcon

Falco mexicanus

open, mountainous areas, plains and prairie; nests on cliffs

Sennett's Hooded Oriole

Icterus cucullatus sennetti

often builds nests in and of Spanish moss (*Tillandsia unioides*); feeds on invertebrates, fruit, and nectar; breeding March to August

Southwestern Willow Flycatcher

Empidonax traillii extimus

LE

E

thickets of willow, cottonwood, mesquite, and other species along desert streams

Western Burrowing Owl

Athene cunicularia hypugaea

open grasslands, especially prairie, plains, and savanna, sometimes in open areas such as vacant lots near human habitation or airports; nests and roosts in abandoned burrows

Western Yellow-billed Cuckoo

Coccyzus americanus occidentalis

C;NL

status applies only to western population beyond the Pecos River Drainage; breeds in riparian habitat and associated drainages; springs, developed wells, and earthen ponds supporting mesic vegetation; deciduous woodlands with cottonwoods and willows; dense understory foliage is important for nest site selection; nests in willow, mesquite, cottonwood, and hackberry; forages in similar riparian woodlands; breeding season mid-May-late Sept

Zone-tailed Hawk

Buteo albonotatus

T

BREWSTER COUNTY

BIRDS

Federal Status State Status

arid open country, including open deciduous or pine-oak woodland, mesa or mountain country, often near watercourses, and wooded canyons and tree-lined rivers along middle-slopes of desert mountains; nests in various habitats and sites, ranging from small trees in lower desert, giant cottonwoods in riparian areas, to mature conifers in high mountain regions

FISHES

Federal Status State Status

- | | | | |
|---|------------------------------------|----|---|
| Big Bend gambusia | <i>Gambusia gaigei</i> | LE | E |
| presently restricted to one artificial springfed pool in Big Bend National Park close to the Rio Grande; type locality described as a marshy cattail slough fed by springs | | | |
| Blue sucker | <i>Cycleptus elongatus</i> | | T |
| larger portions of major rivers in Texas; usually in channels and flowing pools with a moderate current; bottom type usually of exposed bedrock, perhaps in combination with hard clay, sand, and gravel; adults winter in deep pools and move upstream in spring to spawn on riffles | | | |
| Bluntnose shiner | <i>Notropis simus simus</i> | | T |
| extinct; Rio Grande; main river channel, often below obstructions over substrate of sand, gravel, and silt; damming and irrigation practices presumed major factors contributing to decline | | | |
| Chihuahua catfish | <i>Ictalurus sp 1</i> | | |
| (extirpated) has been identified from the Rio Grande and Rio Conchos of Texas/Mexico. | | | |
| Chihuahua shiner | <i>Notropis chihuahua</i> | | T |
| Rio Grande basin, Big Bend region; clear, cool water that is often associated with nearby springs; often in pools with slight current or riffles over a gravel or sand bottom where vegetation may be present | | | |
| Conchos pupfish | <i>Cyprinodon eximius</i> | | T |
| Rio Grande and Devils River basins; sloughs, backwaters, and margins of larger streams, channels of creeks, and mouths | | | |
| Headwater catfish | <i>Ictalurus lupus</i> | | |
| originally throughout streams of the Edwards Plateau and the Rio Grande basin, currently limited to Rio Grande drainage, including Pecos River basin; springs, and sandy and rocky riffles, runs, and pools of clear creeks and small rivers | | | |
| Maravillas red shiner | <i>Cyprinella lutrensis blairi</i> | | |
| (extinct) found in Maravillas Creek, reported extinct in 1989 | | | |
| Mexican redhorse | <i>Moxostoma austrinum</i> | | |
| Rio Grande basin above Amistad Reservoir; restricted to rocky riffles of creeks and small to medium rivers, often near boulders in swift water | | | |
| Mexican stoneroller | <i>Campostoma ornatum</i> | | T |
| in Texas, Big Bend region; clear, fast riffles, chutes, and pools in small to medium-sized creeks with gravel or sand bottoms | | | |

BREWSTER COUNTY

FISHES

Federal Status

State Status

Rio Grande shiner

Notropis jemezianus

Rio Grande and upper Pecos River basins; large, open, weedless rivers or large creeks with bottom of rubble, gravel and sand, often overlain with silt

Rio Grande silvery minnow

Hybognathus amarus

LE

E

extirpated; historically Rio Grande and Pecos River systems and canals; reintroduced in Big Bend area; pools and backwaters of medium to large streams with low or moderate gradient in mud, sand, or gravel bottom; ingests mud and bottom ooze for algae and other organic matter; probably spawns on silt substrates of quiet coves

INSECTS

Federal Status

State Status

A mayfly

Neochoroterpes kossi

AZ, NM, west TX small streams; mayflies distinguished by aquatic larval stage; adult stage generally found in shoreline vegetation

A Royal moth

Sphingicampa raspa

woodland - hardwood; with oaks, junipers, legumes and other woody trees and shrubs; good density of legume caterpillar foodplants must be present; Prairie acacia (*Acacia augustissima*) is the documented caterpillar foodplant, but there could be a few other woody legumes used

A tiger beetle

Cicindela hornii

grassland/herbaceous; burrowing in or using soil; dry areas on hillside or mesas where soil is rocky or loamy and covered with grasses, invertivore; diurnal, hibernates/aestivates, active mostly for several days after heavy rains. the life cycle probably takes two years so larvae would always be present in burrows in the soil

Blanchards' sphinx moth

Adhemarius blanchardorum

unknown, but may be confined to the deciduous forest in Upper Green Gulch to Panther Pass summit of Big Bend National Park; host plant undetermined; May-June adult emergence

Bonita diving beetle

Deronectes neomexicana

predatory, feeding on other water insects and insect larvae; spend majority of life underwater, surfacing only to create an air bubble held under the wing covers for breathing

Chisos metalmark

Apodemia chisosensis

agave scrub community; nectarivore/herbivore, larval food Havard's plum (*Prunus havardii*); diurnal, hibernates/aestivates, adult flights in spring and early August, second brood dependent on summer rains; larvae both aestivate/hibernate in rolled leaf, begin feeding late May and diapause in dead leaves until following spring, few exceptions emerge for a partial late summer flight

Chisos skipperling

Piruna haferniki

BREWSTER COUNTY

INSECTS

Federal Status

State Status

open oak/pine woodland, thorn scrub below oak zone, nectarivore/herbivore, adults in genus nectar and drink from damp soil; larva of subfamily feed on grasses or sedges, some very specialized, caterpillars of other Piruna eat leaves of broad-leaved grasses, including grama grass Bouteloua; diurnal, hibernates/aestivates; adults fly from March to possibly October

Freeman's metalmark *Calephelis rawsoni freemani*

Davis Mountains; moist areas including stream edges, gulches, subtropical woodland, shaded limestone outcrops

Poling's hairstreak *Fixsenia polingi*

oak woodland with Quercus grisea as substantial component, probably also uses Q. emoryi; larvae feed on new growth of Q. grisea, adults utilize nectar from a variety of flowers including milkweed and catslaw acacia; adults fly mid May - Jun, again mid Aug - early Sept

Rawson's metalmark *Calephelis rawsoni*

moist areas in shaded limestone outcrops in central Texas, desert scrub or oak woodland in foothills, or along rivers elsewhere; larval hosts are Eupatorium havanense, E. greggii.

Tawny giant skipper *Agathymus neumoegeni chisosensis*

Chisos Mountains, grassland/herbaceous, shrubland/chaparral, woodland - hardwood; adult males drink from mud and manure, larvae bore in leaves of Agave parryi and perhaps A. lechugilla, adults fly mainly mid-Sept- mid-Oct, larvae feed in fall, then hibernate, feed again until about July and then aestivate

MAMMALS

Federal Status

State Status

Big free-tailed bat *Nyctinomops macrotis*

habitat data sparse but records indicate that species prefers to roost in crevices and cracks in high canyon walls, but will use buildings, as well; reproduction data sparse, gives birth to single offspring late June-early July; females gather in nursery colonies; winter habits undetermined, but may hibernate in the Trans-Pecos; opportunistic insectivore

Black bear *Ursus americanus*

T/SA;NL

T

bottomland hardwoods and large tracts of inaccessible forested areas; due to field characteristics similar to Louisiana Black Bear (LT, T), treat all east Texas black bears as federal and state listed Threatened

Black-footed ferret *Mustela nigripes*

LE

extirpated; inhabited prairie dog towns in the general area

Black-tailed prairie dog *Cynomys ludovicianus*

dry, flat, short grasslands with low, relatively sparse vegetation, including areas overgrazed by cattle; live in large family groups

Cave myotis bat *Myotis velifer*

BREWSTER COUNTY

MAMMALS

Federal Status

State Status

colonial and cave-dwelling; also roosts in rock crevices, old buildings, carports, under bridges, and even in abandoned Cliff Swallow (*Hirundo pyrrhonota*) nests; roosts in clusters of up to thousands of individuals; hibernates in limestone caves of Edwards Plateau and gypsum cave of Panhandle during winter; opportunistic insectivore

Davis Mountains cottontail *Sylvilagus floridanus robustus*

brushy pastures, brushy edges of cultivated fields, and well-drained streamsides; active mostly at twilight and at night, where they may forage in a variety of habitats, including open pastures, meadows, or even lawns; rest during daytime in thickets or in underground burrows and small culverts; feed on grasses, forbs, twigs and bark; not sociable and seldom seen feeding together

Desert bighorn sheep *Ovis canadensis mexicana*

rough, rocky mountainous terrain; bluffs and steep slopes with sparse vegetation

Fringed bat *Myotis thysanodes*

habitat variable, ranging from mountainous pine, oak, and pinyon-juniper to desert-scrub, but prefers grasslands at intermediate elevations; highly migratory species that arrives in Trans-Pecos by May to form nursery colonies; single offspring born June-July; roosts colonially in caves, mine tunnels, rock crevices, and old buildings

Ghost-faced bat *Mormoops megalophylla*

colonially roosts in caves, crevices, abandoned mines, and buildings; insectivorous; breeds late winter-early spring; single offspring born per year

Gray wolf *Canis lupus*

LE

E

extirpated; formerly known throughout the western two-thirds of the state in forests, brushlands, or grasslands

Greater western mastiff bat *Eumops perotis californicus*

diurnal roosts in rock crevices of vertical cliffs; colony size varies from several individuals to several dozen; males and females may remain together throughout the year; single offspring (occasionally twins) born June-July

Guadalupe southern pocket gopher *Thomomys bottae guadalupensis*

known from Guadalupe Mountains; habitat variable, ranging from loose sands and silts to tight clays; dry deserts to montane meadows; active year round, mostly underground; diet variable, but mostly roots and tubers; breeds continuously, but main season in spring

Limpia Creek pocket gopher *Thomomys bottae texensis*

throughout Davis Mountains; habitat variable, ranging from lower canyons to higher coniferous woodlands; loose sands and silts to tight clays; dry deserts to montane meadows; active year round, mostly underground; diet variable, but mostly roots and tubers; breeds continuously, but main season in spring

Limpia southern pocket gopher *Thomomys bottae limpiae*

BREWSTER COUNTY

MAMMALS

Federal Status

State Status

Limpia Canyon area of Davis Mountains; habitat variable, ranging from loose sands and silts to tight clays; active year round, mostly underground; diet variable, but mostly roots and tubers; breeds continuously, but main season in spring

Long-legged bat *Myotis volans*

in Texas, Trans-Pecos region; high, open woods and mountainous terrain; nursery colonies (which may contain several hundred individuals) form in summer in buildings, crevices, and hollow trees; apparently do not use caves as day roosts, but may use such sites at night; single offspring born June-July

Mexican long-nosed bat *Leptonycteris nivalis* LE E

in Texas, Big Bend region; colonial, cave-dwelling species that usually inhabits deep caverns; nectivorous, with Agave spp. preferred; breeding season April-June, with single offspring born in Mexico prior to migration to Texas

Ocelot *Leopardus pardalis* LE E

dense chaparral thickets; mesquite-thorn scrub and live oak mottes; avoids open areas; breeds and raises young June-November

Pale Townsend's big-eared bat *Corynorhinus townsendii pallescens*

roosts in caves, abandoned mine tunnels, and occasionally old buildings; hibernates in groups during winter; in summer months, males and females separate into solitary roosts and maternity colonies, respectively; single offspring born May-June; opportunistic insectivore

Pocketed free-tailed bat *Nyctinomops femorosaccus*

semiarid desert grasslands; roosts in caves cliff crevices under building roof tiles; feed on insects; females bear one pup per season Jul - Aug

Spotted bat *Euderma maculatum* T

in Texas, Big Bend region; preferred habitat not fully understood, but species reported from pine forests at high elevations to open, desert scrub; reproduction data sparse, but single offspring born June-July

Western red bat *Lasiurus blossevillii*

roosts in tree foliage in riparian areas, also inhabits xeric thorn scrub and pine-oak forests; likely winter migrant to Mexico; multiple pups born mid-May - late Jun

Western small-footed bat *Myotis ciliolabrum*

mountainous regions of the Trans-Pecos, usually in wooded areas, also found in grassland and desert scrub habitats; roosts beneath slabs of rock, behind loose tree bark, and in buildings; maternity colonies often small and located in abandoned houses, barns, and other similar structures; apparently occurs in Texas only during spring and summer months; insectivorous

