

US EPA ARCHIVE DOCUMENT

**BIOLOGICAL ASSESSMENT
FOR
TARGA MIDSTREAM SERVICES LLC**



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**FOR THE
LONGHORN GAS PLANT
ON
PRIVATE SURFACE
LOCATED IN WISE COUNTY, TEXAS
W. Cooke Survey, A-163**

**PREPARED FOR
TARGA MIDSTREAM SERVICES LLC
BY
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EXECUTIVE SUMMARY

Targa Midstream Services LLC (Targa) is proposing to construct the Longhorn Gas Plant (Longhorn Plant), a natural gas processing plant, on approximately 58 acres near Decatur in Wise County, Texas (Project Area). The Longhorn Plant will be designed to process up to 200 million standard cubic feet per day (MMscfd) of rich natural gas. Targa is seeking a permit under the Environmental Protection Agency's (EPA) Greenhouse Gas (GHG) Prevention of Significant Deterioration (PSD) Program to construct the Longhorn Plant.

Pursuant to Section 7 of the Endangered Species Act (ESA), EPA will review the project's potential effects to species listed threatened and endangered under the federal Endangered Species Act (ESA) as part of the PSD permitting process. Targa requested the services of Raven Environmental Services Inc. (Raven) to prepare this Biological Assessment (BA). Raven is an environmental management and consulting firm located in Huntsville, TX.

The objective of this BA is to determine the potential effects of EPA's issuance of this permit to animal and plant species that are protected under the ESA and listed by the US Fish and Wildlife Service (FWS) in Wise County, Texas. This BA will provide the necessary information to describe how construction and operation of the proposed Longhorn Plant will fully comply with requirements set forth in section 7(a)(2) of ESA and 50 C.F.R. Part 402 (Interagency Cooperation – Endangered Species Act of 1973, as amended).

Raven conducted a literature review to locate published research concerning potential effects on wildlife generally the species considered for evaluation in this BA specifically. Resources utilized include the World Wide Web, public libraries, the Company reference library, and the personal environmental library of the author. Information and literature reviewed regarding the life histories and habitat requirements of the species for consideration include state and federal agency reports, management documents, peer-reviewed scientific literature, and online data provided by NatureServe, the U.S. Fish and Wildlife Service (FWS) and the Texas Parks and Wildlife Department (TPW). Raven also discussed this project with scientists and resource managers familiar with the area and/or species for consideration including: Mr. Omar R. Bocanegra (Biologist, FWS, Arlington, Texas); Mr. Bob Gottfried, (Administrator, Texas Natural Diversity Database, TPW, Austin, Texas); and Mr. Alfredo Sanchez (Biologist, U.S. Forest Service, LBJ and Caddo National Grasslands, Decatur, Texas). This BA is also based on the on-site field survey conducted by Raven, and the direct observations made of the action area and surrounding area. This BA was prepared in accordance with guidelines provided in 50 C.F.R. Part 402.12 (Consultation Procedures, Biological Assessments).

Modeling demonstrates that all concentrations of pollutants are at or below EPA significant impact levels (SILs) at the boundary of the Action Area. Importantly, Longhorn will have no wastewater discharge.

As discussed in more detail in this assessment, based on a literature and data review, discussions with experts, the field survey, and the analysis of effects in this BA, no habitat exists within the Action Area or the surrounding area for any species listed (or proposed for listing) as threatened or endangered under the ESA that occurs in Wise County. Accordingly, there will be no effect on any species listed as threatened or endangered (or proposed for such listing) that occurs in Wise County, Texas as a result of EPA's issuance of the PSD permit for the Longhorn Plant.

1.0 PROJECT DESCRIPTION

This proposed project to construct the Longhorn Plant is generally located in the northeastern portion of Wise County, Texas and is approximately 5.7 miles northeast of Decatur, Texas, and approximately 1.15 miles northwest of FM Highway 51. The project area is located in the east-central portion of the Pecan Creek, USGS 7.5' Quadrangle (Quad). Specifically, the coordinate for the center of the Longhorn Plant surface location will be 33° 18' 42.356", 97° 31' 36.192" (NAD 27). For the Action Area location, please see the attached *Exhibit A - Vicinity Map* in the Appendix.

The Longhorn Plant will be designed to process up to 200 MMscfd of rich natural gas. The Longhorn Plant will consist of inlet separation facilities, an amine treating unit, a glycol dehydration unit, a cryogenic processing skid and supporting equipment. The main processes at the Longhorn Plant will include:

- Inlet separation facilities
- Removal of carbon dioxide (CO₂) from natural gas through amine treating
- Removal of water from natural gas through glycol dehydration and in molecular sieve dehydrator beds
- Separation of natural gas liquids from natural gas through a cryogenic process
- Pipeline transport of high-pressure condensate liquids out of the facility by way of existing pipelines
- Truck loading of low-pressure condensate and produced water liquids out of the facility

Operation of the above equipment will result in emissions of GHGs in the amount of 176,416 tons per year (tpy) of carbon dioxide equivalent (CO₂e). Because these project related emissions are greater than the PSD thresholds of 100,000 tpy CO₂e and 250 tpy GHG mass, PSD is triggered for GHGs.

Targa has also opted to install electric engines in order to remain a minor source for criteria pollutants and hazardous air pollutants. Further, Targa is installing a regenerative thermal oxidizer (RTO) to control process vents from the amine gas treater and gas dehydration units. The RTO has a destruction rate efficiency (DRE) of 99%. Targa has also designed a closed drain system with a flash tank that routes all flash vapors to plant fuel via pressure feed or a vapor recovery unit. Flash, working and breathing vapors from the low pressure condensate tanks are also controlled by a vapor recovery unit and recycled to the plant fuel system. Targa will also install a 40 CFR Part 60.18 compliant flare that is air assisted and designed for smokeless operation. All pressure safety valves (PSVs) containing heavier than air hydrocarbons, refrigeration system PSVs and compressor blowdowns and residue compressor blowdown vapors are routed to the flare.

Operation of the facility will result in no discharge of wastewater or contact stormwater.

Stormwater will not come into contact with any hydrocarbon streams and less than 25 percent of the Project Area (approximately 14 acres) will be constructed with an impervious surface.

Constructing the pad and access road for the Longhorn Gas Plant will require grading and/or filling a total of approximately 58 acres located within an existing pasture and utilizing approximately 1.0 miles of an existing unimproved road for access, which connects with FM

Highway 51. Once construction is completed, the disturbed surface (pad and road) will be stabilized with rock aggregate to a sufficient depth to ensure all-weather operability and to minimize erosion.

Pad and access road construction will require approximately six weeks. Layout, construction and testing of equipment and facilities for the plant will require approximately six to eight months. All construction estimates are dependent on rainfall and other environmental conditions, as well as equipment and contractor availability. It is anticipated that the Longhorn Plant will be in operation for a period of 20 or more years and that the primary product will be natural gas, natural gas liquids, and low pressure condensate. Storage tanks will be located on the pad to capture low pressure condensate, produced water, and waste water. There will also be storage tanks for lube oil, amine, glycol, antifreeze, refrigerant propane, heat medium oil, and methanol. The low pressure condensate will be removed from the site via tanker truck. The natural gas liquids and natural gas will be removed via pipelines. Access and vehicular traffic routes associated with construction and any future production activities and maintenance of this plant will be from FM Highway 51. For a map of the Longhorn Plant and the access road please see the attached *Exhibits B, C, and D* in the Appendix.

2.0 METHODOLOGY

2.1 Action Area Determination

The “Action Area” for a BA as defined by 50 C.F.R. Part 402.02 means all areas to be affected directly or indirectly by the Federal action (EPA permit issuance) and not merely the immediate area involved in the action. Guidance received from Mr. Omar Bocanegra (FWS) regarding the action area for federally listed species indicated a 0.5-mile radius area surrounding the plant would be sufficient to ensure adequate analysis of the potential for disturbance or harassment to listed species that could occupy habitat adjacent to the plant.

