Environmental Assessment for the CPS Energy Shepherd Substation Transmission Line, Bexar County, Texas

SWCA Project Number 37946

Revised October 2017

SUBMITTED TO:

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CONTENTS

APPENDICES

FIGURES

TABLES

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1.0 DESCRIPTION OF PROPOSED PROJECT

1.1 Scope of the Project

CPS Energy is planning to build a new electric substation and associated transmission line in southwestern San Antonio, Bexar County, Texas known as the Shepherd Substation Project (project) (Figure 1). The new substation would cover an area of approximately 6 acres and would be connected to the existing Valley Road to Cagnon 138-kV transmission line by a new transmission line. Construction on the substation and transmission line is anticipated to start in early 2018 and to be completed by early 2020.

At the request of CPS Energy, SWCA Environmental Consultants (SWCA) prepared an Environmental Assessment (EA) for this project. SWCA prepared this EA in accordance with the *CPS Energy Electric Transmission Line Routing/Substation Siting General Process Manual* (PBS&J 2001). This EA is intended to provide CPS Energy with information to satisfy internal due diligence requirements and to address issues concerning potential project impacts on the natural, human, and cultural environment.

This EA is a revised version of an initial EA published in May 2017. This revised EA includes analysis of an alternative substation site added in June 2017, as described in Section 2.2.3.

1.2 Purpose and Need

To meet expected utility load growth of 20-25% in the project vicinity, and to maintain reliability by reducing the risk of overloaded circuits, CPS Energy needs to construct the proposed Shepherd Substation. Specifically, the new substation would improve CPS Energy's electric system with shorter circuits that reduce customers' exposure to outages. The new circuits would also strengthen the primary distribution backbone and insert sufficient field ties to adjacent substation circuits to prevent major loss of customer load under faulted conditions.

1.3 Description of Proposed Design

The following sections provide general design details for the proposed project.

1.3.1 Substation Design

The approximately 6-acre substation would be designed with two initial power transformers, one four-feeder 35-kilovolt (kV) distribution switchgear, and one four-feeder 13-kV distribution switchgear. It would be sized for two line terminals, four power transformers, and a 138-kV capacitor bank. Figure 2 illustrates a typical CPS Energy substation.