Western yellow bat *Lasiurus xanthinus*

forages over water both perennial and intermittent sources, found at low elevations (< 6,000 feet), roosts in vegetation (yucca, hackberry, sycamore, cypress, and especially palm); also hibernates in palm; locally common in residential areas landscaped with palms in Tuscon and Phoenix, Arizona; young born in June; insectivore

BREWSTER COUNTY

MAMMALS

Federal Status

State Status

White-nosed coati

Nasua narica

T

woodlands, riparian corridors and canyons; most individuals in Texas probably transients from Mexico; diurnal and crepuscular; very sociable; forages on ground and in trees; omnivorous; may be susceptible to hunting, trapping, and pet trade

Yellow-nosed cotton rat

Sigmodon ochrognathus

higher elevations in the Chisos Mountains, Davis Mountains, and Sierra Vieja; rocky slopes with scattered bunches of grass; underground dens and aboveground nests in various locations, including at base of agaves or roots of junipers; active in daytime; several litters possible during breeding season of March-October

Yuma myotis bat

Myotis yumanensis

desert regions; most commonly found in lowland habitats near open water, where forages; roosts in caves, abandoned mine tunnels, and buildings; season of partus is May to early July; usually only one young born to each female

MOLLUSKS

Federal Status

State Status

Chisos Mountains threband

Humboldtiana chisosensis

known from the Chisos Mountains, Big Bend National Park; in xeric rockslides along the lower margin of the evergreen woodland

False spike mussel

Quincuncina mitchelli

substrates of cobble and mud, with water lilies present; Rio Grande, Brazos, Colorado, and Guadalupe (historic) river basins

Salina mucket

Potamilus metnecktayi

lotic waters; submerged soft sediment (clay and silt) along river bank; other habitat requirements are poorly understood; Rio Grande Basin

Stockton Plateau threband

Humboldtiana texana

rocky hill country with short grasses and some dwarf oaks on the hills; elevation about 1200-1500 m (3900-5000 ft)

Texas hornshell

Popenaias popeii

C

both ends of narrow shallow runs over bedrock, in areas where small-grained materials collect in crevices, along river banks, and at the base of boulders; not known from impoundments; Rio Grande Basin and several rivers in Mexico

REPTILES

Federal Status

State Status

Big Bend slider

Trachemys gaigeae

almost exclusively aquatic, sliders (*Trachemys* spp.) prefer quiet bodies of fresh water with muddy bottoms and abundant aquatic vegetation, which is their main food source; will bask on logs, rocks or banks of water bodies; breeding March-July

BREWSTER COUNTY

REPTILES

| | | Federal Status | State Status |
|--|-------------------------------------|----------------|--------------|
| Chihuahuan Desert lyre snake | <i>Trimorphodon wilkinsonii</i> | | T |
| <p>mostly crevice-dwelling in predominantly limestone-surfaced desert northwest of the Rio Grande from Big Bend to the Franklin Mountains, especially in areas with jumbled boulders and rock faults/fissures; secretive; egg-bearing; eats mostly lizards</p> | | | |
| Chihuahuan mud turtle | <i>Kinosternon hirtipes murrayi</i> | | T |
| <p>semi-aquatic, prefers bodies of fresh water with abundant aquatic vegetation; eats invertebrates; breeds March-July</p> | | | |
| Reticulated gecko | <i>Coleonyx reticulatus</i> | | T |
| <p>rocky desert areas of the Big Bend region; terrestrial and nocturnal; reproduction not well known, but captive individuals laid eggs in July</p> | | | |
| Texas horned lizard | <i>Phrynosoma cornutum</i> | | T |
| <p>open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September</p> | | | |
| Texas tortoise | <i>Gopherus berlandieri</i> | | T |
| <p>open brush with a grass understory is preferred; open grass and bare ground are avoided; when inactive occupies shallow depressions at base of bush or cactus, sometimes in underground burrows or under objects; longevity greater than 50 years; active March-November; breeds April-November</p> | | | |
| Trans-Pecos black-headed snake | <i>Tantilla cucullata</i> | | T |
| <p>small size with a uniform body color and a small, dark head; secretive; fossorial; mostly nocturnal; mesquite-creosote and pinyon-juniper-oak; eggs laid June-August; eat insects, spiders, and other invertebrates</p> | | | |

PLANTS

| | | Federal Status | State Status |
|--|---------------------------------------|----------------|--------------|
| Appressed two-bristle rock-daisy | <i>Perityle bisetosa var appressa</i> | | |
| <p>crevices in limestone exposures on bluffs and other rock outcrops; flowering May-September</p> | | | |
| Big Bend hop-hornbeam | <i>Ostrya chisosensis</i> | | |
| <p>mixed woodlands on mesic, rocky, igneous slopes at high elevations in the Chisos Mountains; flowering May-June</p> | | | |
| Bigpod bonamia | <i>Bonamia ovalifolia</i> | | |
| <p>sandy and/or gravelly soils on rocky uplands, slopes, or drainages in Chihuahuan Desert shrublands; on the steep sand covered rocky slopes on the east side of Big Bend National Park; several widely separated populations in different habitats; flowering May-November</p> | | | |
| Boquillas lizardtail | <i>Gaura boquillensis</i> | | |

BREWSTER COUNTY

PLANTS

Federal Status

State Status

mostly in sandy soils in desert canyons and arroyos, occasionally in gravelly limestone soils in Chihuahuan Desert scrub at low elevations; flowering March-August

Brush-pea *Genistidium dumosum*

Chihuahuan Desert scrub on rocky limestone hills at lower elevations; in Coahuila, also found on volcanic tuff and sandstone; flowering June-October

Bunched cory cactus *Coryphantha ramillosa ssp ramillosa* LT T

rocky slopes, ledges, and flats in the Chihuahuan Desert, most frequently on exposures of Santa Elena or Buda limestones or the Boquillas Formation between 400-1070 m (1300-3500 ft) in elevation; flowering August-November, perhaps as early as April in response to rainfall

Bushy wild-buckwheat *Eriogonum suffruticosum*

Texas endemic; sparsely vegetated rocky limestone slopes, low hills, and clay flats; also on gypseous soils; flowering March-April, in full fruit by May

Chaffey's cory cactus *Escobaria dasyacantha var chaffeyi*

pine-oak-juniper woodlands on rocky igneous and limestone soils at 1425-2225 m (4675-7300 ft).; flowering March-June; fruiting June-September

Chisos agave *Agave glomeruliflora*

gravelly or rocky soils in oak-juniper woodlands and mesquite-creosote bush-invaded grasslands at elevations of about 600-1800 m (1950-5900 ft); flowering mid-spring to early fall

Chisos coral-root *Hexalectris revoluta*

in the Chisos and Guadalupe mountains, in humus in oak groves along rocky creekbeds at mid- to high elevations; in the Glass Mountains, it has been found 'among lechuguilla and shinnery oak on the sunny slopes and ridges'; purplish or brownish stem color provides a surprisingly effective camouflage from human observers, aerial stems are not reliably sent up every year; usually flowering May-August,

Chisos Mountains hedgehog cactus *Echinocereus chisoensis var chisoensis* LT T

Texas endemic; degraded desert grasslands or open shrublands on unconsolidated gravelly fan and terrace deposits on desert flats and low hills at moderate elevations of about 600-800 m (1950-2600 ft) in the Chihuahuan Desert, almost always found under the shelter of a nursery plant; flowering March-April, perhaps July, fruit maturing May-June, perhaps as late as August

Chisos oak *Quercus graciliformis*

Texas endemic; oak woodlands in dry rocky canyons, usually associated with a high water table; in moister portions of canyons of the Chisos Mountains, above elevations of 1650 m (5400 ft); flowering in the spring, fruiting July-early September

Chisos pinweed *Lechea mensalis*

open oak-pinyon-juniper woodlands over igneous or sandstone rock outcrops at high elevations in the mountains of the Trans Pecos and adjacent New Mexico; in Mexico, gravelly soil over igneous rocks and on alternating limestone and rhyolite substrates; presumably flowering June-August

BREWSTER COUNTY

PLANTS

Federal Status

State Status

Cliff bedstraw

Galium correllii

dry, steep or vertical limestone cliff faces of various exposures in Chihuahuan Desert along Rio Grande, Pecos River, and their tributaries, at elevations of 350-500 m (1150-1650 ft), resembles cliff swallow nests that are also found on limestone cliffs; flowering April-November, fruiting May-December

Correll's green pitaya

Echinocereus viridiflorus var correllii

Texas endemic; among grasses on rock crevices on low hills in desert or semi-desert grassland on novaculite or limestone; flowering March-May

Cox's dalea

Dalea bartonii

Texas endemic; semi-desert shortgrass grasslands with scattered pinyon pine and juniper in gravelly soils on limestone hills; probably flowering in late spring, fruiting in late summer-early fall, may flower in response to rainfall

Cutler's twistflower

Streptanthus cutleri

open shrublands or grasslands on calcareous gravel of talus slopes, rocky hillsides, and gravelly streambeds, at moderate elevations in the Chihuahuan Desert; flowering mostly February-March, sometimes into May

Davis' green pitaya

Echinocereus davisii

LE

E

Texas endemic; novaculite outcrops in full sun among sparse Chihuahuan Desert scrub usually hidden in mats of Selaginella; flowering (February-) March-April

Desert night-blooming cereus *Peniocereus greggii var greggii*

Chihuahuan Desert shrublands or shrub invaded grasslands in alluvial or gravelly soils at lower elevations, 1200-1500 m (3900-4900 ft), on slopes, benches, arroyos, flats, and washes; flowering synchronized over a few nights in early May to late June when almost all mature plants bloom, flowers last only one day and open just after dark, may flower as early as April

Duncan's cory cactus

Escobaria dasyacantha var duncanii

Chihuahuan Desert scrub at low to moderate elevations 650-1825 m (2150-6000 ft) on hills, ledges, and benches in cracks and crevices of limestone outcrops; flowering February-March (-May, or July in New Mexico), fruiting mostly May-June

Durango yellow-cress

Rorippa ramosa

moist, fine-textured, alluvial soils on floodplains and in beds of intermittent streams; flowering March-May

Dwarf broomspurge

Chamaesyce jejuna

according to specimen collections, found on grama-grass prairie on caliche uplands, also dry caliche slopes, and limestone hills; flowering late March through July

Glass Mountains rock-daisy *Perityle vitreomontana*

Texas endemic; crevices and solution pockets in Capitan Limestone exposures on cliffs and rock outcrops in the Glass Mountains; flowering June-October

Golden-spine hedgehog cactus *Echinocereus chloranthus var neocapillus*

BREWSTER COUNTY

PLANTS

Federal Status State Status

Texas endemic; sparsely vegetated desert grasslands over novaculite outcrops; flowering late March-early May

Golden-spine prickly-pear *Opuntia aureispina*

desert flats and low hills on slabs of fractured Boquillas limestone, Chihuahuan Desert near Rio Grande, 480-850 m (1576-2800 ft) elevation; flowering March-May (-June)

Green spikemoss *Selaginella viridissima*

shaded or sheltered igneous, limestone, or sandstone rock ledges, boulders, and cliffs in woodlands and shrublands; can occur in areas susceptible to flash flooding, as well as, prolonged hot, dry conditions; sporiferous June-August

Guadalupe Mountains fescue *Festuca ligulata* C

pine-oak-juniper woodlands on mesic slopes and in creek bottoms above 1800 m (5900 ft); Chisos Mountains substrates are gravelly and sandy loams derived from igneous materials; Guadalupe Mountains substrates are unknown but presumed to be loamy soils over limestone; flowering August-September, occasionally in spring after sufficient rainfall

Havard's stonecrop *Sedum havardii*

crevices in igneous rock outcrops, sometimes loose igneous talus, in oak-pinyon woodlands and chaparral at mid- to high elevations in the Chisos (rocky west facing slope) and Davis mountains; flowering May-September

Heather leaf-flower *Phyllanthus ericoides*

crevices in limestone on dry canyon walls and other rock outcrops; flowering October, and presumably in other months, given sufficient moisture

Hester's cory cactus *Escobaria hesteri*

Texas endemic; grasslands on novaculite hills or limestone hills and alluvial fans, also in pine-oak-juniper woodlands on igneous substrates; flowering April-early June (-November), also during growing season possibly in response to significant rainfall; fruiting June-August (-January)

Hinckley's brickellbush *Brickellia hinckleyi* var *hinckleyi*

Texas endemic; mixed woodlands or forests on rocky slopes in higher elevation mountain canyons; most specimens are from canyons on the north flank of Mt. Livermore in the Davis Mountains, where substrates are igneous; flowering July-October

Hinckley's oak *Quercus hinckleyi* LT T

creosote bush-mariola or lechuguilla-sotol shrublands on arid limestone slopes at mid-elevations in Chihuahuan Desert; flowering in spring, produces acorns late August-early September

Jackie's bluet *Stenaria mullerae* var *pooleana*

Texas endemic; north- to east-facing vertical limestone cliff faces in mid-elevation canyons in mountains in the Chihuahuan Desert; flowering May, perhaps to September

Kay's grama *Bouteloua kayi*

BREWSTER COUNTY

PLANTS

Federal Status State Status

Texas endemic; gravelly soils on desert flats and on limestone ledges along bluffs; flowering May-November

Lateleaf oak *Quercus tardifolia*

mixed evergreen-deciduous woodlands in moist canyon bottoms at elevation ca. 2,150 m (7,050 ft) in the Chisos Mountains; flowering in the spring