Due to a lack of any wastewater discharge or other factors that could further extend the Action Area, EPA directed Targa to determine the Action Area based on the potential dispersion of criteria pollutants resulting from project emissions. To perform this analysis, Targa engaged Trinity Consultants (Jessica Coleman, Trinity Consultants, Dallas, TX) as a subcontractor. Trinity utilized EPA’s AERMOD model (version 11103) to estimate the maximum ground level concentration values for criteria pollutants. This analysis resulted in a maximum significant impact area of less than a 0.50 mile radius from the center of the plant location. The Trinity Consultants “*Longhorn Gas Plant AERMOD Modeling Results*” memorandum is included as Exhibit E in the Appendix. As a conservative measure, Targa is using the greater of the two possible action areas, or the 0.50 mile radius (502 acres).

More specifically, an air dispersion modeling analysis was performed to determine the area surrounding the Longhorn Gas Plant where emissions of criteria pollutants may have a significant impact, as determined by each pollutant’s National Ambient Air Quality Standards (NAAQS) modeling significance impact level (SIL). The modeled criteria pollutants included particulate matter with an aerodynamic diameter of 10 microns or less (PM10), particulate matter with an aerodynamic diameter of 2.5 microns or less (PM2.5), carbon monoxide (CO), nitrogen dioxide (NO2), and sulfur dioxide (SO2). The NAAQS air quality dispersion modeling analysis was conducted in accordance with current Texas Commission on Environmental Quality (TCEQ) and EPA modeling procedures.

The purpose of the State NAAQS analysis is to demonstrate that emissions of criteria pollutants from a new source will not cause or contribute to an exceedance of the State NAAQS for any criteria pollutant. Per TCEQ guidance, a preliminary impact determination is performed using a screening analysis approach to determine whether the proposed source could have a significant impact on existing air quality.

Criteria pollutants were modeled using the U.S. EPA's AERMOD model to obtain the GLC_{max} for comparison with the applicable NAAQS. The modeled concentration from each pollutant was compared to the applicable SIL. If the modeled concentration does not result in a significant impact (i.e., the modeled concentration is less than the SIL), then the demonstration is complete. If the modeled concentration exceeds the relevant SIL, then further analysis is required to demonstrate compliance with the full NAAQS.

The criteria pollutants and averaging periods modeled in the NAAQS analysis are shown in Table 1. The distance from the center of the facility where no SIL exceedances are expected, and where no significant impact is expected, is noted in miles in the table. Pollutants that do not have a distance listed did not result in a significant impact (i.e., resulted in impacts less than the SIL) beyond the property line of the proposed Longhorn Plant.

Table 1. Constituents evaluated in NAAQS analysis and distances from facility where no exceedances are expected.

Pollutant	Averaging Period	MSL ($\mu\text{g}/\text{m}^3$)	Distance from Center of Facility where no MSL Exceedance is Expected (miles)
NO ₂	Annual	1.0	0.22
	1-Hour	7.5	0.48
CO	8-Hour	500	-
	1-Hour	2,000	-
PM ₁₀	24-Hour	5.0	-
PM _{2.5}	Annual	0.3	-
	24-Hour	1.2	-
SO ₂	3-Hour	25.0	-
	1-Hour	7.8	-

As detailed in the State Health Effects Review and NAAQS Analysis above, the maximum significant impact area of the proposed emission sources extends to less than 0.48 miles from the center of the facility. However, as a conservative measure and based on discussions with FWS staff (discussed above), Targa is using a larger 0.50 mile radius as the Action Area.

2.2 Noise Analysis

The possibility of direct and indirect effects from noise disturbance might occur during the initial construction phase of the project, followed by the continuous operation of the facility. It is important to provide some point of reference when discussing sound. The decibel (dB) is a logarithmic unit that cannot be added and subtracted like ordinary numbers. An increase of 3dB is a doubling of the "strength" of the sound (e.g. an increase of 10dB means the sound is 10 times as loud). As a reference, normal human conversation at a range of three (3) feet is in the 60-65 decibel (dB) range, and 85 dBA is the level at which hearing protection is required during 12-hour shifts.

Noise created by and during the construction and installation phase will be temporary, lasting only an estimated six to eight weeks, beginning with the initial site preparation / construction phase followed by equipment installation. These activities will include the use of all or some of the following equipment: bulldozer, dump truck, grader, scraper, loader, backhoe, mobile crane, concrete mixer, and concrete pump. The average noise level range for each type of equipment at a distance of 50 feet for industrial construction is between 91 (truck) and 79 (loader) while the average dBA at 50 feet for all 9 pieces of equipment listed is 84.22 dBA (USEPA, 1971, Noise From Construction Equipment...).

After construction and installation, the Longhorn facility will operate continuously. During operation, the facility will emit noise at a relative ambient or steady level. Targa has elected to install electric compressors, which emit no GHGs and are substantially quieter than gas fired engines, normally by 10-20 dBA.

Based on the use of electric compressors, the relative distance of the boundary of the Action Area from the area of construction and operation, and the rate at which sound waves dissipate over distance, noise levels associated with operation of the Project will be far below 85 dBA by the time they reach the Action Area boundary, to the extent they have not completely dissipated by the time they reach that point.

As a result, because there is no habitat within the Action Area for any species listed as threatened or endangered under the ESA that occur in Wise County, Texas, noise levels associated with construction and operation of the Project will have no effect on any such species.

2.3 Wastewater and Stormwater Analysis

As discussed above, there will be no wastewater stream associated with the Longhorn Plant because no boilers or cooling towers that normally produce blowdown streams will be used at the facility. Moreover, storm water will not come into contact with any hydrocarbon streams and less than 14 acres (less than 25% of the total facility footprint) of the facility will be constructed with an impervious surface. The facility will have some paved surfaces such as roads, walkways, and parking lots as well as required containment areas, but overall the facility will still be covered in soil, sand, and gravel to minimize surface runoff and erosion.

The Longhorn Plant will remove water from natural gas through a glycol dehydration unit and by utilizing molecular sieve dehydrator beds. This produced water will be captured and stored onsite in storage tanks. There will also be onsite storage tanks for lube oil, amine, glycol, antifreeze, refrigerant propane, heat medium oil, and methanol. The tanks will be located within containment dikes engineered and designed to confine all liquids onsite in the event of an accidental leak or rupture. All liquids will be periodically removed from the Longhorn Plant via tanker truck and will be transported and disposed of in accordance with all laws, codes and regulations. Targa will comply with all the requirements of the facility's Spill Prevention Control and Countermeasures (SPCC) plan for design of storage tanks and containment areas.

2.4 USFWS Species Review

Mr. Omar Bocanegra (FWS Wildlife Biologist, Arlington, Texas Ecological Services Field Office), who is the lead biologist for black-capped vireo (BCV) scientific permits, was contacted by Raven via email on January 27, 2012 and asked whether the FWS required or recommended

that any additional species be considered for effects in this BA, that is, over and above the three listed species for Wise County: whooping crane (endangered), black-capped vireo (endangered) and bald eagle (delisted and monitored). Mr. Bocanegra responded that the evaluation of effects for this project should be limited to the whooping crane and black-capped vireo only. He further stated that including the bald eagle for analysis was not required under the ESA.

Although FWS directed Targa to limit its review to these two species, TPW describes three additional species as “federally listed” and potentially occurring in Wise County, Texas: the gray wolf, the red wolf, and the interior least term (TPW Wildlife Diversity Program website: http://www.tpwd.state.tx.us/gis/ris/es/ES_Reports.aspx?county=Wise; accessed November 27, 2012). Although these three species are not listed by FWS as occurring in Wise County and FWS has authority over the status of these species for purposes of a BA under the ESA, they are included in this BA as a conservative measure because they are described by TPW as “federally listed.”