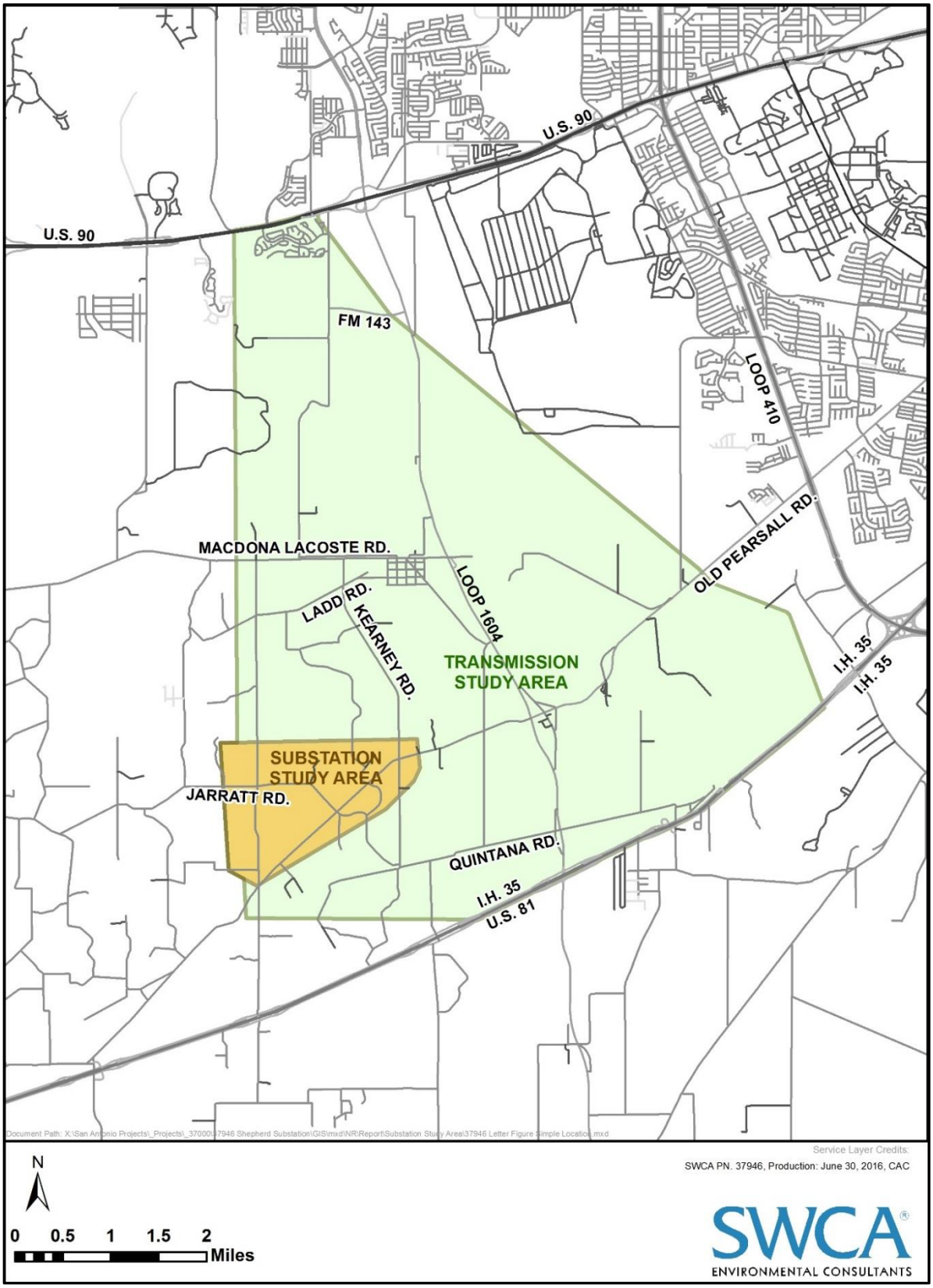

Figure 1. Project location.

Figure 2. Typical substation.

1.3.2 Transmission Line Easement

An approximately 29,726-linear-foot new transmission line would be constructed to connect the new substation to CPS Energy's existing Valley Road to Cagnon 138-kV transmission line. The new transmission line would be constructed within a 60- to 100-foot-wide right-of-way (ROW) easement for a total area of approximately 55 acres. Temporary construction easements or separate access easements could also be required during construction, but have not been identified at this time.

Easement would be acquired as necessary by CPS Energy along the transmission line route. Generally, the ROW would be unfenced and landowners would have access to easements located on their land. However, CPS Energy would install a locking gate on any existing fences that cross the ROW or restrict CPS Energy access to the ROW.

1.3.3 Structures

The CPS Energy transmission system comprises various components that include foundations, poles, web steel structures, and lines that vary due to the terrain and specific project requirements. A majority of the transmission line for this project would be constructed of steel poles, as illustrated in Figure 3. Typical steel poles would range from 85 to 125 feet in height and span distances of approximately 700 feet. However, there are possible exceptions due to engineering requirements and/or site conditions. CPS Energy would ensure that design criteria would meet or exceed the American National Standards Institute C2, National Electric Safety Code, and CPS Energy standard design specifications.

Figure 3. Typical steel monopole transmission line.

1.3.4 Construction Process and Schedule

Construction of the substation and transmission line would require site clearing and ROW preparation, structure assembly and erection, conductor and shield wire installation, and site clean-up. CPS Energy would remove trees or other vegetation that interfere with the construction, operation, and maintenance of the substation or transmission line. However, clearing and grading of construction areas would be minimized to the extent practicable and graded in a manner that would minimize erosion and conform to the natural topography. Tree and brush removal would comply with applicable state or local regulations, and would consider landowner preference where possible. The project would also comply with Texas Commission on Environmental Quality (TCEQ) and the City of San Antonio requirements for stormwater discharges. Following structure assembly and installation, CPS Energy would level all areas of ground disturbance, remove debris, and restore site conditions.

As summarized in Section 6.0, CPS Energy will perform environmental baseline studies and a regulatory review of the final selected site/route to determine specific permitting requirements, and will comply with applicable local, state, and federal regulatory requirements.

Construction of the substation and transmission line is planned to begin in late 2018 and extend to mid-2020, although the schedule could be further refined as the engineering design progresses. The substation would be constructed by a combination of contractor and CPS Energy crews. Normal working hours would be Monday–Friday, 7:00 A.M. to 6:00 P.M., with the possibility of working on weekends, as needed, to maintain construction schedules.

1.3.5 Operation and Maintenance

CPS Energy would periodically inspect the substation, transmission line ROW, structures, and line to ensure safe and reliable facilities. The primary maintenance action would consist of removal or trimming of trees that pose a potential danger to the conductors or structures.