Leatherweed croton *Croton pottsii* var *thermophilus*

sparingly vegetated desert grasslands on extremely xeric sites at low elevations (500-800 m [1650-2640 ft]), on substrates ranging from sand to limestone and basalt; flowering spring-fall

Leoncita false foxglove *Agalinis calycina*

grasslands on perennially moist heavy, alkaline/saline, calcareous silty clays and loams in and around cienegas (desert springs) and seeps; flowering September-October

Little-leaf brongniartia *Brongniartia minutifolia*

Chihuahuan Desert shrublands at lower elevations 600-1400 m (1950-5000 ft), in blackish sand, gravel, volcanic ash and other substrates, often in or along arroyos or shallow drainages; flowering May-August (-December in Mexico)

Lloyd's mariposa cactus *Sclerocactus mariposensis*

LT T

among low shrubs and rosette-forming perennials in gravelly or rocky soils on arid limestone slopes in the Chihuahuan Desert, mostly on Boquillas Formation; elevation 750-1,050 m (2,450-3,450 ft); flowering February-mid March, fruit maturing 1-2 months later

Longstalk heimia *Nesaea longipes*

moist or subirrigated alkaline or gypsiferous clayey soils along unshaded margins of cienegas and other wetlands; occurs sparingly on an alkaline, somewhat saline silt loam on terraces of spring-fed streams in grassland; also occurs common in moderately alkaline clay along perennial stream and in subirrigated wetlands atop poorly-defined spring system; also occurs in low, wetland area along highway right-of-way; flowering May-September

Many-flowered unicorn-plant *Proboscidea spicata*

dry sandy alluvial and/or Eolian soils on terraces along Rio Grande or in other disturbed sandy habitats; flowering May-June (-August)

Maravillas milkwort *Polygala maravillasensis*

crevices of limestone exposed on canyons walls, along the Rio Grande and its tributaries, and in low desert mountains at 450-950 m (1,450-3,100 ft) elevation; appears restricted to the area of the Lower Canyons of the Rio Grande and lower Boquillas Canyon on both sides of the border; flowering May-October

Mary's bluet *Stenaria butterwickiae*

Texas endemic; shallow pockets or crevices in limestone bedrock on ridgetops; flowering or fruiting at least May-August

Nellie cory cactus *Escobaria minima*

LE E

BREWSTER COUNTY

PLANTS

Federal Status State Status

Texas endemic; novaculite outcrops in full sun among Chihuahuan Desert scrub, usually in cracks or chips of novaculite or in mats of Selaginella; flowering March-June, probably most consistently from mid April - mid May; fruiting within one month or less of flowering

Old blue pennyroyal *Hedeoma pilosum*

Texas endemic; single historic record from open exposed limestone; flowering period unknown.

Orcutt's senna *Senna orcuttii*

gravelly or rocky soil on limestone slopes and in beds of intermittent streams, within various mid- to lower elevation Chihuahuan Desert communities; at least one site is on east- to north-facing slopes; flowering July -August

Perennial caltrop *Kallstroemia perennans*

Texas endemic; somewhat barren gypseous clays or limestone soils at low elevations in the Chihuahuan Desert; flowering late spring-early fall

Powell's Mormon tea *Ephedra torreyana var powelliorum*

desert scrub on gravelly to fine grained gypseous soils; 850-1100 m (2789-3609 ft)

Purple gay-mallow *Batesimalva violacea*

among boulders in seasonally moist igneous rock canyons, often under small trees and large shrubs; habitat in Mexico dry deciduous forest and matorral; flowering/fruiting at least October-November in Big Bend National Park, possibly throughout the year in Mexico

Ripley's senna *Senna ripleyana*

gravelly hilltops in arid grasslands and creosote flats in Chihuahuan Desert; elevation ranges 1,200-1,500 m (3,900-4,900 ft); flowering/fruiting July-October

Robust oak *Quercus robusta*

mixed evergreen-deciduous woodlands in moist canyon bottoms at elevations ca. 1,280 m (4,200 ft) in foothills of the Chisos Mountains; flowering in th spring

Shinners' tickle-tongue *Zanthoxylum parvum*

Texas endemic; understory of maple-oak woodlands or evergreen oak shinnery on rocky, often shallow, well-drained, neutral, non-calcareous loams underlain by rhyolite, tuff trachyandesite, or other igneous rock, at elevations between about 1,350-1,750 m (4,400-5,750 ft); flowering late March-early April, before the leaves have fully expanded

Sierra del Carmen oak *Quercus carmenensis*

shrublands and woodlands on talus slopes at 2,200-2,500 m (7,200-8,200 ft) elevation; immature fruit collected in July

Silver cholla *Opuntia imbricata var argentea*

Texas endemic; rocky limestone slopes, rarely in alluvial soils in mesquite thickets, flowering April-July; fruit ripening two-three months after flowering

Slimlobe rock-daisy *Perityle dissecta*

limestone cliff faces in desert canyons; flowering/fruiting spring-fall

BREWSTER COUNTY

PLANTS

Federal Status

State Status

Stairstep two-bristle rock-daisy

Perityle bisetosa var scalaris

Texas endemic; crevices in limestone exposures on bluffs and other rock outcrops; flowering May-October

Stalk-leaf phacelia

Phacelia petiolata

Chihuahuan Desert scrub on gypsum at low elevations; flowering May-August

Straw-spine glory-of-Texas

Thelocactus bicolor var flavidispinus

Texas endemic; rocky hills of the Caballos Novaculite formation; in desert grasslands or shrublands below about 1,500 m (5000 ft); flowering late March-May, also June-September after significant rainfall

Swallow spurge

Chamaesyce golondrina

alluvial or eolian sand along Rio Grande, occasionally on adjacent shale or limestone slopes; flowering June-November

Terlingua brickellbush

Brickellia hinckleyi var terlinguensis

Texas endemic; various situations in Chihuahuan Desert; perhaps at lower elevations than var. hinckleyi; found on slope in the Chisos Mountains and along creek bottom; flowering July-October?

Terlingua Creek cat's-eye

Cryptantha crassipes

LE

E

Texas endemic; on low, seemingly barren, xeric hills of gypseous clay and chalky shales of the Boquillas Formation; flowering late March-early June; fruiting April-July

Texas false saltgrass

Allolepis texana

sandy to silty soils of valley bottoms and river floodplains, not generally on alkaline or saline sites; flowering (May-) July-October depending on rainfall

Texas largeseed bittercress

Cardamine macrocarpa var texana

seasonally moist, loamy soils in pine-oak woodlands at high elevations in the Chisos and Davis mountains; also moderate elevations in oak-juniper woodlands in Kinney and Uvalde counties; flowering in early spring and usually withering by the beginning of summer, sometimes persisting and flowering intermittently through autumn depending on rainfall

Texas milkvine

Matelea texensis

Texas endemic; desert grasslands or woodlands over igneous substrate, at elevations between 1200-1500 m (3900-5000 ft); flowering/fruiting May-October

Texas wolf-berry

Lycium texanum

semi-desert grasslands and thorn shrublands on sandy, gravelly, and/or loamy soils, on very gently sloping terrain as well as in rocky areas of canyons, often over limestone at moderate elevations; flowering March-October

Three-tongue spurge

Chamaesyce chaetocalyx var triligulata

in Texas, in crevices in steep limestone cliffs and on scree and colluvium below; In Coahuila, on basalt and tuff cliffs; flowering/fruiting July-October, perhaps earlier in growing season too.

Trans-Pecos maidenbush

Andrachne arida

BREWSTER COUNTY

PLANTS

Federal Status State Status

crevices in calcareous bedrock exposures on arid mountain slopes, usually with succulents, Texas sites are on Cretaceous limestone; Mexican sites differ; flowering July-October

Two-bristle rock-daisy *Perityle bisetosa var bisetosa*

Texas endemic; crevices in limestone exposures on bluffs and other rock outcrops; flowering late summer-fall

Warnock's coral-root *Hexalectris warnockii*

in leaf litter and humus in oak-juniper woodlands on shaded slopes and intermittent, rocky creekbeds in canyons; in the Trans Pecos in oak-pinyon-juniper woodlands in higher mesic canyons (to 2000 m [6550 ft]), primarily on igneous substrates; in Terrell County under *Quercus fusiformis* mottes on terraces of spring-fed perennial streams, draining an otherwise rather xeric limestone landscape; on the Callahan Divide (Taylor County), the White Rock Escarpment (Dallas County), and the Edwards Plateau in oak-juniper woodlands on limestone slopes; in Gillespie County on igneous substrates of the Llano Uplift; flowering June-September; individual plants do not usually bloom in successive years

Watson's false clappia-bush *Pseudoclappia watsonii*

Texas endemic; Chihuahuan Desert shrublands on dry, rocky, gypseous clay hills and arroyos; flowering May-August

Wendt's malaxis *Malaxis wendtii*

in Texas, oak-juniper-pinyon woodlands in moist canyons and on north-facing slopes in the Chisos Mountains; flowering July-September

White column cactus *Escobaria albicolumnaria*

creosote bush or lechuguilla canyon shrublands primarily on nearly level terrain to rolling hills on thin, gravelly soils or limestone bedrock of the Santa Elena, Glen Rose, Boquillas, and Telephone Canyon formations; at lower elevations 550-1370 m (1800-5000 ft) in the Chihuahuan Desert; flowering early March-May

Wilkinson's whitlow-wort *Paronychia wilkinsonii*

shallow rocky soils in crevices on novaculite hills or outcrops at low to moderate elevations in the Chihuahuan Desert; flowering April-October

Wright's trumpets *Acleisanthes wrightii*

open semi-desert grasslands and shrublands on shallow stony soils over limestone on low hills and flats; flowering spring-fall, probably also in response to rains

Wright's water-willow *Justicia wrightii*

shortgrass grasslands and/or shrublands; dry gravelly clay soils over limestone on flats and low hills at elevations of 900-1500 m (2950-4900 ft); flowering April-August, or perhaps after periods of sufficient rainfall

ENVIRONMENTAL RECORDS DEFINITIONS - STATE (TX)

TXMNGDAREAS Managed Areas

VERSION DATE: NR

Areas identified for conservation, such as State or Federal lands, nature preserves and parks. These areas have been shown to contain evidence of element occurrences found in the Natural Diversity Database.

TXNDD Special Status Species

VERSION DATE: NR

The Texas Natural Diversity Database (TXNDD) was established in 1983 and is the Texas Parks and Wildlife Department's (TPWD) most comprehensive source of information on rare, threatened, and endangered plants, animals, invertebrates, exemplary natural communities, and other significant features. The TXNDD is continually updated, providing current or additional information on statewide status and locations of these unique elements of natural diversity. The TXNDD does not include a representative inventory of rare resources in the state due to the small proportion of public versus private land. Although it is based on the best data available to TPWD regarding rare species, these data cannot provide a definitive statement as to the presence, absence, or condition of special species, natural communities, or other significant features in any area. Nor can these data substitute for on-site evaluation by qualified biologists.



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**Federally and State Listed Threatened and Endangered Species
With Potential to Occur in Brewster County**

| Species Common and Scientific Name | Federal Status | State Status | Preferred Habitat | Habitat Present? | Species Affected? |
|---|----------------|--------------|---|------------------|-------------------|
| BIRDS | | | | | |
| American peregrine falcon <i>Falco peregrinus anatum</i> | DL | E | year-round resident and local breeder in west Texas, nests in cliffs, also migrant across state from northern breeding areas in US and Canada, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands | No | No |
| Arctic peregrine falcon <i>Falco peregrinus tundrius</i> | DL | T | migrant throughout state from subspecies' far northern breeding range, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands. | No | No |
| Baird's Sparrow <i>Ammodramus bairdii</i> | NA | NA | shortgrass prairie with scattered low bushes and matted vegetation; mostly migratory in western half of State, though winters in Mexico and just across Rio Grande into Texas from Brewster through Hudspeth counties | No | No |
| Black-capped Vireo <i>Vireo atricapilla</i> | LE | E | oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces; requires foliage reaching to ground level for nesting cover; return to same territory, or one nearby, year after year; deciduous and broad-leaved shrubs and trees provide insects for feeding; species composition less important than presence of adequate broad-leaved shrubs, foliage to ground level, and required structure; nesting season March-late summer | No | No |
| Common black-hawk <i>Buteogallus anthracinus</i> | NA | T | cottonwood-lined rivers and streams; willow tree groves on the lower Rio Grande floodplain; formerly bred in south Texas | No | No |
| Ferruginous Hawk <i>Buteo regalis</i> | LE | E | open country, primarily prairies, plains, and badlands; nests in tall trees along streams or on steep slopes, cliff ledges, river-cut banks, hillsides, power line towers; year-round resident in northwestern high plains, wintering elsewhere throughout western 2/3 of Texas | No | No |
| Gray hawk <i>Asturina nitida</i> | NA | T | irregularly along U.S.-Mexico border; mature riparian woodlands and nearby semiarid mesquite and scrub grasslands; breeding range formerly extended north to southernmost Rio Grande floodplain of Texas | No | No |
| Interior least tern <i>Sterna Antillarum athalassos</i> | LE | E | subspecies is listed only when inland (more than 50 miles from a coastline); nests along sand and gravel bars within braided streams, rivers; also know to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc); eats small fish and crustaceans, when breeding forages within a few hundred feet of colony | No | No |
| Mexican Hooded Oriole <i>Icterus cucullatus cucullatus</i> | NA | NA | Scrub, mesquite; nests in dense trees, or thickets, usually along water courses | No | No |