2.5 TPW Species Review

Raven accessed two TPW resources for historic occurrence records for proposed, endangered, or threatened species (as defined by ESA, Section 4). The first source is the TPW online webpage for “Rare, Threatened, and Endangered Species of Texas by County”, which was accessed and reviewed by Raven. The second source is the TPW Texas Natural Diversity Database (TXNDD) (accessed December 9, 2011), which is a GIS integrated Oracle database that stores spatial and tabular information for: threatened and endangered species; rare species of concern; rare natural vegetation communities; and other rare natural resources.

Raven reviewed the online TPW PETS list for Wise County, and also requested and received TXNDD GIS shapefiles and historic (element) occurrence record documents for the USGS quadrangle (the Pecan Creek Quad) where the project occurs and also the adjacent, contiguous 8 USGS Quads – an area that encompasses 9 total Quads and approximately 560 square miles. The GIS shapefiles were projected in ArcView and the element occurrence records were reviewed. It was determined that, according to TXNDD, the nearest known record for a sensitive (non-regulatory) plant community is more than 3 miles southeast of the project area and the nearest known record for a federally listed species is more than 20 miles north of the project.

2.6 Field Survey

The field survey for this BA was conducted on January 18 and 19, 2012 by Mr. Ross Carrie (Raven). Targa has a surface use agreement, and legal access from the surface owner, only within the area defined as the project area, which totals 58 acres. The 58-acre project area was surveyed in detail by walking parallel transects spaced 50 feet apart (on average) and also by walking the entire perimeter, which was clearly staked and flagged at the time of the survey. When walking the project area perimeter, direct observations regarding habitat type, and general observations regarding habitat quality, could also be made to an average distance of about 250 feet beyond the project area perimeter, which represents an additional 110 acres surveyed, for a total of approximately 168 acres surveyed (58 acres direct observation plus 110 acres indirect observation). The remaining 580 acres within the 0.50 mile radius (502 acre) action area was remotely sensed for habitat type and quality by examining 2008-2009 Texas Orthoimagery Program (TOP), color infrared, 0.5 meter (cell size) aerial images projected in ESRI® ArcMap™ 10.0, a geographic information software computer program. By using direct observation, indirect observation and remote sensing techniques, the entire action area was assessed for habitat type and quality to the greatest degree that is legally possible. Local public

roads, including FM Highway 51 to the south and FM Highway 730 to the north and connected County Roads, were also driven to generally observe and assess the vegetation communities and habitat conditions at the landscape level.

3.0 SPECIES CONSIDERED

Species considered for this BA are those federally listed as endangered or threatened, as determined by the FWS and listed for Wise County, Texas on the Region 2, FWS website (accessed January 10, 2012). At the request of Raven, Mr. Omar Bocanegra, FWS Wildlife Biologist, reviewed this list and confirmed it is accurate for Wise County and adequate for addressing potential impacts to listed species in the action area. In addition, as noted above, three additional species were considered as a conservative measure based on their status as “federally listed” according to TPW.

Whether suitable habitat is present, and the potential for occurrence for each species considered, is based on direct observation during the field survey and also from the most current survey information and location/occurrence status obtained from sources familiar with the project and Action Area and/or other resources including literature listed in the reference section, and information provided by web sources such as NatureServe, FWS, and TPW / TXNDD including element occurrence records and GIS shapefiles for known species occurrences. The attached *Exhibit A – Vicinity Map* in the Appendix shows the TPW known occurrence locations, none of which lie within the Action Area.

The FWS has determined that these species are threatened or endangered and potentially occur in Wise County, Texas. Species in this category are protected under the Endangered Species Act. According to FWS, there are only two federally listed species for Wise County and both require analysis and evaluation of effects for this project. They are:

- Black-capped Vireo (*Vireo atricapilla*) - a federally endangered species.
- Whooping Crane (*Grus americana*) - a federally endangered species.

In addition, as noted above, although Targa has received specific direction from FWS to include only the black-capped vireo and the whooping crane in its analysis of effects for the project, as a conservative measure based on their description in the TPW database as “federally listed”, this BA also evaluates the potential effects for the project on the following species:

- Gray wolf (*Canis lupus*) – a federally endangered species.
- Red wolf (*Canis rufus*) – a federally endangered species.
- Interior least tern (*Sterna antillarum*) – a federally endangered species.
- Sprague’s Pipit (*Anthus spragueii*) – a federal candidate Species

4.0 EVALUATION OF EFFECTS

4.1 Field Survey and Results

The Action Area and surrounding area was assessed by direct observation of habitat conditions, indirect observation, remote sensing by examining high resolution aerial imagery, and driving local public roads to assess and validate vegetation communities and habitat conditions that could be observed from these roads.

The Action Area is located within the Western Cross Timbers vegetation region. This region forms a narrow band of woodlands interspersed with grasslands that extends from the Red River southward to terminate in Central Texas. The area is typically comprised of savannas and brushlands with stands of small trees intermixed on the landscape.

This region has a subhumid climate. The natural vegetation would ordinarily be grass and the scrubby tree growth that results from thin soils and poorly developed topsoils. The climax understory vegetation includes the predominant grasses: little bluestem (*Schizachyrium scoparium*), big bluestem (*Andropogon gerardii*), Indian grass (*Sorghastrum nutans*), switchgrass (*Panicum virgatum*), Canada wild-rye (*Elymus Canadensis*), side-oats grama (*Bouteloua curtipendula*), hairy grama (*Bouteloua hirsute*), tall dropseed (*Sporobolus compositus*), and Texas wintergrass (*Nassella leucotricha*). Brush species have invaded the Western Cross Timbers, and weedy annual and perennial grasses have increased in number, including hairy tridens (*Tridens pilosus*), Texas grama (*Bouteloua rigidisetata*), red grama (*Bouteloua trifida*), tumble windmill grass (*Chloris verticillata*), tumble grass (*Schedonnardus paniculatus*), red lovegrass (*Eragrostis secundiflora*), and some perennial weeds.

Eastern redcedar (*Juniperus virginiana*), once confined to drainages and rocky outcrops where fire effects were limited, has drastically increased its range. The once open savanna like woodlands are dense woods dominated in some instances by eastern redcedar. Dense thickets of plum (*Prunus* spp.), sumac (*Rhus* spp.) and honey mesquite (*Prosopis glandulosa*) are replacing savannas. Woodlands that historically were dispersed in a park-like setting now form continuous stands of post oak (*Quercus stellata*), blackjack oak (*Quercus marilandica*), Texan sugarberry (*Celtis laevigata* Willd. var. *texana* Sarg.), eastern red cedar, and persimmon (*Diospyros virginiana*). Denser natural woodlands along creeks and drainages consist of Texan sugarberry and eastern redcedar with eastern cottonwood (*Populus deltoides*) and black willow (*Salix nigra*) along the larger drainage features.

The Action Area generally reflects this pattern of vegetation composition and coverage.

For a map of the Action Area overlaid on a USGS Topographic quadrangle, please see the attached *Exhibit B – USGS Quadrangle Map*. For a map of the Action Area overlaid on a color infrared aerial image, please see the attached *Exhibit C – Color Infrared Map*. For photographs of the Action Area, please see *Exhibit E – Action Area Photographs* - please note that the photograph locations and azimuth may be seen on Exhibits B and C.

4.2 Species Analysis

4.2.1 Black-capped Vireo – Federally Endangered

4.2.1.1 Species and Habitat Description

The black-capped vireo is a 4.5 inch insect-eating songbird. Mature males are olive green above and white below with faint greenish-yellow flanks. The crown and back of the head is black with a partial white eye-ring. This iris is brownish-red and the bill black. The plumage on the back of the female is duller than the males. Females have a medium to dark gray head with a blackish ring around the white surrounding the eye.