2.0 EVALUATION OF ALTERNATIVE SUBSTATION LOCATIONS AND TRANSMISSION LINE ROUTES

2.1 Objective of Study

In accordance with the *CPS Energy Electric Transmission Line Routing/Substation Siting General Process Manual* (PBS&J 2001), CPS Energy identified potential substation sites and transmission routes for the Shepherd Substation project to determine a preferred location that is feasible from an economic, engineering, systems planning, and environmental perspective. CPS Energy followed its established process, which consists of eight key steps: 1) establish the need for the project; 2) define the study area; 3) obtain environmental information; 4) map environmental and land use constraints; 5) conduct environmental, engineering and cost analyses; 6) conduct public involvement efforts, if appropriate; 7) acquire CPS Energy Board approval; and 8) design and construct the project.

2.1.1 Study Area Delineation

The study area for the proposed substation is roughly bounded by Shepherd Road on the west, Pearsall Road on the south, Kearney Road on the east, and Ladd Road on the north, comprising an area of approximately 1,400 acres. The study area for the proposed transmission line is located west of Loop 410 and is generally bounded by U.S. Route 90 to the north, Shepherd Road to the west, and Interstate Highway 35 to the south. The transmission line study area covers approximately 18,140 acres.

2.2 Identification of Alternative Sites

2.2.1 Constraints Mapping

Through review of published sources and geographic information system (GIS) databases, SWCA identified existing structures, land uses, known cultural resources, and ecological resources in the study areas. Sources reviewed included:

- U.S. Geological Survey (USGS) digital 7.5-minute topographic quadrangle maps, Culebra Hill, Macdona and Terrell Wells Quadrangles, Bexar, County, Texas.
- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM). 2010. Bexar County, Texas and Incorporated Areas.
- U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) Trust Resources Report (USFWS 2016).
- Texas Parks and Wildlife Department (TPWD) Vegetation Types of Texas (McMahan 1984).
- TPWD county threatened and endangered species lists (TPWD 2016).
- Texas Natural Diversity Database. 2016. Element of occurrence records for rare and protected species. April 22, 2016.
- National Cooperative Soil Survey. 2016a. Custom soil resource report for Bexar County. Natural Resources Conservation Service (NRCS) Web Soil Survey. http://websoilsurvey.sc.egov.usda.gov.

- USFWS National Wetland Inventory (NWI) Map. 1994.
- Banks Environmental Data. 2016. Regulatory Database Report. August 15, 2016.
- Texas Archeological Site Atlas on-line database, http://pedernales.thc.state.tx.us/.
- Google Earth and GIS data sources cited on figures as applicable.

SWCA created constraints maps in GIS using publicly available information to identify locations of environmental features and existing infrastructure in the study areas (Figures 4-6).

2.2.2 Identification of Potential Substation Sites and Transmission Routes

Preliminary potential substation sites were identified based on mapped constraints, existing land uses, proximity to existing transmission lines, and access to public roads. Substations were sited to avoid significant known environmental constraints such as streams, wetlands, floodplains, cemeteries, and significant cultural resources sites, as well as land use constraints such as habitable structures and schools. Six potential substation sites were presented to the public at an open-house meeting on August 25, 2016. Potential transmission line routes were mapped for each potential substation site based on the following considerations: existing easements/ROW, property boundaries, existing land uses, and mapped constraints. Alternative transmission routes were divided into segments (labeled as Segments A through BW in Exhibit A); most segments connect to two or more potential substation sites. As with substations, CPS Energy presented these potential transmission line routes at the open-house meeting on August 25, 2016.

2.2.3 Identification of Primary Substation Sites and Transmission Routes

Following the August 25, 2016 open-house meeting, an interested seller approached CPS Energy to offer an alternative substation site. After reviewing the site location relative to environmental constraints and engineering/construction costs, CPS Energy added this site as Substation Site 7. CPS Energy also evaluated public input and considered revisions to proposed substation sites and the network of preliminary route segments. Overall, CPS Energy selected a total of seven substation sites and 89 transmission routes to be carried forward for detailed alternatives analysis. The results of these analyses were published in an initial Environmental Assessment prepared by SWCA and submitted to CPS Energy on May 19, 2017.

On June 22, 2017, the seven potential substation sites and 89 transmission route alternatives were presented at a CPS Energy Board of Trustees Public Input meeting conducted by CPS Energy. At the public input meeting, an additional interested seller came forward to offer an additional alternative substation site. Following review of this site location relative to environmental constraints and engineering/construction costs, CPS Energy added this additional potential site as Substation Site 8. To provide an updated analysis comparing all eight substation locations, SWCA has prepared this revised Environmental Assessment providing detailed analysis of eight substation sites and 90 transmission routes.