| Species Common and Scientific Name | Federal Status | State Status | Preferred Habitat | Habitat Present? | Species Affected? |
|--|----------------|--------------|--|------------------|-------------------|
| Montezuma Quail <i>Cyrtonyx montezumae</i> | NA | NA | open pine-oak or juniper-oak with ground cover of bunch grass on flats and slopes of semi-desert mountains and hills; travels in pairs or small groups; eats succulents, acorns, nuts, and weed seeds, as well as various invertebrates | No | No |
| Mountain Plover <i>Charadrius montanus</i> | NA | NA | breeding: nests on high plains or shortgrass prairie, on ground in shallow depression; nonbreeding: shortgrass plains and bare, dirt (plowed) fields; primarily insectivorous | No | No |
| Northern Aplomado falcon <i>Falco femoralis septentrionalis</i> | LE | E | open country, especially savannah and open woodland, and sometimes in very barren areas; grassy plains and valleys with scattered mesquite, yucca, and cactus; nests in old stick nests of other bird species | No | No |
| Peregrine Falcon <i>Falco peregrinus</i> | DL | T | both subspecies migrate across the state from more northern breeding areas in US and Canada to winter along coast and farther south; subspecies (<i>F. p. anatum</i>) is also a resident breeder in west Texas; the two subspecies' listing statuses differ, <i>F.p. tundrius</i> is no longer listed in Texas; but because the subspecies are not easily distinguishable at a distance, reference is generally made only to the species level; see subspecies for habitat | No | No |
| Prairie Falcon <i>Falco mexicanus</i> | NA | NA | open, mountainous areas, plains and prairie; nests on cliffs | No | No |
| Sennett's hooded oriole <i>Icterus cucullatus sennetti</i> | LE | E | often builds nests in and of Spanish moss; feeds on invertebrates, fruit, and nectar; breeding March-August | No | No |
| Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i> | LE | E | thickets of willow, cottonwood, mesquite, and other species along desert streams | No | No |
| Western burrowing owl <i>Athene cunicularia hypugaea</i> | NA | R | open grasslands, especially prairie, plains, and savanna, sometimes in open areas such as vacant lots near human habitation or airports; nests and roosts in abandoned burrows | No | No |
| Western Yellow-billed Cuckoo <i>Coccyzus americanus occidentalis</i> | C | NL | status applies only to western population beyond the Pecos River Drainage; breeds in riparian habitat and associated drainages; springs, developed wells, and earthen ponds supporting mesic vegetation; deciduous woodlands with cottonwoods and willows; dense understory foliage is important for nest site selection; nests in willow, mesquite, cottonwood, and hackberry; forages in similar riparian woodlands; breeding season mid-May-late Sept | No | No |
| Zone-tailed hawk <i>Buteo albonotatus</i> | NA | T | arid open country, including deciduous or pine-oak woodland, often near watercourses and wooded canyons or tree-lined rivers along middle-slopes of desert mountains; nests in various habitats and sites, ranging from small trees in lower desert, giant cottonwoods in riparian areas, to mature conifers in high mountain regions | No | No |
| FISHES | | | | | |
| Big Bend gambusia <i>Gambusia gaigei</i> | LE | E | presently restricted to one artificial springfed pool in Big Bend National Park close to the Rio Grande; type locality described as a marshy cattail slough fed by springs | No | No |

| Species Common and Scientific Name | Federal Status | State Status | Preferred Habitat | Habitat Present? | Species Affected? |
|--|----------------|--------------|--|------------------|-------------------|
| Blue sucker <i>Cycleptus elongatus</i> | NA | T | larger portions of major rivers in Texas; usually in channels and flowing pools with a moderate current; bottom type usually of exposed bedrock, perhaps in combination with hard clay, sand, and gravel; adults winter in deep pools and move upstream in spring to spawn on riffles | No | No |
| Bluntnose shiner <i>Notropis simus simus</i> | NA | T | extinct; Rio Grande; main river channel, often below obstructions over substrate of sand, gravel, and silt; damming and irrigation practices presumed major factors contributing to decline | No | No |
| Chihuahua catfish <i>Ictalurus sp 1</i> | NA | NA | (extirpated); historically Rio Grande and Pecos River systems and canals; pools and backwaters of medium to large streams with low or moderate gradient in mud, sand, or gravel bottom; probably spawns on silt substrates of quiet coves | No | No |
| Chihuahua shiner <i>Notropis chihuahua</i> | NA | T | Rio Grande basin, Big Bend region; clear, cool water that is often associated with nearby springs; often in pools with slight current or riffles over a gravel or sand bottom where vegetation may be present | No | No |
| Conchos pupfish <i>Cyprinodon eximius</i> | NA | T | Rio Grande and Devils River basins; sloughs, backwaters, and margins of larger streams, channels of creeks, and mouths | No | No |
| Headwater catfish <i>Ictalurus lupus</i> | NA | NA | originally throughout streams of the Edwards Plateau and the Rio Grande basin, currently limited to Rio Grande drainage, including Pecos River basin; springs, and sandy and rocky riffles, runs, and pools of clear creeks and small rivers | No | No |
| Maravillas red shiner <i>Cyprinella lutrensis blairi</i> | NA | NA | (extinct) found in Maravillas Creek, reported extinct in 1989 | No | No |
| Mexican redbhorse <i>Moxostoma austrinum</i> | NA | NA | Rio Grande basin above Amistad Reservoir; restricted to rocky riffles of creeks and small to medium rivers, often near boulders in swift water | No | No |
| Mexican stoneroller <i>Campostoma ornatum</i> | NA | T | in Texas, Big Bend region; clear, fast riffles, chutes, and pools in small to medium-sized creeks with gravel or sand bottoms | No | No |
| Rio Grande shiner <i>Notropis jemezianus</i> | NA | NA | Rio Grande and upper Pecos River basins; large, open, weedless rivers or large creeks with bottom of rubble, gravel and sand, often overlain with silt | No | No |
| Rio Grande silvery minnow <i>Hybognathus amarus</i> | LE | E | extirpated; historically Rio Grande and Pecos River systems and canals; reintroduced in Big Bend area; pools and backwaters of medium to large streams with low or moderate gradient in mud, sand, or gravel bottom; ingests mud and bottom ooze for algae and other organic matter; probably spawns on silt substrates of quiet coves | No | No |
| INSECTS | | | | | |
| A mayfly <i>Neochoroterpes kossi</i> | NA | NA | AZ, NM, west TX small streams; mayflies distinguished by aquatic larval stage; adult stage generally found in shoreline vegetation | No | No |
| A Royal moth <i>Sphingicampa blanchardi</i> | NA | R | woodland - hardwood; Tamaulipan thorn scrub with caterpillar's host plant, Texas Ebony an important element | No | No |

| Species Common and Scientific Name | Federal Status | State Status | Preferred Habitat | Habitat Present? | Species Affected? |
|---|----------------|--------------|---|------------------|-------------------|
| A tiger beetle <i>Cicindela hornii</i> | NA | R | grassland/herbaceous; burrowing in or using soil; dry areas on hillside or mesas where soil is rocky or loamy and covered with grasses, invertivore; diurnal, hibernates/aestivates, active mostly for several days after heavy rains. the life cycle probably takes two years so larvae would always be present in burrows in the soil | No | No |
| Blanchards' sphinx moth <i>Adhemarius blanchardorum</i> | NA | R | unknown, but may be confined to the deciduous forest in Upper Green Gulch to Panther Pass summit of Big Bend National Park; host plant undetermined; May-June adult emergence | No | No |
| Bonita diving beetle <i>Deronectes neomexicana</i> | NA | R | predatory, feeding on other water insects and insect larvae; spend majority of life underwater, surfacing only to create an air bubble held under the wing covers for breathing | No | No |
| Chisos metalmark <i>Apodemia chisosensis</i> | NA | R | agave scrub community; nectarivore/herbivore, larval food Havard's plum (<i>Prunus havardii</i>); diurnal, hibernates/aestivates, adult flights in spring and early August, second brood dependent on summer rains; larvae both aestivate/hibernate in rolled leaf, begin feeding late May and diapause in dead leaves until following spring, few exceptions emerge for a partial late summer flight | No | No |
| Chisos skipperling <i>Piruna haferniki</i> | NA | NA | open oak/pine woodland, thorn scrub below oak zone, nectarivore/herbivore, adults in genus nectar and drink from damp soil; larva of subfamily feed on grasses or sedges, some very specialized, caterpillars of other <i>Piruna</i> eat leaves of broad-leaved grasses, including grama grass <i>Bouteloua</i> ; diurnal, hibernates/aestivates; adults fly from March to possibly October | No | No |
| Freeman's metalmark <i>Calephelis rawsoni freemani</i> | NA | NA | Davis Mountains; moist areas including stream edges, gulches, subtropical woodland, shaded limestone outcrops | No | No |
| Poling's hairstreak <i>Fixsenia polingi</i> | NA | NA | oak woodland with <i>Quercus grisea</i> as substantial component, probably also uses <i>Q. emoryi</i> ; larvae feed on new growth of <i>Q. grisea</i> , adults utilize nectar from a variety of flowers including milkweed and catslaw acacia; adults fly mid May - Jun, again mid Aug - early Sept | No | No |
| Rawson's metalmark <i>Calephelis rawsoni</i> | NA | NA | moist areas in shaded limestone outcrops in central Texas, desert scrub or oak woodland in foothills, or along rivers elsewhere; larval hosts are <i>Eupatorium havanense</i> , <i>E. greggii</i> . | No | No |
| Tawny giant skipper <i>Agathymus neumoegeni chisosensis</i> | NA | NA | Chisos Mountains, grassland/herbaceous, shrub land/chaparral, woodland - hardwood; adult males drink from mud and manure, larvae bore in leaves of <i>Agave parryi</i> and perhaps <i>A. lechugilla</i> , adults fly mainly mid-Sept- mid-Oct, larvae feed in fall, then hibernate, feed again until about July and then aestivate | No | No |
| MAMMALS | | | | | |
| Big free-tailed bat <i>Nyctinomops macrotis</i> | NA | NA | habitat data sparse but records indicate that species prefers to roost in crevices and cracks in high canyon walls, but will use buildings, as well; reproduction data sparse, gives birth to single offspring late June-early July; females gather in nursery colonies; winter habits undetermined, but may hibernate in the Trans-Pecos; opportunistic insectivore | No | No |

| Species Common and Scientific Name | Federal Status | State Status | Preferred Habitat | Habitat Present? | Species Affected? |
|--|----------------|--------------|--|------------------|-------------------|
| Black bear <i>Ursus americanus</i> | T/SA | NL T | bottomland hardwoods and large tracts of inaccessible forested areas; due to field characteristics similar to Louisiana Black Bear (LT, T), treat all east Texas black bears as federal and state listed Threatened | No | No |
| Black-footed ferret <i>Mustela nigripes</i> | LE | NA | extirpated; inhabited prairie dog towns in the general area | No | No |
| Black-tailed prairie dog <i>Cynomys ludovicianus</i> | NA | NA | dry, flat, short grasslands with low, relatively sparse vegetation, including areas overgrazed by cattle; live in large family groups | No | No |
| Cave myotis bat <i>Myotis velifer</i> | NA | NA | colonial and cave-dwelling; also roosts in rock crevices, old buildings, carports, under bridges, and even in abandoned Cliff Swallow (<i>Hirundo pyrrhonota</i>) nests; roosts in clusters of up to thousands of individuals; hibernates in limestone caves of Edwards Plateau and gypsum cave of Panhandle during winter; opportunistic insectivore | No | No |
| Davis Mountains cottontail <i>Sylvilagus floridanus robustus</i> | NA | NA | brushy pastures, brushy edges of cultivated fields, and well-drained streamsides; active mostly at twilight and at night, where they may forage in a variety of habitats, including open pastures, meadows, or even lawns; rest during daytime in thickets or in underground burrows and small culverts; feed on grasses, forbs, twigs and bark; not sociable and seldom seen feeding together | No | No |
| Desert bighorn sheep <i>Ovis canadensis mexicana</i> | NA | NA | rough, rocky mountainous terrain; bluffs and steep slopes with sparse | No | No |
| Fringed bat <i>Myotis thysanodes</i> | NA | NA | habitat variable, ranging from mountainous pine, oak, and pinyon-juniper to desert-scrub, but prefers grasslands at intermediate elevations; highly migratory species that arrives in Trans-Pecos by May to form nursery colonies; single offspring born June-July; roosts colonially in caves, mine tunnels, rock crevices, and old buildings | No | No |
| Ghost-faced bat <i>Mormoops megalophylla</i> | NA | T | colonially roosts in caves, crevices, abandoned mines, and buildings; insectivorous; breeds late winter-early spring with single offspring | No | No |
| Gray wolf <i>Canis lupus</i> | LE | E | extirpated; formerly known throughout the western two-thirds of the state in forests, brush lands, or grasslands | No | No |
| Greater western mastiff bat <i>Eumops perotis californicus</i> | NA | NA | diurnal roosts in rock crevices of vertical cliffs; colony size varies from several individuals to several dozen; males and females may remain together throughout the year; single offspring (occasionally twins) born June -July | No | No |
| Guadalupe southern pocket gopher <i>Thomomys bottae guadalupeensis</i> | NA | NA | known from Guadalupe Mountains; habitat variable, ranging from loose sands and silts to tight clays; dry deserts to mountain meadows; active year round, mostly underground; diet variable, but mostly roots and tubers; breeds continuously, but main season in spring | No | No |