Vireos require broadleaf shrub vegetation reaching to ground level for nesting cover. They typically nest in shrublands and open woodlands with a distinctive patchy structure. Typical habitat is characterized by shrub vegetation extending from the ground to about

6 feet or more and covering 30-60% or greater of the total area. In the eastern portion of the vireo's range, the shrub layer is often combined with an open, sparse to moderate tree canopy. Patches of open grass or bare rock separate the clumps of shrubs and trees.

More specifically, suitable nesting habitat for the BCV requires the presence of adequate broad-leaved shrubs, foliage to the ground level, and a mixture of open grassland and woody cover (Grzybowski et al. 1994). Ashe juniper is often present, but preferred habitat usually has a low density and cover of juniper (Grzybowski et al. 1994). Deciduous and broad-leaved trees are also important for providing habitat for insects on which the vireo feeds (Grzybowski et al. 1994).

Historical records show that the Black-capped Vireo (BCV) once occurred and nested from central Kansas, Oklahoma, Texas and into Northern Mexico. The BCV has been extirpated or is declining in more than 50% of its historic range (Ehrlich et al. 1992). This decline has been attributed to nest parasitism by Brown-headed cowbirds and the loss of nesting habitat (Ehrlich et al. 1992). Habitat loss has been attributed to urbanization, fire suppression, over browsing by livestock and range management that removes broad-leaved, low woody vegetation (Ehrlich et al. 1992).

4.2.1.2 Occurrence and Sighting Data

Recent inventories in or near the Action Area for this species are available from the following sources:

1. Ground surveys by personnel on the U.S. Forest Service Lyndon B. Johnson National Grasslands (Grasslands)
2. Breeding Bird Survey routes located in or near the action area
3. Texas Natural Diversity Database (TNDD) maintained by TPW
4. Ground surveys by Raven Environmental Services, Inc. on January 18-19, 2012.

In 1999, the US Forest Service District Biologist on the Grasslands along with representatives of the Tallgrass Prairie Chapter of the Audubon Society conducted ground surveys for the BCV in Units 3, 9, 29, 31, 41, 45, 49 and 71. A second survey was conducted by this same group in 2003 in Units 45, 49 and 71. No BCVs were detected during either year.

The North American Breeding Bird Survey is a long-term, large-scale, international avian monitoring program initiated in 1966 to track the status and trends of North American bird populations. Each year during the height of the avian breeding season, volunteers skilled in avian identification collect bird population data along 24.5-mile roadside survey routes. Over 4100 survey routes are located across the continental U.S. and Canada. Two routes are located on or near the action area: the Decatur route (Number 83360) located on the LBJ Grasslands and the Rhome route (Number 83074) located less than a mile south of Decatur. Annual surveys have been completed on the Decatur route between 1995 and 2001 and on the Rhome route between 1967 and 2005. BCVs were not detected during any year on either route.

One element occurrence was recorded in the TXNDD for a BCV breeding pair approximately 20 miles northwest of the Action Area in Montague County (Data acquired from TNDD on December 17, 2011). The pair was observed in 2001 in a small patch of

isolated habitat on private land located approximately five miles northwest of Forestburg, Texas in Montague County. This pair has not been observed since 2001 and represents the only observation of BCV in Wise and surrounding counties since their extirpation. The lack of recruitment of new breeding individuals into this area suggests that habitat quality is generally deteriorating most likely due to the lack of routine fire on the landscape that is necessary to maintain suitable habitat for this species.

A survey of the Action Area was conducted by Raven on January 18-19, 2012 to determine whether suitable nesting habitat was present in the Action Area. No BCV were detected during this survey. Drainages with woody cover were observed, but the woody cover is dense and homogenous, with few interspersed grassy openings, and does not provide adequate BCV nesting habitat. Photo number five (Exhibit E) provides a representative example of the dense late successional stage brush and woodland vegetation on the western boundary of the project area that lacks the more open woodland habitat features preferred by BCV. In general, the lack of frequent fire on the landscape combined with long-term intensive grazing have eliminated nesting habitat in the Action Area and the surrounding area and severely limit opportunities for suitable BCV habitat to become re-established in the future. Finally, given that nesting populations are known to occur in excess of 50 miles only to the west and south of the Action Area and BCV wintering habitat is confined to Central America, it is extremely unlikely that BCVs would migrate anywhere near the Action Area, let alone Wise County.

4.2.1.3 Determination of Effects

As noted above, BCV ground surveys, breeding bird surveys and Raven's survey conducted in the Action Area and the surrounding area have never recorded a BCV sighting. In addition, the nearest BCV sighting to the Action Area occurred 11 years ago, approximately 20 miles from the boundary of the Action Area, in a different County, and in habitat more suitable for this species. This is not surprising considering the fact that the Action Area and surrounding area include no habitat suitable to the BCV. Specifically, the Action Area and surrounding area is comprised of savannas and brushlands with stands of small trees intermixed on the landscape, characterized by a lack of broad-leaved shrubs and foliage to ground level; whereas the BCV requires adequate broad-leaved shrubs, foliage to the ground level, and a mixture of open grassland and woody cover.

Accordingly, due to a lack of sightings and a lack of suitable habitat within the Action Area and surrounding area, as well as a migratory route that takes the BCV away, rather than in the direction of the Action Area, construction and operation of the Longhorn Plant will have no effect on BCVs.

4.2.2 Whooping Crane – Federally Endangered

4.2.2.1 Species and Habitat Description

The whooping crane occurs only in North America and is North America's tallest bird, with males approaching 5 feet. The species can have a wingspan of 7.5 feet and can weigh 17 pounds. The body length averages about 52 inches. The whooping crane's adult plumage is snowy white except for black primaries, black or grayish alula (specialized feathers attached to the upper leading end of the wing), sparse black bristly feathers on the carmine crown and malar region (side of the head from the bill to the

angle of the jaw), and a dark gray-black wedge-shaped patch on the nape. Immature whooping cranes are cinnamon brown. Whooping cranes are omnivorous and feed on insects, frogs, rodents and vegetation in shallow, seasonally and semi-permanently flooded wetlands.

Whooping cranes are a long-lived species; current estimates suggest a maximum longevity in the wild of at least 30 years. There is only one self-sustaining wild population – the Aransas Wood Buffalo National Park population, which nests in the area of Wood Buffalo National Park in Canada, and winters in coastal marshes surrounding Aransas National Wildlife Refuge in Texas. Whooping cranes migrate throughout the central portion of the state during October-November and again in April.

Spring migration from the Texas Gulf Coast begins from March 25 to April 15 with the last birds leaving by April 15. The whooping crane's migration to its nesting grounds in Canada can be rapid, requiring as few as 10 to 11 days to cover 2400 miles with very few stops. Its southward migration in the fall can require up to 50 days: a two-day flight from breeding range to staging area in Saskatchewan where birds remain one to five weeks on grainfields and wetlands, and then a rapid one-week trip across U.S. prairies states ending at wintering range on Aransas National Wildlife Refuge. It is a diurnal migrant, rarely continuing after dark; makes regular stops to feed and rest using a variety of habitats for foraging and roosting away from human activity. Flight during migration is generally characterized as infrequent flapping and rapid, high-altitude flight (600 – 1800 meters) with limited wing movement. During migration, cranes use the more energy-efficient passage that results from repetitive sequences of spiraling upward in thermal updrafts followed by long, slow, declining glide. Habitat used for roosting and feeding during migration includes croplands and palustrine (freshwater inland, shallow) wetlands. Migratory stopovers are well-defined for cranes, existing in the southern Saskatchewan, Nebraska, Kansas and Oklahoma. The closest migratory stopover to the Action Area is the Salt Plains National Wildlife Refuge in Alfalfa County, Oklahoma.