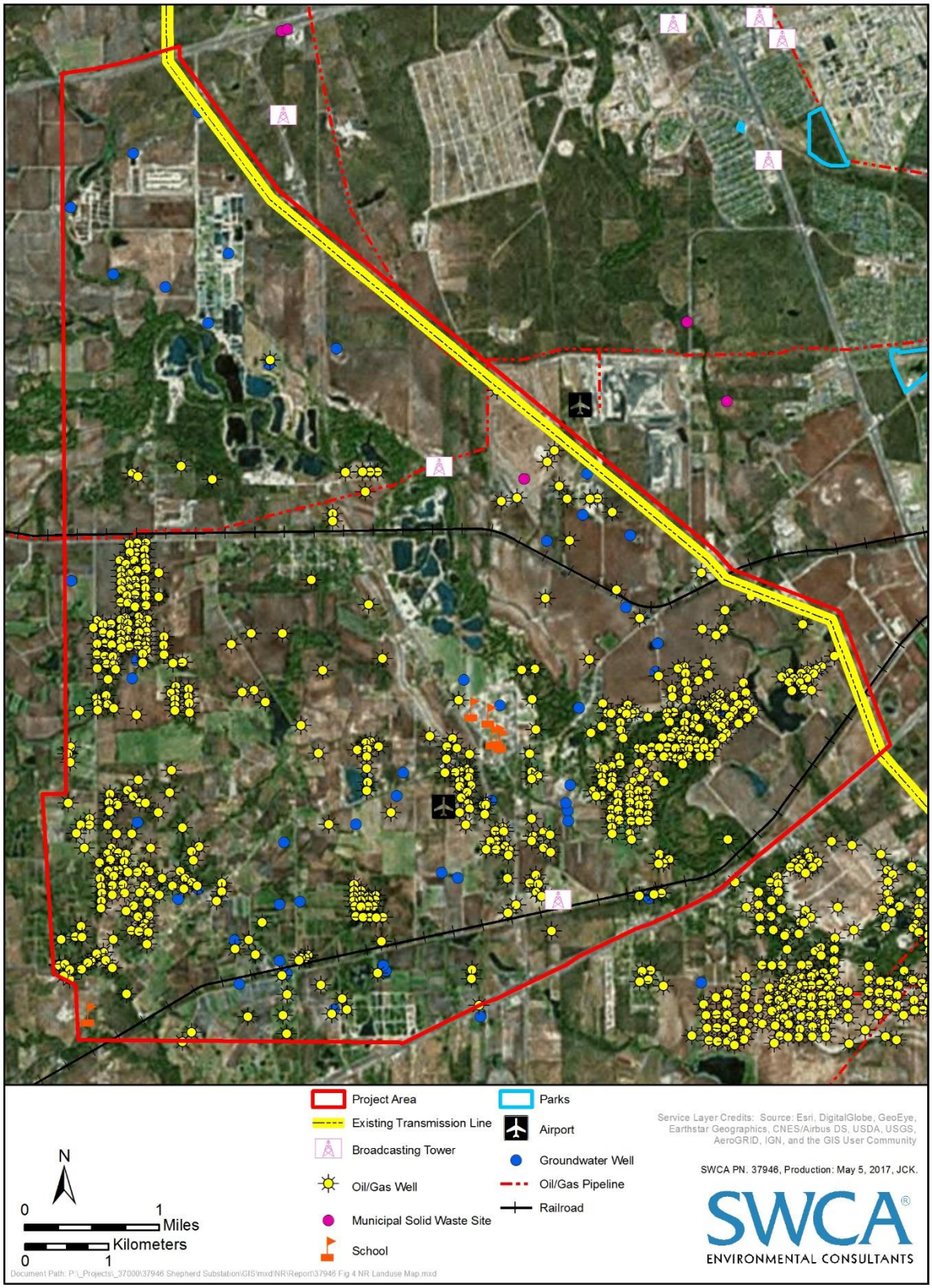

Figure 4. Land uses in transmission study area.