| Species Common and Scientific Name | Federal Status | State Status | Preferred Habitat | Habitat Present? | Species Affected? |
|---|----------------|--------------|---|------------------|-------------------|
| Limpia Creek pocket gopher <i>Thomomys bottae texensis</i> | NA | NA | throughout Davis Mountains; habitat variable, ranging from lower canyons to higher coniferous woodlands; loose sands and silts to tight clays; dry deserts to mountain meadows; active year round, mostly underground; diet variable, but mostly roots and tubers; breeds continuously, but main season in spring | No | No |
| Limpia southern pocket gopher <i>Thomomys bottae limpiae</i> | NA | NA | Limpia Canyon area of Davis Mountains; habitat variable, ranging from loose sands and silts to tight clays; active year round, mostly underground; diet variable, but mostly roots and tubers; breeds continuously, but main season in spring | No | No |
| Long-legged bat <i>Myotis volans</i> | NA | NA | in Texas, Trans-Pecos region; high, open woods and mountainous terrain; nursery colonies (which may contain several hundred individuals) form in summer in buildings, crevices, and hollow trees; apparently do not use caves as day roosts, but may use such sites at night; single offspring born June-July | No | No |
| Mexican long-nosed bat <i>Leptonycteris nivalis</i> | LE | E | in Texas, Big Bend region; colonial, cave-dwelling species that usually inhabits deep caverns; nectivorous, with Agave spp. preferred; breeding season April-June, with single offspring born in Mexico prior to migration to Texas | No | No |
| Ocelot <i>Leopardus pardalis</i> | LE | E | dense chaparral thickets; mesquite-thorn scrub and live oak mottes; avoids open areas; breeds and raises young June-November | No | No |
| Pale Townsend's big-eared bat <i>Corynorhinus townsendii pallescens</i> | NA | NA | roosts in caves, abandoned mine tunnels, and occasionally old buildings; hibernates in groups during winter; in summer months, males and females separate into solitary roosts and maternity colonies, respectively; single offspring born May-June; opportunistic insectivore | No | No |
| Pocketed free-tailed bat <i>Nyctinomops femorosaccus</i> | NA | NA | semiarid desert grasslands; roosts in caves cliff crevices under building roof tiles; feed on insects; females bear one pup per season Jul - Aug | No | No |
| Spotted bat <i>Euderma maculatum</i> | NA | T | in Texas, Big Bend region; preferred habitat not fully understood, but species reported from pine forests at high elevations to open, desert scrub; reproduction data sparse, but single offspring born June-July | No | No |
| Western red bat <i>Lasiurus blossevillii</i> | NA | NA | roosts in tree foliage in riparian areas, also inhabits xeric thorn scrub and pine-oak forests; likely winter migrant to Mexico; multiple pups born mid-May - late Jun | No | No |
| Western small-footed bat <i>Myotis ciliolabrum</i> | NA | NA | mountainous regions of the Trans-Pecos, usually in wooded areas, also found in grassland and desert scrub habitats; roosts beneath slabs of rock, behind loose tree bark, and in buildings; maternity colonies often small and located in abandoned houses, barns, and other similar structures; apparently occurs in Texas only during spring and summer months; insectivorous | No | No |

| Species Common and Scientific Name | Federal Status | State Status | Preferred Habitat | Habitat Present? | Species Affected? |
|--|----------------|--------------|---|------------------|-------------------|
| Western yellow bat <i>Lasiurus xanthinus</i> | NA | NA | forages over water both perennial and intermittent sources, found at low elevations (< 6,000 feet), roosts in vegetation (yucca, hackberry, sycamore, cypress, and especially palm); also hibernates in palm; locally common in residential areas landscaped with palms in Tuscon and Phoenix, Arizona; young born in June; insectivore | No | No |
| White-nosed coati <i>Nasua narica</i> | NA | T | woodlands, riparian corridors and canyons; most individuals in Texas probably transients from Mexico; diurnal and crepuscular; very sociable; forages on ground and in trees; omnivorous; may be susceptible to hunting, trapping, and pet trade | No | No |
| Yellow-nosed cotton rat <i>Sigmodon ochrognathus</i> | NA | NA | higher elevations in the Chisos Mountains, Davis Mountains, and Sierra Vieja; rocky slopes with scattered bunches of grass; underground dens and aboveground nests in various locations, including at base of agaves or roots of junipers; active in daytime; several litters possible during breeding season of March-October | No | No |
| Yuma myotis bat <i>Myotis yumanensis</i> | NA | NA | desert regions; most commonly found in lowland habitats near open water, where forages; roosts in caves, abandoned mine tunnels, and buildings; season of partus is May to early July; usually only one young born to each female | No | No |
| MOLLUSKS | | | | | |
| Chisos Mountains threeband <i>Humboldtiana chisosensis</i> | NA | NA | known from the Chisos Mountains, Big Bend National Park; in xeric rockslides along the lower margin of the evergreen woodland | No | No |
| False spike mussel <i>Quincuncina mitchelli</i> | NA | R | substrates of cobble and mud, with water lilies present; Rio Grande, Brazos, Colorado, and Guadalupe (historic) river basins | No | No |
| False spike mussel <i>Quincuncina mitchelli</i> | | | substrates of cobble and mud, with water lilies present; Rio Grande, Brazos, Colorado, and Guadalupe (historic) river basins | No | No |
| Salina mucket <i>Potamilus metnecktayi</i> | NA | R | lotic waters; submerged soft sediment (clay and silt) along river bank; other habitat requirements are poorly understood; Rio Grande Basin | No | No |
| Stockton Plateau threeband <i>Humboldtiana texana</i> | NA | NA | rocky hill country with short grasses and some dwarf oaks on the hills; elevation about 1200-1500 m (3900-5000 ft) | No | No |
| Texas hornshell <i>Popenaias popeii</i> | C | R | narrow shallow runs over bedrock where small-grained materials collect in crevices, along river banks, and at the base of boulders; not known from impoundments; Rio Grande Basin | No | No |
| REPTILES | | | | | |
| Big Bend slider <i>Trachemys gaigeae</i> | NA | NA | almost exclusively aquatic, sliders (<i>Trachemys</i> spp.) prefer quiet bodies of fresh water with muddy bottoms and abundant aquatic vegetation, which is their main food source; will bask on logs, rocks or banks of water bodies; breeding March-July | No | No |

| Species Common and Scientific Name | Federal Status | State Status | Preferred Habitat | Habitat Present? | Species Affected? |
|--|----------------|--------------|---|------------------|-------------------|
| Chihuahuan Desert lyre snake <i>Trimorphodon vilkinsonii</i> | NA | T | mostly crevice-dwelling in predominantly limestone-surfaced desert northwest of the Rio Grande from Big Bend to the Franklin Mountains, especially in areas with jumbled boulders and rock faults/fissures; secretive; egg-bearing; eats mostly lizards | No | No |
| Chihuahuan mud turtle <i>Kinosternon hirtipes murrayi</i> | NA | T | semi-aquatic, prefers bodies of fresh water with abundant aquatic vegetation; eats invertebrates; breeds March-July | No | No |
| Reticulated gecko <i>Coleonyx reticulatus</i> | NA | T | rocky desert areas of the Big Bend region; terrestrial and nocturnal; reproduction not well known, but captive individuals laid eggs in July | No | No |
| Texas horned lizard <i>Phrynosoma cornutum</i> | NA | T | open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive | No | No |
| Trans-Pecos black-headed snake <i>Tantilla cucullata</i> | NA | T | small size with a uniform body color and a small, dark head; secretive; fossorial; mostly nocturnal; mesquite -creosote and pinyon-juniper-oak; eggs laid June-August; eat insects, spiders, and other invertebrates | No | No |
| Texas tortoise <i>Gopherus berlandieri</i> | NA | T | open brush with a grass understory is preferred; open grass and bare ground are avoided; when inactive occupies shallow depressions at base of bush or cactus, sometimes in underground burrows or under objects; active March-November | No | No |
| PLANTS | | | | | |
| Appressed two-bristle rock-daisy <i>Perityle bisetosa var appressa</i> | | | crevices in limestone exposures on bluffs and other rock outcrops; flowering May-September | No | No |
| Big Bend hop-hornbeam <i>Ostrya chisosensis</i> | NA | NA | mixed woodlands on mesic, rocky, igneous slopes at high elevations in the Chisos Mountains; flowering May-June | No | No |
| Bigpod bonamia <i>Bonamia ovalifolia</i> | NA | NA | sandy and/or gravelly soils on rocky uplands, slopes, or drainages in Chihuahuan Desert shrub lands; on the steep sand covered rocky slopes on the east side of Big Bend National Park; several widely separated populations in different habitats; flowering May-November | No | No |
| Boquillas lizardtail <i>Gaura boquillensis</i> | NA | NA | mostly in sandy soils in desert canyons and arroyos, occasionally in gravelly limestone soils in Chihuahuan Desert scrub at low elevations; flowering March-August | No | No |
| Brush-pea <i>Genistidium dumosum</i> | NA | NA | Chihuahuan Desert scrub on rocky limestone hills at lower elevations; in Coahuila, also found on volcanic tuff and sandstone; flowering June-October | No | No |
| Bunched cory cactus <i>Coryphantha ramillosa ssp ramillosa</i> | LT | T | epiphytic on various trees and shrubs; flowering February-May rocky slopes, ledges, and flats in the Chihuahuan Desert, most frequently on exposures of Santa Elena or Buda limestone or the Boquillas Formation between 400-1070 m (1300-3500 ft) in elevation; flowering August-November, perhaps as early as April in response to rainfall | No | No |

| Species Common and Scientific Name | Federal Status | State Status | Preferred Habitat | Habitat Present? | Species Affected? |
|---|----------------|--------------|--|------------------|-------------------|
| Bushy wild-buckwheat <i>Eriogonum suffruticosum</i> | NA | NA | Texas endemic; sparsely vegetated rocky limestone slopes, low hills, and clay flats; also on gypseous soils; flowering March-April, in full fruit by May | No | No |
| Chaffey's cory cactus <i>Escobaria dasyacantha var chaffeyi</i> | NA | NA | pine-oak-juniper woodlands on rocky igneous and limestone soils at 1425-2225 m (4675-7300 ft).; flowering March-June; fruiting June-September | No | No |
| Chisos agave <i>Agave glomeruliflora</i> | NA | NA | gravelly or rocky soils in oak-juniper woodlands and mesquite-creosote bush-invaded grasslands at elevations of about 600-1800 m (1950-5900 ft); flowering mid-spring to early fall | No | No |
| Chisos coral-root <i>Hexalectris revoluta</i> | NA | NA | in the Chisos and Guadalupe mountains, in humus in oak groves along rocky creekbeds at mid- to high elevations; in the Glass Mountains, it has been found 'among lechuguilla and shinnery oak on the sunny slopes and ridges'; purplish or brownish stem color provides a surprisingly effective camouflage from human observers, aerial stems are not reliably sent up every year; usually flowering May-August | No | No |
| Chisos Mountains hedgehog cactus <i>Echinocereus chisoensis var chisoensis</i> | LT | T | Texas endemic; degraded desert grasslands or open shrub lands on unconsolidated gravelly fan and terrace deposits on desert flats and low hills at moderate elevations of about 600-800 m (1950-2600 ft) in the Chihuahuan Desert, almost always found under the shelter of a nursery plant; flowering March-April, perhaps July, fruit maturing May-June, perhaps as late as August | No | No |
| Chisos oak <i>Quercus graciliformis</i> | NA | NA | Texas endemic; oak woodlands in dry rocky canyons, usually associated with a high water table; in moister portions of canyons of the Chisos Mountains, above elevations of 1650 m (5400 ft); flowering in the spring, fruiting July-early September | No | No |
| Chisos pinweed <i>Lechea mensalis</i> | NA | NA | open oak-pinyon-juniper woodlands over igneous or sandstone rock outcrops at high elevations in the mountains of the Trans Pecos and adjacent New Mexico; in Mexico, gravelly soil over igneous rocks and on alternating limestone and rhyolite substrates; presumably flowering June-August | No | No |
| Cliff bedstraw <i>Galium correllii</i> | NA | NA | dry, steep or vertical limestone cliff faces of various exposures in Chihuahuan Desert along Rio Grande, Pecos River, and their tributaries, at elevations of 350-500 m (1150-1650 ft), resembles cliff swallow nests that are also found on limestone cliffs; flowering April-November, fruiting May-December | No | No |
| Correll's green pitaya <i>Echinocereus viridiflorus var correllii</i> | NA | NA | Texas endemic; among grasses on rock crevices on low hills in desert or semi-desert grassland on novaculite or limestone; flowering March-May | No | No |
| Cox's dalea <i>Dalea bartonii</i> | NA | NA | Texas endemic; semi-desert short-grass grasslands with scattered pinyon pine and juniper in gravelly soils on limestone hills; probably flowering in late spring, fruiting in late summer-early fall, may flower in response to rainfall | No | No |
| Cutler's twistflower <i>Streptanthus cutleri</i> | NA | NA | open shrub lands or grasslands on calcareous gravel of talus slopes, rocky hillsides, and gravelly streambeds, at moderate elevations in the Chihuahuan Desert; flowering mostly February-March, sometimes into May | No | No |