4.2.2.2 Occurrence and Sighting Data

No Whooping Cranes have been detected during past or current inventories of Wise and surrounding counties. Fall and winter inventories of the Whooping Crane, when it would likely be more abundant in the action area, are limited. The Christmas Bird Count (CBC) coordinated and sponsored by the National Audubon Society provides some occurrence and trend information for bird species on their wintering range. Data collected during CBCs in Texas indicated Whooping Cranes are concentrated in winter coastal marsh habitat in and around the Aransas National Wildlife Refuge on the Texas Gulf Coast. No Whooping Cranes have been detected during CBCs in Wise County.

No element occurrence records for Whooping Cranes are documented within the TXNDD sample area (~15 mile radius from Action Area), which includes nearly all of Wise County and also large portions of Cooke, Montague, and Denton Counties (Data acquired from TXNDD on December 17, 2011).

A ground survey of the Action Area and surrounding area was conducted by personnel from Raven Environmental Services, Inc. on January 18-19, 2012 to determine whether suitable stopover habitat was present in or near the 58-acre project area and larger action area, and to determine whether Whooping Cranes could be present in these areas. No Whooping Cranes were detected during this survey. Open field habitat is

widespread and the dominant vegetation cover in the Action Area. Species composition within these open fields range from mixes of native vegetation to managed improved pastures with varying levels of grazing intensity. In general, these agricultural field habitats do not provide adequate feeding and stopover habitat for migrant Whooping Cranes because they do not provide the flooded wetland mosaic preferred by Whooping Cranes. Construction of new transmission lines providing power to the Longhorn Plant will be entirely within the Action Area. These new power lines will not represent a strike hazard for migrating Whooping Cranes given wetland habitat that might attract migrating individuals is not available in the Action Area and not within the 100-foot protective zone USFWS recommends using during the design of new power line infrastructure.

4.2.2.3 Determination of Effects

As noted above, there has never been a sighting of a whooping crane documented in the TXNDD database and no individuals were observed during the survey conducted by Raven. In addition, the Action Area and surrounding area, which is comprised of savannas and brushlands with stands of small trees intermixed on the landscape, includes no suitable stopover habitat for migrating whooping cranes, which prefer wetlands or croplands for feeding and roosting.

Although it is possible that whooping cranes could pass over the Action Area during migration, their migration altitude, which ranges from 600 to 1800 meters, would take them well above the highest point of the proposed Longhorn Plant. Although the birds descend to lower altitudes when approaching and after leaving stopover habitat, as discussed directly above, no such habitat is located anywhere near the Action Area that would attract cranes to feed or roost during migration. The Whooping Crane Recovery Plan (USFWS 2007) emphasizes that to minimize collisions between cranes and stationary structures it is important to avoid construction of new facilities in wetlands or other areas frequently used by cranes; given the lack of wetland habitat in the Action Area that might attract migrating individuals, the Longhorn Plant meets the protective criteria recommended by USFWS.

Accordingly, construction and operation of the Longhorn Plant will have no effect on the whooping crane.

4.2.3 Gray Wolf – Federally Endangered

4.2.3.1 Species and Habitat Description

The gray wolf is not listed by FWS for Wise County. Although FWS has authority over the status of this species, it is included in this discussion as a conservative measure because it is described on the TPW website as federally listed.

The gray wolf is a close relative of domestic dogs. Its thick fur ranges in color from creamy white to reddish brown to shades of gray and black. Gray wolves are the largest species of wolf and range between 50 and 90 pounds and 4 to 5 feet long. Adult males are larger than adult females.

Gray wolves breed once a year. They mate in late winter and pups are born in the spring. Dens are usually ground burrows excavated in slopes where rocks will function to support the roof of the tunnel and burrow. They are carnivores which prey on large

herbivores such as deer and Pronghorn antelope, but will also eat rabbits, ground squirrels, and mice. Gray wolves are found in forests, brushlands or grasslands where suitable cover and denning sites are available. The decline of gray wolves has been attributed mostly to predator control by humans.

4.2.3.2 Occurrence and Sighting Data

Historically the gray wolf was found throughout much of Texas. Today, none are found in the state and they are considered extirpated from Texas. Not surprisingly, no element occurrence records for gray wolves are documented within the TXNDD database search requested by Raven (~15 mile radius from Action Area), which includes nearly all of Wise County and also large portions of Cooke, Montague, and Denton Counties.

4.2.3.3 Determination of Effects

Based on a lack of sightings and the species extirpation from Texas, construction and operation of the Longhorn Plant will have no effect on gray wolves.

4.2.4 Red Wolf – Federally Endangered

4.2.4.1 Species and Habitat Description

The red wolf is not listed by FWS for Wise County. Although FWS has authority over the status of this species, it is included in this discussion as a conservative measure because it is described on the TPW website as federally listed. A recent petition to delist the red wolf on the basis that it is a hybrid was rejected by USFWS

The red wolf is smaller but morphologically similar to its larger cousin the gray wolf. As its name implies, the red wolf has a coat that is brown to reddish in color. The red wolf weighs 45-80 pounds, stands approximately 26 inches tall at the shoulder and measures 4 feet in length (USFWS, 2007). Red wolves feed mostly on mammals including rabbits, deer, small pigs and opossums.

4.2.4.2 Occurrence and Sighting Data

Formerly the red wolf was believed to have occurred from central Texas eastward to the coasts of Florida and Georgia and north to North Carolina, and along the Mississippi River Valley north to southern Illinois, and occasionally in Mexico. The last remnant population along Texas/Louisiana coast was rendered functionally extinct due to hybridization with the coyote. A single experimental reintroduced population now occurs in an area of in northeastern North Carolina and two propagation populations are currently maintained by the USFWS. Other red wolves exist in many captive-breeding facilities. Historically the red wolf was found throughout much of Texas. The last known wild red wolf was killed in 1980 and the species is currently considered extirpated from the state. Not surprisingly, no element occurrence records for red wolves are documented within the TXNDD database search requested by Raven (~15 mile radius from Action Area), which includes nearly all of Wise County and also large portions of Cooke, Montague, and Denton Counties.

4.2.4.3 Determination of Effects

Based on a lack of sightings and the species extirpation from Texas and its range overall throughout the southeastern United States, construction and operation of the Longhorn Plant will have no effect on red wolves.

4.2.5 Interior Least Tern – Federally Endangered

4.2.5.1 Species and Habitat Description

The interior least tern is not listed by FWS for Wise County. Although FWS has authority over the status of this species, it is included in this discussion as a conservative measure because it is described on the TPW website as federally listed.

The least tern (*sternula antillarum*) is a species of small, migratory bird, approximately 8 to 10 inches in length, with narrow pointed wings and gray, white, and black coloring. Three subspecies of least tern have been recognized in the United States based on their distinct breeding ranges: (1) the interior least tern (*sternula antillarum athalassos*), which breeds along the Missouri, Mississippi, Colorado, Arkansas, Red, and Rio Grande rivers, including parts of Texas; (2) the eastern or coastal least tern (*sternula antillarum antillarum*), which breeds along the coast of the Gulf of Mexico in South Texas and along the Atlantic coast from Maine to Florida; and (3) the California least tern (*sternula antillarum browni*), which breeds along the Pacific coast from central to southern California. The distinction between the three subspecies is based on breeding areas; they are morphologically and behaviorally similar.

The least tern resides on the shores of lakes, rivers, and estuaries. Its breeding and nesting habitats are typically located on bare or sparsely-vegetated marine or estuarine shores, sandbar islands in large rivers, or exposed salt flats. The birds prefer open, sandy spaces close to shallow waters with populations of small fish. They have also been known to nest on manmade structures with similar characteristics, such as inland beaches, wastewater treatment plants, and gravel mines. Its diet is aquatic, consisting primarily of small fish but may also include shrimp and occasionally other invertebrates. The least tern typically spends three to five months on the breeding grounds, foraging within a few hundred meters of the colony but occasionally up to 8 miles away.