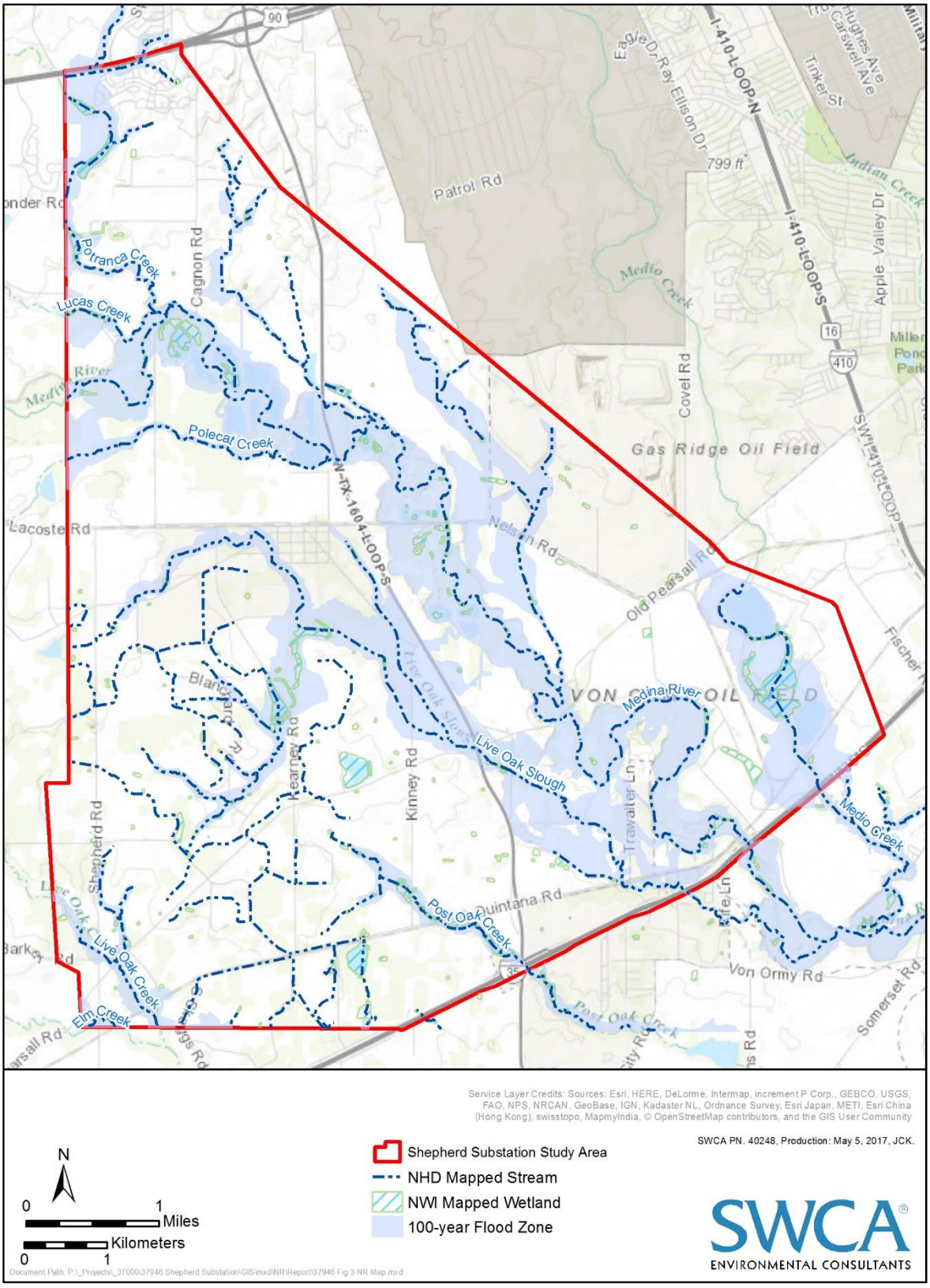

Figure 5. Natural resources in transmission study area.