| Species Common and Scientific Name | Federal Status | State Status | Preferred Habitat | Habitat Present? | Species Affected? |
|---|----------------|--------------|---|------------------|-------------------|
| Davis' green pitaya <i>Echinocereus davisii</i> | LE | E | Texas endemic; novaculite outcrops in full sun among sparse Chihuahuan Desert scrub usually hidden in mats of Selaginella; flowering (February-) March-April | No | No |
| Desert night-blooming cereus <i>Peniocereus greggii</i> <i>var greggii</i> | NA | NA | Chihuahuan Desert shrub lands or shrub invaded grasslands in alluvial or gravelly soils at lower elevations, 1200-1500 m (3900-4900 ft), on slopes, benches, arroyos, flats, and washes; flowering synchronized over a few nights in early May to late June when almost all mature plants bloom, flowers last only one day and open just after dark, may flower as early as April | No | No |
| Duncan's cory cactus <i>Escobaria dasyacantha</i> <i>var duncanii</i> | NA | NA | Chihuahuan Desert scrub at low to moderate elevations 650-1825 m (2150-6000 ft) on hills, ledges, and benches in cracks and crevices of limestone outcrops; flowering February-March (-May, or July in New Mexico), fruiting mostly May-June | No | No |
| Durango yellow-cress <i>Rorippa ramosa</i> | NA | NA | moist, fine-textured, alluvial soils on floodplains and in beds of intermittent streams; flowering March-May | No | No |
| Dwarf broomspurge <i>Chamaesyce jejuna</i> | NA | NA | according to specimen collections, found on grama-grass prairie on caliche uplands, also dry caliche slopes, and limestone hills; flowering late March through July | No | No |
| Glass Mountains rock-daisy <i>Perityle vitreomontana</i> | NA | NA | Texas endemic; crevices and solution pockets in Capitan Limestone exposures on cliffs and rock outcrops in the Glass Mountains; flowering June-October | No | No |
| Golden-spine hedgehog cactus <i>Echinocereus chloranthus</i> <i>var neocapillus</i> | NA | NA | Texas endemic; sparsely vegetated desert grasslands over novaculite outcrops; flowering late March-early May | No | No |
| Golden-spine prickly-pear <i>Opuntia aureispina</i> | NA | NA | desert flats and low hills on slabs of fractured Boquillas limestone, Chihuahuan Desert near Rio Grande, 480 -850 m (1576-2800 ft) elevation; flowering March-May (-June) | No | No |
| Green spikemoss <i>Selaginella viridissima</i> | NA | NA | shaded or sheltered igneous, limestone, or sandstone rock ledges, boulders, and cliffs in woodlands and shrub lands; can occur in areas susceptible to flash flooding, as well as, prolonged hot, dry conditions; sporiferous June-August | No | No |
| Guadalupe Mountains fescue <i>Festuca ligulata</i> | C | NA | pine-oak-juniper woodlands on mesic slopes and in creek bottoms above 1800 m (5900 ft); Chisos Mountains substrates are gravelly and sandy loams derived from igneous materials; Guadalupe Mountains substrates are unknown but presumed to be loamy soils over limestone; flowering August-September, occasionally in spring after sufficient rainfall | No | No |
| Havard's stonecrop <i>Sedum havardii</i> | NA | NA | crevices in igneous rock outcrops, sometimes loose igneous talus, in oak-pinyon woodlands and chaparral at mid- to high elevations in the Chisos (rocky west facing slope) and Davis mountains; flowering May-September | No | No |

| Species Common and Scientific Name | Federal Status | State Status | Preferred Habitat | Habitat Present? | Species Affected? |
|--|----------------|--------------|--|------------------|-------------------|
| Heather leaf-flower <i>Phyllanthus ericoides</i> | NA | NA | crevices in limestone on dry canyon walls and other rock outcrops; flowering October, and presumably in other months, given sufficient moisture | No | No |
| Hester's cory cactus <i>Escobaria hesteri</i> | NA | NA | Texas endemic; grasslands on novaculite hills or limestone hills and alluvial fans, also in pine-oak-juniper woodlands on igneous substrates; flowering April-early June (-November), also during growing season possibly in response to significant rainfall; fruiting June-August (-January) | No | No |
| Hinckley's brickellbush <i>Brickellia hinckleyi</i> var <i>hinckleyi</i> | NA | NA | Texas endemic; mixed woodlands or forests on rocky slopes in higher elevation mountain canyons; most specimens are from canyons on the north flank of Mt. Livermore in the Davis Mountains, where substrates are igneous; flowering July-October | No | No |
| Hinckley's oak <i>Quercus hinckleyi</i> | LT | T | creosote bush-mariola or lechuguilla-sotol shrub lands on arid limestone slopes at mid-elevations in Chihuahuan Desert; flowering in spring, produces acorns late August-early September | No | No |
| Jackie's bluet <i>Stenaria mullerae</i> var <i>pooleana</i> | NA | NA | Texas endemic; north- to east-facing vertical limestone cliff faces in mid-elevation canyons in mountains in the Chihuahuan Desert; flowering May, perhaps to September | No | No |
| Kay's grama <i>Bouteloua kayi</i> | NA | NA | Texas endemic; gravelly soils on desert flats and on limestone ledges along bluffs; flowering May-November | No | No |
| Lateleaf oak <i>Quercus tardifolia</i> | NA | NA | mixed evergreen-deciduous woodlands in moist canyon bottoms at elevation ca. 2,150 m (7,050 ft) in the Chisos Mountains; flowering in the spring | No | No |
| Leatherweed croton <i>Croton pottsii</i> var <i>thermophilus</i> | NA | NA | sparingly vegetated desert grasslands on extremely xeric sites at low elevations (500-800 m [1650-2640 ft), on substrates ranging from sand to limestone and basalt; flowering spring-fall | No | No |
| Leoncita false foxglove <i>Agalinis calycina</i> | NA | NA | grasslands on perennially moist heavy, alkaline/saline, calcareous silty clays and loams in and around cienegas (desert springs) and seeps; flowering September-October | No | No |
| Little-leaf brongniartia <i>Brongniartia minutifolia</i> | NA | NA | Chihuahuan Desert shrub lands at lower elevations 600-1400 m (1950-5000 ft), in blackish sand, gravel, volcanic ash and other substrates, often in or along arroyos or shallow drainages; flowering May-August (December in Mexico) | No | No |
| Lloyd's mariposa cactus <i>Sclerocactus mariposensis</i> | LT | T | among low shrubs and rosette-forming perennials in gravelly or rocky soils on arid limestone slopes in the Chihuahuan Desert, mostly on Boquillas Formation; elevation 750-1,050 m (2,450-3,450 ft); flowering February-mid March, fruit maturing 1-2 months later | No | No |

| Species Common and Scientific Name | Federal Status | State Status | Preferred Habitat | Habitat Present? | Species Affected? |
|---|----------------|--------------|---|------------------|-------------------|
| Longstalk heimia <i>Nesaea longipes</i> | NA | NA | moist or subirrigated alkaline or gypsiferous clayey soils along unshaded margins of cienegas and other wetlands; occurs sparingly on an alkaline, somewhat saline silt loam on terraces of spring-fed streams in grassland; also occurs common in moderately alkaline clay along perennial stream and in subirrigated wetlands atop poorly-defined spring system; also occurs in low, wetland area along highway right-of-way; flowering May-September | No | No |
| Many-flowered unicorn-plant <i>Proboscidea spicata</i> | NA | NA | dry sandy alluvial and/or Eolian soils on terraces along Rio Grande or in other disturbed sandy habitats; flowering May-June (-August) | No | No |
| Maravillas milkwort <i>Polygala maravillasensis</i> | NA | NA | crevices of limestone exposed on canyons walls, along the Rio Grande and its tributaries, and in low desert mountains at 450-950 m (1,450-3,100 ft) elevation; appears restricted to the area of the Lower Canyons of the Rio Grande and lower Boquillas Canyon on both sides of the border; flowering May-October | No | No |
| Mary's bluet <i>Stenaria butterwickiae</i> | NA | NA | Texas endemic; shallow pockets or crevices in limestone bedrock on ridge tops; flowering or fruiting at least May-August | No | No |
| Nellie cory cactus <i>Escobaria minima</i> | LE | E | Texas endemic; novaculite outcrops in full sun among Chihuahuan Desert scrub, usually in cracks or chips of novaculite or in mats of Selaginella; flowering March-June, probably most consistently from mid April -mid May; fruiting within one month or less of flowering | No | No |
| Old blue pennyroyal <i>Hedeoma pilosum</i> | NA | NA | Texas endemic; single historic record from open exposed limestone; flowering period unknown | No | No |
| Orcutt's senna <i>Senna orcuttii</i> | NA | NA | gravelly or rocky soil on limestone slopes and in beds of intermittent streams, within various mid- to lower elevation Chihuahuan Desert communities; at least one site is on east- to north-facing slopes; flowering July -August | No | No |
| Perennial caltrop <i>Kallstroemia perennans</i> | NA | NA | Texas endemic; somewhat barren gypseous clays or limestone soils at low elevations in the Chihuahuan Desert; flowering late spring-early fall | No | No |
| Powell's Mormon tea <i>Ephedra torreyana</i> var <i>powelliorum</i> | NA | NA | desert scrub on gravelly to fine grained gypseous soils; 850-1100 m (2789-3609 ft) | No | No |
| Purple gay-mallow <i>Batesimalva violacea</i> | NA | NA | among boulders in seasonally moist igneous rock canyons, often under small trees and large shrubs; habitat in Mexico dry deciduous forest and matorral; flowering/fruiting at least October-November in Big Bend National Park, possibly throughout the year in Mexico | No | No |
| Ripley's senna <i>Senna ripleyana</i> | NA | NA | gravelly hilltops in arid grasslands and creosote flats in Chihuahuan Desert; elevation ranges 1,200-1,500 m (3,900-4,900 ft); flowering/fruiting July-October | No | No |

| Species Common and Scientific Name | Federal Status | State Status | Preferred Habitat | Habitat Present? | Species Affected? |
|---|----------------|--------------|--|------------------|-------------------|
| Robust oak <i>Quercus robusta</i> | NA | NA | mixed evergreen-deciduous woodlands in moist canyon bottoms at elevations ca. 1,280 m (4,200 ft) in foothills of the Chisos Mountains; flowering in th spring | No | No |
| Shinners' tickle-tongue <i>Zanthoxylum parvum</i> | NA | NA | Texas endemic; understory of maple-oak woodlands or evergreen oak shinners on rocky, often shallow, well-drained, neutral, non-calcareous loams underlain by rhyolite, tuff trachyandesite, or other igneous rock, at elevations between about 1,350-1,750 m (4,400-5,750 ft); flowering late March-early April, before the leaves have fully expanded | No | No |
| Sierra del Carmen oak <i>Quercus carmenensis</i> | NA | NA | shrub lands and woodlands on talus slopes at 2,200-2,500 m (7,200-8,200 ft) elevation; immature fruit collected in July | No | No |
| Silver cholla <i>Opuntia imbricata var argentea</i> | NA | NA | Texas endemic; rocky limestone slopes, rarely in alluvial soils in mesquite thickets, flowering April-July; fruit ripening two-three months after flowering | No | No |
| Slimlobe rock-daisy <i>Perityle dissecta</i> | NA | NA | limestone cliff faces in desert canyons; flowering/fruitleting spring-fall | No | No |
| Stairstep two-bristle rock-daisy <i>Perityle bisetosa var scalaris</i> | NA | NA | Texas endemic; crevices in limestone exposures on bluffs and other rock outcrops; flowering May-October | No | No |
| Stalk-leaf phacelia <i>Phacelia petiolata</i> | NA | NA | Chihuahuan Desert scrub on gypsum at low elevations; flowering May-August | No | No |
| Straw-spine glory-of-Texas <i>Thelocactus bicolor var flavidispinus</i> | NA | NA | Texas endemic; rocky hills of the Caballos Novaculite formation; in desert grasslands or shrublands below about 1,500 m (5000 ft); flowering late March-May, also June-September after significant rainfall | No | No |
| Swallow spurge <i>Chamaesyce golondrina</i> | NA | NA | alluvial or eolian sand along Rio Grande, occasionally on adjacent shale or limestone slopes; flowering June -November | No | No |
| Terlingua brickellbush <i>Brickellia hinckleyi var terlinguensis</i> | NA | NA | Texas endemic; various situations in Chihuahuan Desert; perhaps at lower elevations than var. hinckleyi; found on slope in the Chisos Mountains and along creek bottom; flowering July-October | No | No |
| Terlingua Creek cat's-eye <i>Cryptantha crassipes</i> | LE | E | Texas endemic; on low, seemingly barren, xeric hills of gypseous clay and chalky shales of the Boquillas Formation; flowering late March-early June; fruitleting April-July | No | No |
| Texas false saltgrass <i>Allolepis texana</i> | NA | NA | sandy to silty soils of valley bottoms and river floodplains, not generally on alkaline or saline sites; flowering (May-) July-October depending on rainfall | No | No |