The least tern population in the interior of the U.S. migrates annually, spending the winter on the coast of Central America and the northern and Atlantic coast of South America. Its migratory route typically follows major rivers and marine coasts where possible, feeding along the way in shallow water and resting on estuarine and riparian shores. The interior population appears to track major river basins to the Mississippi River before continuing south to the Gulf of Mexico. The stabilization of major river systems for navigation, hydropower and flood control has impaired the dynamic processes necessary to maintain the sandbar ecology that interior tern populations rely on for breeding habitat resulting in population declines and their ultimate federal listing as endangered in 1985.

4.2.5.2 Occurrence and Sighting Data

FWS does not consider Wise County to be among the locations where the least tern is known or believed to occur, though the neighboring counties of Grayson and Collingsworth, which border the Red River, are identified as potential habitat. TPW does not designate Wise County as part of the tern's breeding or wintering range.

The Audubon Society database (<http://ebird.org/content/ebird/> queried December 3, 2012) reports no sightings of least terns or interior least terns in Wise County. More than 8,000 of the approximately 8,750 observations of least terns in the state occurred along the coast of the Gulf of Mexico. Counties bordering Wise County reported minimal historical observations, if any—83 observations in Dallas County and 51 observations in Tarrant County. Grayson County, located to the northeast of Wise County, along the Red River, was the nearest location with a significant number of observations. Audubon Society observations that specifically identified interior least terns were much more rare—only 21 observations in the state, all near the Gulf of Mexico region.

4.2.5.3 Determination of Effects

The Action Area does not contain, and is not located near, the types of sandy low-lying marine or estuarine shorelines or riverine habitats preferred as nesting and foraging habitat by the least tern. The nearest body of water to the Action Area that would provide suitable habitat for interior populations of the least tern is the Red River, located approximately 34 miles away. Specifically these areas include Prairie Dog Town Fork in Childress County adjacent to Oklahoma and along the Trinity River downstream from Dallas. Given this distance between the Action Area and the Red River and the lack of suitable wetland habitat it is unlikely habitat in the Action Area would serve as a stopover destination for migrating least terns. Moreover, because of the tendency of interior populations to follow major river basins during migration and the large distance between the Action Area and any such river basin, terns will not fly over or near the Longhorn Plant. In addition, the lack of recent sightings in the vicinity of the Project provide further support for the lack of Project impact on the least tern population.

For all of these reasons, construction and operation of the Longhorn Plant will have no effect on the interior least tern.

4.2.6 Sprague's Pipit – Federal Candidate

4.2.6.1 Explanation of *Candidate* Status

Sprague's pipit (*Anthus spragueii*) is **not listed** under authority of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.). Since 2010, Sprague's pipit has been considered by FWS as a **candidate** for listing as endangered or threatened; however, they have yet to **propose** this species for listing. Inclusion of candidate species in a BA is considered optional by the FWS. Targa, as a conservative measure, elected to include candidate species and assess the potential impacts of the Longhorn Plant. While this analysis provides a determination of potential impacts for the pipit, it is for completeness purposes only and has no legal significance because candidate species have no legal protection as defined under the ESA and therefore the impacts determination included in this analysis has no legal force or effect.

4.6.2.2 Species and Habitat Description

Sprague's pipit spends its winters generally in northern Mexico and across all of Texas, except for the Texas Panhandle region, from mid-September through early April. Their spring and summer breeding range is located in the northern native grass prairies of the Great Plains, including portions of southern-central Canada and nearly all of North

Dakota and Montana. Year-round habitat is open grasslands and fields that are well drained and essentially devoid of shrubbery and trees. This bird prefers native grass species over non-natives, and prairies and fields that have an intermediate density and height in clump-grass structure. Their diet consists primarily of arthropods, but some seeds are consumed during the winter. This pipit is small, ranging in length from 10 to 15 centimeters and weighing between 22 to 26 grams and is considered a ground-inhabiting passerine. Both sexes and all ages are similar in appearance; being generally an overall buff color, accentuated with darker browns. When flushed, they typically rise in an undulating flight, often circling while giving diagnostic, single-syllable, squeaky, “squick” calls. They are generally solitary on wintering and migratory grounds. During breeding, this species nests on the ground, usually at the base of a dense tussock of grass, and lays between 4 and 5 eggs. Since being first described in 1843, Sprague’s pipit has suffered a dramatic decline throughout its range, due primarily to the disappearance of native prairie due to conversion to agriculture and cultivation, overgrazing by domestic livestock, and invasion and introduction of non-native grasses (Robbins, 1999).

This project’s action area is located within the wintering range of Sprague’s pipit and provides enough marginal, but adequate habitat to attract and hold this species.

4.2.6.3 Occurrence and Sighting Data

There are two volunteer bird census counts that occur annually across the U.S.: the Audubon Society Christmas Bird Count (CBC) and the U.S. Geological Survey Patuxent Wildlife Research Center’s Breeding Bird Survey (BBS). In the 2010 FWS 12-month petition finding for this species, the CBC data from the winters of 1966 through 2006 (40 years), were analyzed for Sprague’s pipit occurrence in Texas with the result of an estimated annual decline of 2.54 percent (75 FR 56028 56050). Survey-wide BBS data indicate a significant decline averaging 3.9 percent per year for 1967-2007 (40 years), which amounts to an 80 percent decline for this time period. BBS abundance declined from an average of 2.5 to 4.0 birds per route in 1967-1977 to 0.9 to 1.2 birds per route in 2000-2007 (Natureserve).

The nearest CBC bird count circle to this proposed action is referred to as the Wise County, Texas (TXWC) circle. The centerpoint for the 15 mile diameter CBC circle is located approximately 4.8 miles west-northwest of downtown Decatur at geographic coordinates: latitude 33.25 and longitude 97.6667. This treatment area is 1.6 miles beyond the perimeter (east) of TXWC CBC circle. This Audubon count has been active for ten years, from 2001 to 2011. During that ten-year period, no Sprague’s pipits have been recorded and only three American pipits (*Anthus rubescens*) have been observed: one each during 3 different years.

No element occurrence records for Sprague’s pipit are documented within the TPWD TNDD sample area (~15 mile radius from the Longhorn project area), which includes nearly all of Wise County and also large portions of Cooke, Montague, and Denton Counties (Data acquired from TPWD TXNDD on December 17, 2011).

A ground survey of the project area and accessible portions of the action area was conducted by personnel from Raven Environmental Services, Inc. on January 18-19, 2012 to determine whether individual Sprague’s pipits were present, and/or whether suitable wintering habitat was present, in or near the 58-acre project area and larger

action area. Two (2) Sprague's pipits were directly observed within the proposed construction area during this field survey. Both individuals appeared to be foraging on the ground in an over-grazed portion of the construction area just prior to taking to flight as Mr. Carrie approached them. Both individuals produced the diagnostic call as they took flight and had the characteristic undulating flight pattern during ascent. Patches of adequate, although not high quality, habitat was also observed throughout the Action Area.

4.2.6.4 Determination of Impacts

This proposed action will cause the permanent loss of Sprague's pipit wintering habitat where construction of the facility will remove 58 acres of pasture that also includes some scattered native grass species. Given that the candidate status of Sprague's pipit is based more on the continued loss of limited nesting habitat in the northern reaches of the Great Plains and less on the loss of more abundant winter habitat distributed throughout its southern range, the construction and operation of the Longhorn Plant in the small patch of 58 acres of exclusively winter habitat would not likely contribute to the decline of this species. As such, the construction and operation of the Longhorn Plant may impact Sprague's pipit individuals but is not likely to result in federal listing or loss of viability.