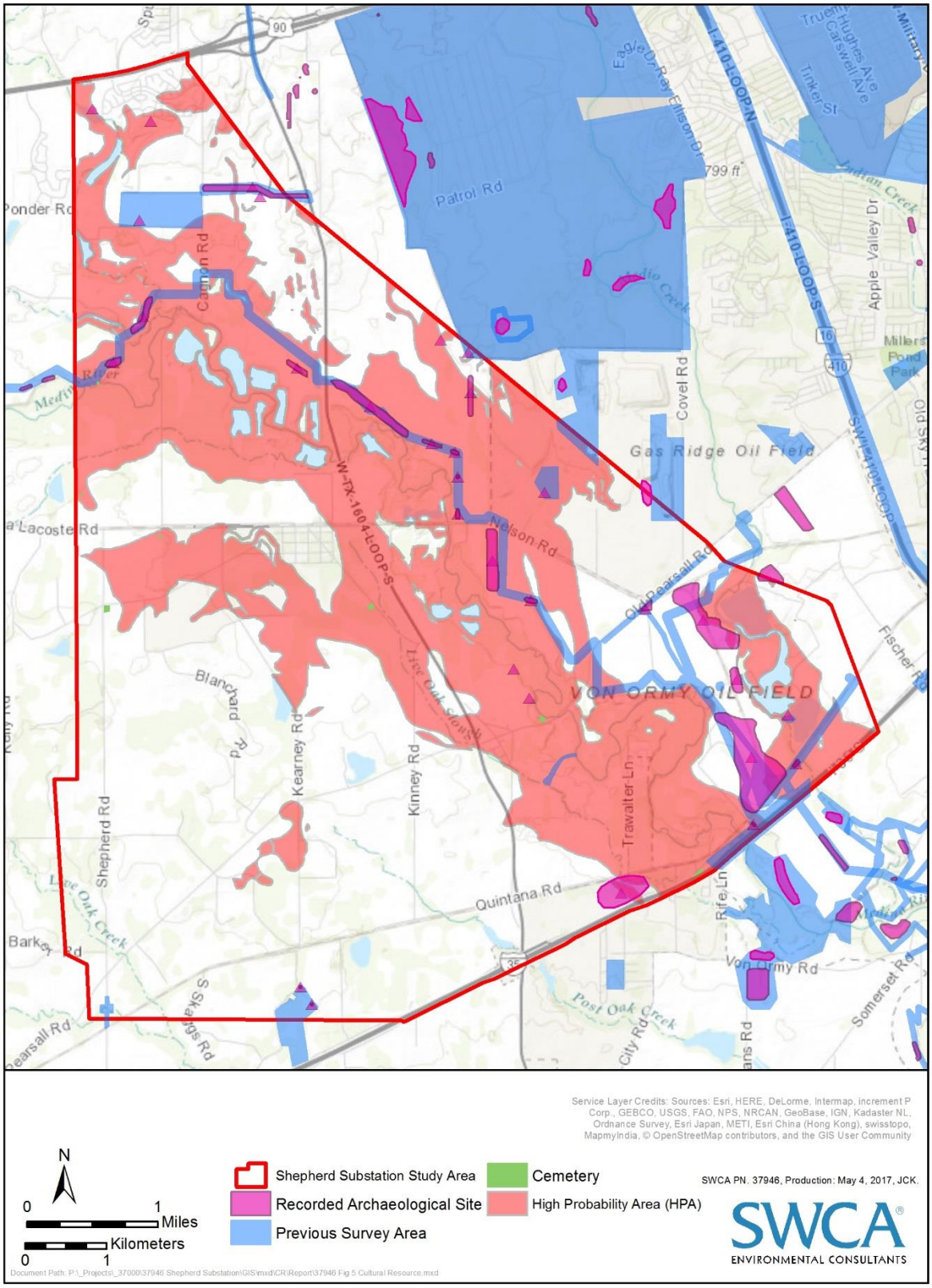

Figure 6. Cultural resources in transmission study area.

2.3 Alternatives Analysis

The eight potential substation sites and 90 potential transmission line routes were analyzed in detail based on the environmental criteria listed in Table 1 (see Appendix D). Each substation site and transmission line route was assigned a combined score that represented the total number of criteria that were impacted per site or route. Combined scores were compared across substation sites and across transmission line routes to rank each site or route from most to least preferred. As a general rule, sites or routes with the lowest combined score were deemed most environmentally preferred because they have the least number of environmental constraints and impacts. The SWCA ranking of potential environmental and cultural impacts within each substation site and route alternative were considered by CPS Energy when performing the analysis for the preferred site location in relation to the other variables considered (engineering practicality, public disruption, cost, etc. See Section 7.0).

Table 1. Environmental Criteria Used to Evaluate Shepherd Substation Project Alternatives.