| Species Common and Scientific Name | Federal Status | State Status | Preferred Habitat | Habitat Present? | Species Affected? |
|--|----------------|--------------|---|------------------|-------------------|
| Texas largeseed bittercress <i>Cardamine macrocarpa var texana</i> | NA | NA | seasonally moist, loamy soils in pine-oak woodlands at high elevations in the Chisos and Davis mountains; also moderate elevations in oak-juniper woodlands in Kinney and Uvalde counties; flowering in early spring and usually withering by the beginning of summer, sometimes persisting and flowering intermittently through autumn depending on rainfall | No | No |
| Texas milkvine <i>Matelea texensis</i> | NA | NA | Texas endemic; desert grasslands or woodlands over igneous substrate, at elevations between 1200-1500 m (3900-5000 ft); flowering/fruitletting May-October | No | No |
| Texas wolf-berry <i>Lycium texanum</i> | NA | NA | semi-desert grasslands and thorn shrub lands on sandy, gravelly, and/or loamy soils, on very gently sloping terrain as well as in rocky areas of canyons, often over limestone at moderate elevations; flowering March-October | No | No |
| Three-tongue spurge <i>Chamaesyce chaetocalyx var triligulata</i> | NA | NA | in Texas, in crevices in steep limestone cliffs and on scree and colluvium below; In Coahuila, on basalt and tuff cliffs; flowering/fruitletting July-October, perhaps earlier in growing season too. | No | No |
| Trans-Pecos maidenbush <i>Andrachne arida</i> | NA | NA | crevices in calcareous bedrock exposures on arid mountain slopes, usually with succulents, Texas sites are on Cretaceous limestone; Mexican sites differ; flowering July-October | No | No |
| Two-bristle rock-daisy <i>Perityle bisetosa var bisetosa</i> | NA | NA | Texas endemic; crevices in limestone exposures on bluffs and other rock outcrops; flowering late summer-fall | No | No |
| Warnock's coral-root <i>Hexalectris warnockii</i> | NA | NA | in leaf litter and humus in oak-juniper woodlands on shaded slopes and intermittent, rocky creek beds in canyons; in the Trans Pecos in oak-pinyon-juniper woodlands in higher mesic canyons (to 2000 m [6550 ft]), primarily on igneous substrates; in Terrell County under <i>Quercus fusiformis</i> mottes on terraces of spring-fed perennial streams, draining an otherwise rather xeric limestone landscape; on the Callahan Divide (Taylor County), the White Rock Escarpment (Dallas County), and the Edwards Plateau in oak-juniper woodlands on limestone slopes; in Gillespie County on igneous substrates of the Llano Uplift; flowering June-September; individual plants do not usually bloom in successive years | No | No |
| Watson's false clappia-bush <i>Pseudocappia watsonii</i> | NA | NA | Texas endemic; Chihuahuan Desert shrublands on dry, rocky, gypseous clay hills and arroyos; flowering May-August | No | No |
| Wendt's malaxis <i>Malaxis wendtii</i> | NA | NA | in Texas, oak-juniper-pinyon woodlands in moist canyons and on north-facing slopes in the Chisos Mountains; flowering July-September | No | No |

| Species Common and Scientific Name | Federal Status | State Status | Preferred Habitat | Habitat Present? | Species Affected? |
|---|----------------|--------------|--|------------------|-------------------|
| White column cactus <i>Escobaria albicolumnaria</i> | NA | NA | creosote bush or lechuguilla canyon shrub lands primarily on nearly level terrain to rolling hills on thin, gravelly soils or limestone bedrock of the Santa Elena, Glen Rose, Boquillas, and Telephone Canyon formations; at lower elevations 550-1370 m (1800-5000 ft) in the Chihuahuan Desert; flowering early March-May | No | No |
| Wilkinson's whitlow-wort <i>Paronychia wilkinsonii</i> | NA | NA | shallow rocky soils in crevices on novaculite hills or outcrops at low to moderate elevations in the Chihuahuan Desert; flowering April-October | No | No |
| Wright's trumpets <i>Acleisanthes wrightii</i> | NA | NA | open semi-desert grasslands and shrublands on shallow stony soils over limestone on low hills and flats; flowering spring-fall, probably also in response to rains | No | No |
| Wright's water-willow <i>Justicia wrightii</i> | NA | NA | short grass grasslands and/or shrub lands; dry gravelly clay soils over limestone on flats and low hills at elevations of 900-1500 m (2950-4900 ft); flowering April-August, or perhaps after periods of sufficient rainfall | No | No |

E = Endangered

T = Threatened

R = Rare

NA = Not applicable

APPENDIX C-Sec 106 Documentation

October 23, 2009

Texas Historical Commission
105 West 16th Street
Austin, Texas 78701

RECEIVED

OCT 27 2009

History Programs Division

Attn: Linda Henderson

Cultural Resources Review/Section 106 Review
Proposed Telecommunications Tower
Applicant Name: Pecos County Sheriff's Department
Site Name: Glass Mountain Tower Site
Brewster County, Texas
Terracon Project No. A4097076

Terracon

Consulting Engineers & Scientists

Terracon Consultants, Inc.
1211 West Florida Avenue
Midland, Texas 79701
Phone 432-684-9600
Fax 432-684-9608
www.terracon.com

**NO HISTORIC
PROPERTIES AFFECTED
PROJECT MAY PROCEED**

By 
For Mark Wolfe
State Historic Preservation Officer
Date 13 November 2009

Dear Ms. Henderson:

On behalf of the Pecos County Sheriff's Department, Terracon Consultants, Inc. (Terracon) is requesting a review of potential impacts to historic properties that may result from the proposed construction of a 480-foot guyed telecommunications tower at the above referenced location. Federal Communications Commission's (FCC) regulations require that the Pecos County Sheriff's Department consider the effects of the proposed tower on historic properties. Your response is sought in compliance with Section 106 of the National Historic Preservation Act (NHPA). Enclosed is the NT Submission Packet – FCC Form 620 and appropriate attachments.

Terracon is submitting this letter, on behalf of the Pecos County Sheriff's Department, to seek a letter of no effect and to comply with Federal Communications Commission (FCC) requirements as identified in 47CFR Ch. I §1.1307. Your comments are also being requested pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's regulation for compliance with Section 106, codified at 36 CFR Part 800. Your confirmation on this matter would be greatly appreciated. Please feel free to contact our office if you have any questions concerning this letter.

Sincerely,

Terracon

S. James Mills
Project Environmental Scientist

S. Lorraine Norwood
Principal Investigator

Attachments: NT Submission Packet – FCC Form 620 and appropriate attachments
Copies to: Addressee (1 copy)

Mills, James

From: towernotifyinfo@fcc.gov
Sent: Friday, September 04, 2009 2:01 AM
To: Mills, James
Cc: kim.pristello@fcc.gov; diane.dupert@fcc.gov
Subject: NOTICE OF ORGANIZATION(S) WHICH WERE SENT PROPOSED TOWER CONSTRUCTION NOTIFICATION INFORMATION - Email ID #2286897

Dear Sir or Madam:

Thank you for using the Federal Communications Commission's (FCC) Tower Construction Notification System (TCNS). The purpose of this electronic mail message is to inform you that the following authorized persons were sent the information you provided through TCNS, which relates to your proposed antenna structure. The information was forwarded by the FCC to authorized TCNS users by electronic mail and/or regular mail (letter).

Persons who have received the information that you provided include leaders or their designees of federally-recognized American Indian Tribes, including Alaska Native Villages (collectively "Tribes"), Native Hawaiian Organizations (NHOs), and State Historic Preservation Officers (SHPOs). For your convenience in identifying the referenced Tribes and in making further contacts, the City and State of the Seat of Government for each Tribe and NHO, as well as the designated contact person, is included in the listing below. We note that Tribes may have Section 106 cultural interests in ancestral homelands or other locations that are far removed from their current Seat of Government. Pursuant to the Commission's rules as set forth in the Nationwide Programmatic Agreement for Review of Effects on Historic Properties for Certain Undertakings Approved by the Federal Communications Commission (NPA), all Tribes and NHOs listed below must be afforded a reasonable opportunity to respond to this notification, consistent with the procedures set forth below, unless the proposed construction falls within an exclusion designated by the Tribe or NHO. (NPA, Section IV.F.4).

The information you provided was forwarded to the following Tribes and NHOs who have set their geographic preferences on TCNS. If the information you provided relates to a proposed antenna structure in the State of Alaska, the following list also includes Tribes located in the State of Alaska that have not specified their geographic preferences. For these Tribes and NHOs, if the Tribe or NHO does not respond within a reasonable time, you should make a reasonable effort at follow-up contact, unless the Tribe or NHO has agreed to different procedures (NPA, Section IV.F.5). In the event such a Tribe or NHO does not respond to a follow-up inquiry, or if a substantive or procedural disagreement arises between you and a Tribe or NHO, you must seek guidance from the Commission (NPA, Section IV.G). These procedures are further set forth in the FCC's Declaratory Ruling released on October 6, 2005 (FCC 05-176).

1. NAGPRA Coordinator Neil B Cloud - Southern Ute Tribe - Ignacio, CO - electronic mail and regular mail
Exclusions: Under the following 6 conditions, the Southern Ute Indian Tribe does not need to review the proposed tower:

The Southern Ute Indian Tribe does NOT need to review proposed extensions to increase the height of already existing towers.

The Southern Ute Indian Tribe does NOT need to review proposed collocations on already existing towers.

The Southern Ute Indian Tribe does NOT need to review proposed structures that are to be placed on rooftops.

The Southern Ute Indian Tribe does NOT need to review proposed structures that are within a city's limits, if the proposed structure is to be located on a disturbed road that has already been gravelled.

The Southern Ute Indian Tribe does NOT need to review proposed structures that are to be placed on pastures that have already been plowed or cultivated.

The Southern Ute Indian Tribe does NOT need to review proposed structures that are merely extensions in height of an already existing structure.

For all other proposed areas, the SouthernUte Indian Tribe DOES NEED a copy of the Form 620. Please send the Form 620 via regular mail and be sure to INCLUDE THE FAX # of the company in order to receive a reply:

Neil B. Cloud, NAGPRA Coordinator, P.O. Box 737, Mail Stop #73, 116 Capote Drive, Ignacio, Colorado 81137

If the applicant/tower builder receives no response from the Southern Ute Indian Tribe within 30 days AFTER YOU HAVE SENT THE FORM 620, including color photographs and resumes, to the Tribe, then the Southern Ute Indian Tribe has no interest in participating in pre-construction review for the site.

2. Governor Frank Paiz - Ysleta del Sur Pueblo - El Paso, TX - electronic mail

3. NAGPRA Assistant Kelly Glancy - Comanche Nation - Lawton, OK - regular mail
Exclusions: Under the following conditions, the Comanche Tribe does not need to review proposed projects that involve pre-existing above-ground feature additions or modifications: the proposed project is within the city limits, if the proposed structure is to be located on a previously disturbed site that has been previously evaluated.

If the proposed project does not meet the aforementioned conditions, the Comanche Tribe THPO/NAGPRA Office now requires photographs of the proposed site taken from all 4 directions (north, south, east and west). Additionally, we do not require, but request that you provide us with an aerial view of the proposed site whenever possible.

We also now require a written legal description of the proposed site (such as the section, range, township, etc.), and request that you provide us with any existing reports or surveys relating to the proposed site.

Please send these materials to us via regular or express mail, since we require hard copies (not electronic copies). Please send to: Comanche Nation Office of Historic Preservation, c/o Kelly Glancy -THPO/NAGPRA Assistant, P.O. Box 908, Lawton, OK 73502. Thank you!

Sincerely,
Jimmy Arterberry, THPO/NAGPRA Director

4. TCNS Representative & GAP Technician Jason Prince - Wichita and Affiliated Tribes - Anadarko, OK - electronic mail and regular mail

If the applicant/tower builder receives no response from the Wichita and Affiliated Tribes within 30 days after notification through TCNS, the Wichita and Affiliated Tribes has no interest in participating in pre-construction review for the proposed site. The Applicant/tower builder, however, must immediately notify the Wichita and Affiliated Tribes in the event archaeological properties or human remains are discovered during construction, consistent with Section IX of the Nationwide Programmatic Agreement and applicable law.

5. Tribal Administrator Joshua Waffle - Tonkawa Tribe - Tonkawa, OK - electronic mail

6. Tribal Historic Preservation Officer Holly Houghten - Mescalero Apache Tribe -

Mescalero, NM - electronic mail and regular mail

Exclusions: We do not wish to review towers that are being placed upon existing buildings.

The information you provided was also forwarded to the additional Tribes and NHOs listed below. These Tribes and NHOs have NOT set their geographic preferences on TCNS, and therefore they are currently receiving tower notifications for the entire United States. For these Tribes and NHOs, you are required to use reasonable and good faith efforts to determine if the Tribe or NHO may attach religious and cultural significance to historic properties that may be affected by its proposed undertaking. Such efforts may include, but are not limited to, seeking information from the relevant SHPO or THPO, Indian Tribes, state agencies, the U.S. Bureau of Indian Affairs, or, where applicable, any federal agency with land holdings within the state (NPA, Section IV.B). If after such reasonable and good faith efforts, you determine that a Tribe or NHO may attach religious and cultural significance to historic properties in the area and the Tribe or NHO does not respond to TCNS notification within a reasonable time, you should make a reasonable effort to follow up, and must seek guidance from the Commission in the event of continued non-response or in the event of a procedural or substantive disagreement. If you determine that the Tribe or NHO is unlikely to attach religious and cultural significance to historic properties within the area, you do not need to take further action unless the Tribe or NHO indicates an interest in the proposed construction or other evidence of potential interest comes to your attention.