5.0 DETERMINATION OF EFFECTS SUMMARY

The following summary describes the determinations of effect for the species evaluated in this BA. For the following federally listed endangered species, this proposed action will have **no effect**.

- Black-capped Vireo (*Vireo atricapilla*) - a federally endangered species.
- Whooping Crane (*Grus americana*) - a federally endangered species.
- Gray wolf (*Canis lupus*) – a federally endangered species.
- Red wolf (*Canis rufus*) – a federally endangered species.
- Interior least tern (*Sterna antillarum*) – a federally endangered species.

For the following federal candidate species, this proposed action **may impact individuals but is not likely to result in federal listing or loss of viability**.

- Sprague's pipit (*Anthus spragueii*) – a federal candidate species.

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SIGNATURE PAGE

Prepared By:

Date:



February 19, 2013

Mr. Ross Carrie
Project Manager
Raven Environmental Services, Inc.

Approved By:

Date:

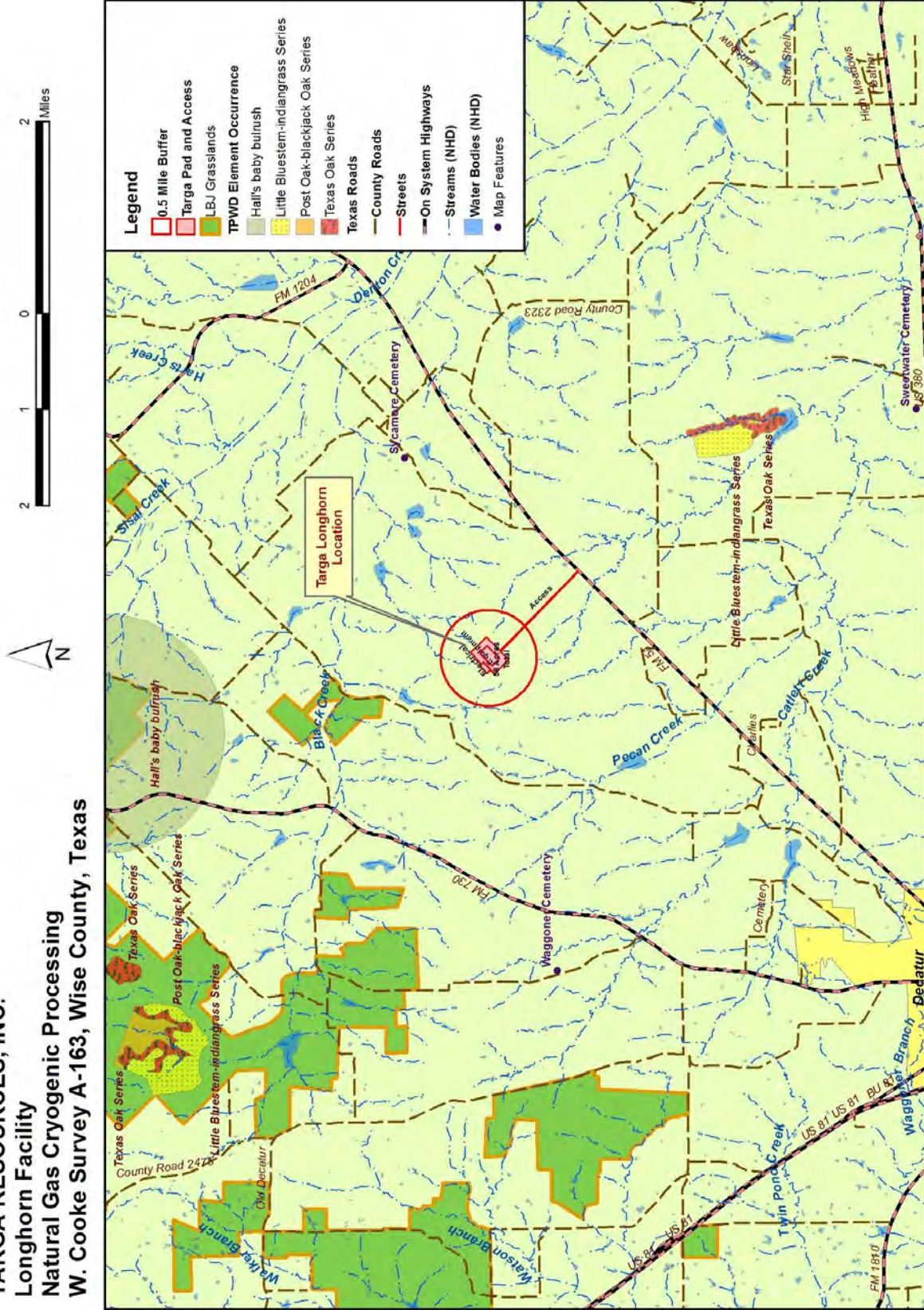
Dr. Alfred Dumauval, Ph.D.
EPA, Region 6, Arlington, TX

APPENDICES

- EXHIBIT A – Vicinity Map**
- EXHIBIT B – USGS Quadrangle Map**
- EXHIBIT C – Color Infrared Map**
- EXHIBIT D – Qualifications of the Author**
- EXHIBIT E – Action Area Photographs**

TARGA RESOURCES, INC.
Longhorn Facility
Natural Gas Cryogenic Processing
W. Cooke Survey A-163, Wise County, Texas

Exhibit A – Vicinity Map



VICINITY MAP WITH LBJ GRASSLANDS AND TPWD LOCATIONS

TARGA RESOURCES, INC.
Longhorn Facility
Natural Gas Cryogenic Processing
W. Cooke Survey A-163, Wise County, Texas

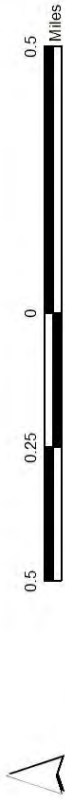
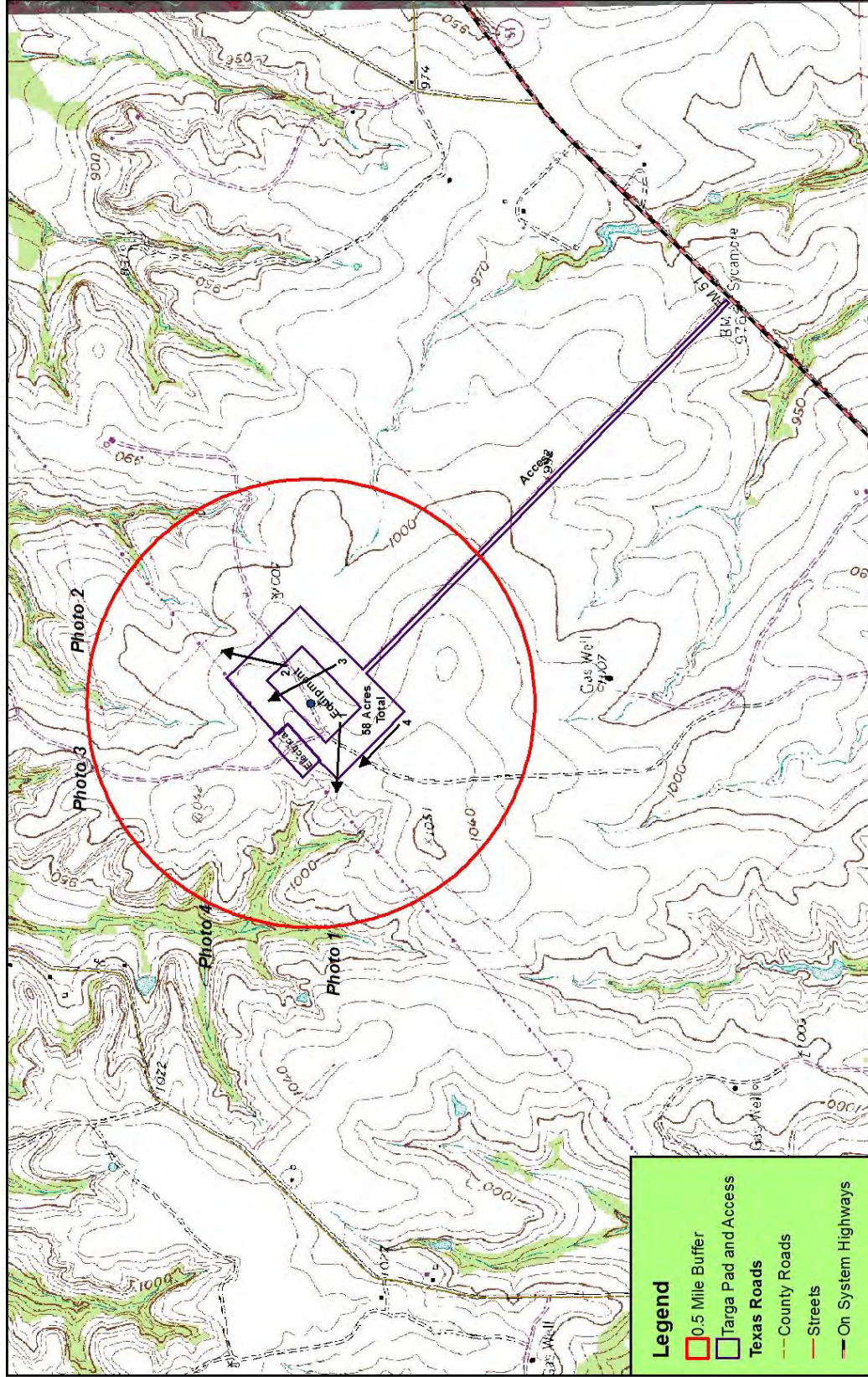