LAND USE
1. Number of habitable structures* within 300 feet of right-of-way (ROW) centerline
2. Number of schools within 1,000 feet of ROW centerline
3. Number of parks/recreational areas† within 1,000 feet of ROW centerline
4. Length of ROW across rangeland/pastureland
5. Length of ROW across land irrigated by traveling systems (rolling or pivot type)
6. Number of U.S. and state highway crossings
7. Number of Farm-to-Market and Ranch-to-Market road crossings
8. Number of Federal Aviation Administration (FAA)-registered airports within 10,000 feet of ROW centerline
9. Number of FAA-registered airports within 20,000 feet of ROW centerline
10. Number of private airstrips within 10,000 feet of ROW centerline
11. Number of heliports within 5,000 feet of ROW centerline
12. Number of commercial AM radio transmitters within 10,000 feet of ROW centerline
13. Number of FM radio transmitters, microwave relay stations, or other electronic installations, within 2,000 feet of ROW centerline
14. Future subdivisions within ROW
15. State or federal lands within ROW
16. Number of hazardous materials/wastes/release sites
17. Municipal solid waste sites
AESTHETICS
18. Foreground visual zone‡ of U.S. and state highways
19. Foreground visual zone‡ of parks/recreational areas†
20. Foreground visual zone‡ of churches, schools, cemeteries
ECOLOGY
21. Length of ROW across upland woodland/brushland
22. Length of ROW across bottomland/riparian woodland
23. Length of ROW across known/occupied habitat of federally endangered/threatened species
24. Length of ROW across potential wetlands
25. Length of ROW across open water (lakes, ponds)
26. Number of stream crossings
27. Length of ROW across 100-year floodplains
CULTURAL RESOURCES
28. Number of recorded historic and prehistoric sites crossed

29.	Number of additional recorded historic and prehistoric sites within 1,000 feet of ROW centerline
30.	Number of National Register of Historic Places (NRHP)-listed or determined-eligible sites crossed
31.	Number of NRHP-listed or determined-eligible sites within 1,000 feet of ROW centerline
32.	Percent within area of high probability to contain archaeological sites
33.	Number of cemeteries within ROW

* Single-family and multifamily dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, nursing homes, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a daily or regular basis.

† Defined as parks and recreational areas owned by a governmental body or an organized group, club, or church.

‡ 0.5 mile, unobstructed.

In addition to the environmental analysis, CPS Energy evaluated the potential sites based on the following feasibility and engineering constraints:

- **Transmission Access:** Proximity to existing transmission line (avoids/minimizes acquisition of new transmission easements and/or new transmission line crossings).
- **Distribution Access:** Proximity to existing distribution line or existing distribution path (minimizes construction of new distribution lines and acquisition of new distribution easement).
- **Land Availability/Compatibility:** Centrally located among the geographic areas to be served, compatibility with area development, accessibility, property on market.
- **Schedule/Costs:** Overall costs (transmission, substation, and distribution cost) and schedule risks.

The results of the alternatives analysis are presented in Section 7.0. An evaluation of potential project impacts to the natural, human, and cultural environment from implementation of any of the considered alternatives is provided in Section 4.0.

3.0 ENVIRONMENTAL SETTING

3.1 Physiography

The study area is located in southwestern San Antonio west of Loop 410 and appears on the Culebra Hill, Macdona, and Terrell Wells USGS 7.5-minute topographic maps (USGS 2013). Topography of the project area has a total relief of approximately 290 feet with elevations ranging from approximately 530 to 820 feet above mean sea level. Topography generally slopes towards the Medina River that traverses the transmission study area generally from the northwest to the southeast.

3.2 Geology

The project area is located within the Balcones Fault Zone (BFZ). During the middle Tertiary, structural down warping occurred to the southeast associated with the formation of the ancestral Gulf of Mexico. The earth's crust was stretched in response, and the BFZ formed along an area of weakness that today marks the eastern and southern boundary of the Edwards Plateau and the Gulf Coastal Plain. In the Bexar County region, the zone consists of a series of northeast-trending, predominantly normal, nearly vertical, *en echelon* faults. One mapped fault occurs in the northeast corner of the project area (Barnes 1983).

Based on published geologic maps (Barnes 1983), the project area is underlain by six geologic units. The northeastern border of the project area is underlain by three of the six geologic units. The Midway Group is confined to a small portion of the northeast corner of the project area near the intersection of Loop 1604 and Pue Road. The Midway Group consists of Eocene aged light to dark gray sand and silt that weathers to yellow and yellowish-brown soil, with a thickness of approximately 100-400 feet (Barnes 1983). The Navarro Group and Marlbrook Marl is also located along the northeastern border of the project area and is composed of a lower and upper part. The lower portion of the Navarro Group and Marlbrook Marl consists of greenish to brownish gray clay with a thickness of approximately 400 feet. The upper portion of this group consists of yellow brown marl, clay, sandstone, and siltstone with a thickness of approximately 580 feet. Total approximate depth of the rock group is 980 feet (Barnes 1983). The third group located in the northeastern portion of the project area is the Pleistocene aged Uvalde Gravel which consists of cemented gravel composed of cobble of quartz, limestone, and igneous rock with some boulders reaching one foot in diameter. Thickness of the rock type ranges from several feet to over 20 feet (Barnes 1983).