None

The information you provided was also forwarded to the following SHPOs in the State in which you propose to construct and neighboring States. The information was provided to these SHPOs as a courtesy for their information and planning. You need make no effort at this time to follow up with any SHPO that does not respond to this notification. Prior to construction, you must provide the SHPO of the State in which you propose to construct (or the Tribal Historic Preservation Officer, if the project will be located on certain Tribal lands), with a Submission Packet pursuant to Section VII.A of the NPA.

7. SHPO Cathie Matthews - Department of Arkansas Heritage - Little Rock, AR - electronic mail

8. Deputy SHPO Ken Grunewald - Department of Arkansas Heritage - Little Rock, AR - electronic mail

9. SHPO Bob L Blackburn - Oklahoma Historical Society - Oklahoma City, OK - regular mail

10. Historian Linda Henderson - Texas Historical Commission - Austin, TX - electronic mail

"Exclusions" above set forth language provided by the Tribe, NHO, or SHPO. These exclusions may indicate types of tower notifications that the Tribe, NHO, or SHPO does not wish to review. TCNS automatically forwards all notifications to all Tribes, NHOs, and SHPOs that have an expressed interest in the geographic area of a proposal, as well as Tribes and NHOs that have not limited their geographic areas of interest. However, if a proposal falls within a designated exclusion, you need not expect any response and need not pursue any additional process with that Tribe, NHO, or SHPO. Exclusions may also set forth policies or procedures of a particular Tribe, NHO, or SHPO (for example, types of information that a Tribe routinely requests, or a policy that no response within 30 days indicates no interest in participating in pre-construction review).

If you are proposing to construct a facility in the State of Alaska, you should contact Commission staff for guidance regarding your obligations in the event that Tribes do not

respond to this notification within a reasonable time.

Please be advised that the FCC cannot guarantee that the contact(s) listed above opened and reviewed an electronic or regular mail notification. The following information relating to the proposed tower was forwarded to the person(s) listed above:

Notification Received: 08/31/2009
Notification ID: 55438
Tower Owner Individual or Entity Name: Pecos County Sheriff's Office
Consultant Name: James Mills
Street Address: 1211 West Florida
City: Midland
State: TEXAS
Zip Code: 79701
Phone: 432-684-9600
Email: sjmills@terracon.com

Structure Type: GTOWER - Guyed Tower
Latitude: 30 deg 23 min 33.9 sec N
Longitude: 103 deg 8 min 9.6 sec W
Location Description: Glass Mountain (West of Highway 385)
City: S of Fort Stockton
State: TEXAS
County: BREWSTER
Ground Elevation: 1713.0 meters
Support Structure: 146.3 meters above ground level
Overall Structure: 152.4 meters above ground level
Overall Height AMSL: 1865.4 meters above mean sea level

If you have any questions or comments regarding this notice, please contact the FCC using the electronic mail form located on the FCC's website at:

<http://wireless.fcc.gov/outreach/notification/contact-fcc.html>.

You may also call the FCC Support Center at (877) 480-3201 (TTY 717-338-2824). Hours are from 8 a.m. to 7:00 p.m. Eastern Time, Monday through Friday (except Federal holidays). To provide quality service and ensure security, all telephone calls are recorded.

Thank you,
Federal Communications Commission

Mills, James

From: towernotifyinfo@fcc.gov
Sent: Thursday, September 03, 2009 3:29 PM
To: Mills, James
Cc: tcns.fccarchive@fcc.gov; jwaffle@tonkawatribe.com
Subject: Reply to Proposed Tower Structure (Notification ID #55438) - Email ID #2291087

Dear James Mills,

Thank you for using the Federal Communications Commission's (FCC) Tower Construction Notification System (TCNS). The purpose of this email is to inform you that an authorized user of the TCNS has replied to a proposed tower construction notification that you had submitted through the TCNS.

The following message has been sent to you from Tribal Administrator Joshua Waffle of the Tonkawa Tribe in reference to Notification ID #55438:

The following site(s) have been reviewed and to date (Thursday, September 03, 2009) with current resources, the Tonkawa Tribe has no known burial sites of the Tonkawa Indians. If any remains or artifacts are discovered please contact the appropriate Agencies and our Tribal Facilities immediately. If the Tonkawa Tribes databases change in regards to the statement in this letter, a Tribal Representative will contact you.

Respectfully,
Joshua Waffle
Tribal Administrator Tonkawa Tribe
Ph 580 628 2561 124
Fx 580 628 3375
Cl 580 491 1209
jwaffle@tonkawatribe.com

For your convenience, the information you submitted for this notification is detailed below.

Notification Received: 08/31/2009
Notification ID: 55438
Tower Owner Individual or Entity Name: Pecos County Sheriff's Office
Consultant Name: James Mills
Street Address: 1211 West Florida
City: Midland
State: TEXAS
Zip Code: 79701
Phone: 432-684-9600
Email: sjmills@terracon.com

Structure Type: GTOWER - Guyed Tower
Latitude: 30 deg 23 min 33.9 sec N
Longitude: 103 deg 8 min 9.6 sec W
Location Description: Glass Mountain (West of Highway 385)
City: S of Fort Stockton
State: TEXAS
County: BREWSTER
Ground Elevation: 1713.0 meters
Support Structure: 146.3 meters above ground level
Overall Structure: 152.4 meters above ground level
Overall Height AMSL: 1865.4 meters above mean sea level

Mills, James

From: towernotifyinfo@fcc.gov
Sent: Wednesday, September 09, 2009 9:19 AM
To: Mills, James
Cc: tcns.fccarchive@fcc.gov; lgranillo@ydsp-nsn.gov
Subject: Reply to Proposed Tower Structure (Notification ID #55438) - Email ID #2294234

Dear James Mills,

Thank you for using the Federal Communications Commission's (FCC) Tower Construction Notification System (TCNS). The purpose of this email is to inform you that an authorized user of the TCNS has replied to a proposed tower construction notification that you had submitted through the TCNS.

The following message has been sent to you from Governor Frank Paiz of the Ysleta del Sur Pueblo in reference to Notification ID #55438:

We have no interest in this site. However, if the Applicant discovers archaeological remains or resources during construction, the Applicant should immediately stop construction and notify the FCC and the Tribe, pursuant to 47 C.F.R Sec. 1.1312 of the Commission's rules.

For your convenience, the information you submitted for this notification is detailed below.

Notification Received: 08/31/2009
Notification ID: 55438
Tower Owner Individual or Entity Name: Pecos County Sheriff's Office
Consultant Name: James Mills
Street Address: 1211 West Florida
City: Midland
State: TEXAS
Zip Code: 79701
Phone: 432-684-9600
Email: sjmills@terracon.com

Structure Type: GTOWER - Guyed Tower
Latitude: 30 deg 23 min 33.9 sec N
Longitude: 103 deg 8 min 9.6 sec W
Location Description: Glass Mountain (West of Highway 385)
City: S of Fort Stockton
State: TEXAS
County: BREWSTER
Ground Elevation: 1713.0 meters
Support Structure: 146.3 meters above ground level
Overall Structure: 152.4 meters above ground level
Overall Height AMSL: 1865.4 meters above mean sea level

Mills, James

From: towernotifyinfo@fcc.gov
Sent: Tuesday, September 15, 2009 3:56 PM
To: Mills, James
Cc: tcns.fccarchive@fcc.gov
Subject: Reply to Proposed Tower Structure (Notification ID: 55438) - Email ID #2296557

Dear James Mills,

Thank you for using the Federal Communications Commission's (FCC) Tower Construction Notification System (TCNS). The purpose of this email is to inform you that an authorized user of the TCNS has replied to a proposed tower construction notification that you had submitted through the TCNS.

The following message has been sent to you from Tribal Historic Preservation Officer Holly Houghten of the Mescalero Apache Tribe in reference to Notification ID #55438:

We have no interest in this site. However, if the Applicant discovers archaeological remains or resources during construction, the Applicant should immediately stop construction and notify the FCC and the Tribe, pursuant to 47 C.F.R Sec. 1.1312 of the Commission's rules.

For your convenience, the information you submitted for this notification is detailed below.

Notification Received: 08/31/2009
Notification ID: 55438
Tower Owner Individual or Entity Name: Pecos County Sheriff's Office
Consultant Name: James Mills
Street Address: 1211 West Florida
City: Midland
State: TEXAS
Zip Code: 79701
Phone: 432-684-9600
Email: sjmills@terracon.com

Structure Type: GTOWER - Guyed Tower
Latitude: 30 deg 23 min 33.9 sec N
Longitude: 103 deg 8 min 9.6 sec W
Location Description: Glass Mountain (West of Highway 385)
City: S of Fort Stockton
State: TEXAS
County: BREWSTER
Ground Elevation: 1713.0 meters
Support Structure: 146.3 meters above ground level
Overall Structure: 152.4 meters above ground level
Overall Height AMSL: 1865.4 meters above mean sea level

SHARP! 513 E Harriet. 2
Lazy-Boys, Antique vanity,
tables, kitchenware,
electronics, and more.

9/19-20/2009 Garage
Sale Saturday & Sunday
starting @ 8am 605 N
7th St., microwave,
kitchen items, large of-
fice desk and office sup-
plies, books, older cast
iron bathtub and sink,
window A/C unit, station-
ary bike, clothes, and
much more.

Carport Sale: 508 N 17th
St. Friday and Saturday
beginning at 9am. Call
837-3979 for details or
directions.

Garage Sale at Twin
Peaks Self Storage
Gas Bar-B-Que with
tank, Mattress Set,
Evaporative Cooler, Nice
Wooden Desk, Baby
Stroller, Toys, Much
More. 2609 W Highway
90 Sat. September 19th
9am-11am

Gargae Sale: Sept. 19th
5pm-7pm and Sept. 19th
9am-12pm 1003 S Harriet
son: Very nice clothes
Baby boy 0-12 mos.
girls 8-12, misses small
men's XL. Winter leather
coats. Halloween outfits
electronics. Clean-air al-
lergy unit for the home.
Electric brest pump.
Baby monitor. Ducks Un-
limited pictures. Infant
items. Bikes. Too much
to list.

Attn: County Judge's Of-
fice at 201 West Avenue
E, Alpine, TX 79831-
1630. The same firm will
not be awarded con-
tracts to provide both
services. We reserve the
right to negotiate with all
firms submitting propo-
sals or qualifications per
the Texas Professional
Services Procurement
Act and UGCMS, and to
reject any or all submis-
sions. Additional submis-
sion requirements for
each service are avail-
able by calling (432)837-
2412. Affirmative
Action/EOE

This is to serve as notice
that the Pecos County
Sheriff's Office is in the
process of fulfilling com-
pliance requirements for
a 480-foot guyed tele-
communications tower
to be located approx-
imately 30 miles north-
east of the intersection
of Highway 385 and
Highway 90, Brewster
County, Texas (Latitude
30.39275°N, Longitude
103.13601°W). Com-
ments are sought on the
effect of the proposed
tower on historic proper-
ties within the viewshed
of the proposed tower
per the Nationwide Pro-
grammatic Agreement of
March 7, 2005, under
the National Historic
Preservation Act of
1966. For comments,
please write to: Mr.
Joshua Ureta, P.O. Box
1647, Fort Stockton,
Texas 79735.

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APPENDIX D- FCC NEPA Land Use Compliance Checklist

NEPA Land Use Checklist

| | | | | | |
|--|---|---|--|----------------------------|---|
| Site Type (choose one): <input checked="" type="checkbox"/> Raw land <input type="checkbox"/> Tower collocation* <input type="checkbox"/> Other collocation* | Site ID: A4097076 | Site Name & Address: Proposed Glass Mountain Tower 27 Miles Northeast of Marathon, Brewster County, Texas | Coordinates (NAD 83): Lat: 30.39275° N Long: 103.13601° W | | |
| NEPA Category | Expert Federal / State Jurisdictional Agencies | <i>Check appropriate box(es) below</i> | | | |
| | | No Adverse Impact | Potential Adverse Impact | Exempt from Review* | Collocation Agreement or NPA Applies** |
| 1. Designated Wilderness Areas | National Park Service, US Forest Service, Bureau of Land Management (BLM) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 2. Designated Wildlife Preserves | National Park Service, US Forest Service, BLM | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 3. Threatened or Endangered Species & Critical Habitats | US Fish & Wildlife Service - Field Office (USF&WS) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 4. Historic Places | State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (THPO) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> |
| 5. Indian Sites of Religious and Cultural Significance | American Indian Tribes, Bureau of Indian Affairs, THPO | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Floodplain | Federal Emergency Management Agency (FEMA) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 7. Wetlands, Deforestation & Surface Waterways | US Army Corps of Engineers (ACOE) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 8. High Intensity White Lights in Residential Neighborhoods | N/A | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

The undersigned has reviewed and approved the completion of this NEPA Checklist for the above-mentioned site.

Prepared by: Terracon, 1211 West Florida Avenue, Midland, Texas 79701.

Signature:  Title: Project Environmental Scientist

Printed Name: S. James Mills Date: January 8, 2010

for S. James Mills