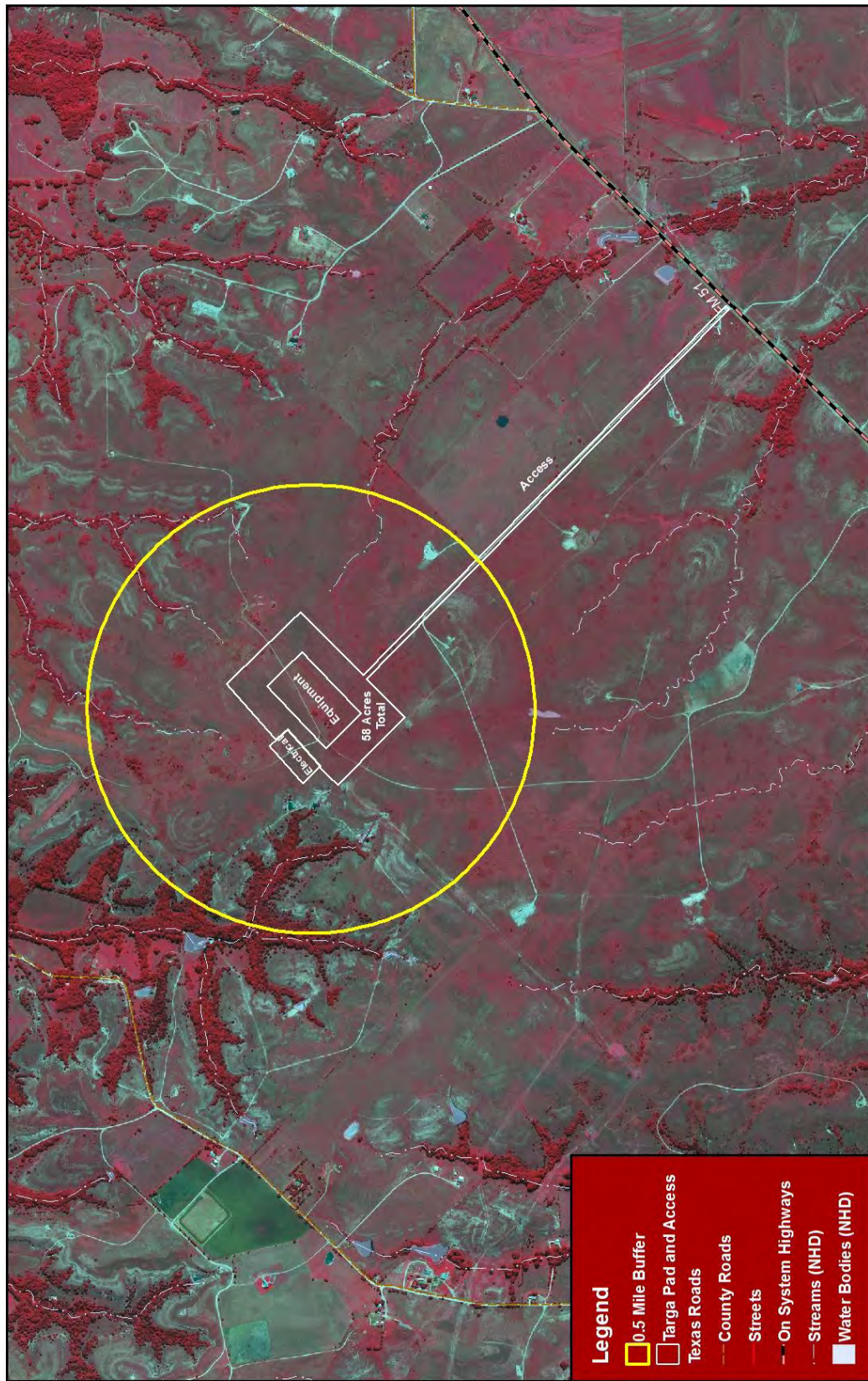
Exhibit B – USGS Quadrangle Map



USGS QUADRANGLE WITH 0.5 MILE BUFFER & PHOTO LOCATIONS

Exhibit C – Color Infrared Map

TARGA RESOURCES, INC.
Longhorn Facility
Natural Gas Cryogenic Processing
W. Cooke Survey A-163, Wise County, Texas



Legend

- 0.5 Mile Buffer
- Targa Pad and Access
- Texas Roads
- County Roads
- Streets
- On System Highways
- Streams (NHD)
- Water Bodies (NHD)

COLOR INFRARED WITH 0.5 MILE BUFFER

Exhibit D – Qualifications of the Primary Author

Mr. Ross Carrie is the primary author of this BA. Mr. Ross Carrie received his Bachelor of Science degree in Zoology and a Masters of Science degree in Wildlife and Fisheries Sciences from Texas A&M University. He has worked more than eighteen years as a manager, consultant, and educator in non-game wildlife management and research, endangered species, environmental and regulatory compliance, and zoonosis management and research. Ross has accumulated over eight years' experience working at management-level positions in county, state, and federal government. His experience includes conducting and publishing original research on endangered species and rare grassland bird species, managing endangered and non-game species on U.S. Forest Service and Department of Defense lands in Texas and Louisiana, developing NEPA-related documents to assess potential impacts of projects proposed on U.S. Forest Service lands, teaching in the Biology Department of Texas A&M University and developing and managing an avian encephalitis surveillance program for all of Harris County, Texas. These experiences inspired him to found Raven in 1996 as a turnkey natural resources management company, providing exemplary and cost-effective services in environmental planning, management, compliance and research. Ross is both President of Raven and a Project Manager, specializing in services that include research design, data collection and management, statistical analysis and publication, and technical writing support.

Exhibit E – Project Area Photographs



PHOTO 1 WEST VIEW



PHOTO 2 NORTHEAST VIEW



PHOTO 3 NORTH VIEW



PHOTO 4 NORTHWEST VIEW



PHOTO 5 NORTHWEST VIEW OF BRUSH HABITAT