Areas along the Medina River through the central portion of the project area are underlain by Pleistocene aged fluvial terrace deposits consisting of gravel, limestone, dolomite, and chert deposits from the Medina River (Barnes 1983).

The southern portion of the project area overlies the Wilcox Group, which consists of mostly mudstone with varying amounts of sandstone and lignite with a thickness of approximately 440 to 1,200 feet (Barnes 1983).

The Leona Formation occurs within a thin strip of the project area on the eastern border and consists of fluvatile terrace deposits of gravel, sand, silt, and clay (Barnes 1983).

3.3 Soils

3.3.1 Soil Associations

The USDA NRCS (formerly Soil Conservation Service) maps the following 36 soil types within the study areas (NRCS 2016). The Loire soil map unit meets hydric soil criteria. A hydric soil is a soil that formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part.

Whitewright-Austin complex, 1 to 5 percent slopes (BsC): This soil complex typically occur on ridges on interfluves. The parent material consists of residuum weathered from Austin chalk formation. In a typical profile, the soil layer is 6 inches of clay loam, 6 to 15 inches of silty clay, and 15 to 20 inches of bedrock. Depth to a root restrictive layer paralithic bedrock is 10 to 20 inches. The soil is well drained with a moderate shrink-swell potential. The minimum depth to a water table is more than 80 inches. This soil does not meet hydric criteria.

Miguel fine sandy loam, 0 to 1 percent slopes (CfA): Miguel fine sandy loam typically occurs on interfluves on coastal plains. The parent material consists of loamy fluviomarine deposits. In a typical profile, the soil layer is 14 inches of neutral fine sandy loam, 14 to 42 inches of slightly alkaline sandy clay, and 42 to 72 inches of moderately alkaline sandy clay. Depth to a root restrictive layer is greater than 60 inches. The soil is well drained with a moderate shrink-swell potential. The minimum depth to a water table is greater than 6 feet. This soil does not meet hydric criteria.

Miguel fine sandy loam, 1 to 3 percent slopes (CfB): Miguel fine sandy loam typically occurs on interfluves on coastal plains. The parent material consists of loamy fluviomarine deposits. In a typical profile, the soil layer is 10 inches of neutral fine sandy loam, 10 to 40 inches of slightly alkaline sandy clay, and 40 to 72 inches of moderately alkaline sandy clay. Depth to a root restrictive layer is greater than 60 inches. The soil is is well drained with a moderate shrink-swell potential. The minimum depth to a water table is greater than 6 feet. This soil does not meet hydric criteria.

Loire clay loam, 0 to 2 percent slopes (Fr): Loire clay loam typically occurs on flood plains on river valleys. The parent material consists of loamy alluvium. In a typical profile, the soil layer is 35 inches of clay loam, 35 to 56 inches of loam, and 56 to 80 inches of fine sandy clay loam. Depth to a root restrictive layer is greater than 60 inches. The soil is well drained with a low shrink-swell potential. The minimum depth to a water table is greater than 6 feet. This soil does meet hydric criteria.

Gullied land-Sunev complex, 3 to 20 percent slopes (Gu): Gullied land is a miscellaneous area and comprises 75% of the complex. The Sunev component comprises 15% of this map unit. This component is on stream terraces on plains. The parent material consists of loamy alluvium of Quaternary age derived from mixed sources. In a typical profile, the soil layer is 0 to 62 inches of clay loam. Depth to a root restrictive layer is greater than 60 inches. The soil is well drained with a low shrink-swell potential. The minimum depth to a water table is greater than 6 feet. This soil does not meet hydric criteria.

Wilco loamy fine sand, 0 to 3 percent slopes (HkB): Wilco loamy fine sand typically occurs on interfluves on coastal plains. The parent material consists of loamy fluviomarine deposits. In a typical profile, the soil layer is 16 inches of slightly acid loamy fine sand, 16 to 33 inches of slightly acid sandy clay loam, 33 to 40 inches of neutral sandy clay loam, and 40 to 60 inches of slightly alkaline sandy clay loam. Depth to a root restrictive layer is greater than 60 inches. The soil is well drained with a moderate shrink-swell potential. The minimum depth to a water table is greater than 6 feet. This soil does not meet hydric criteria.

Wilco loamy fine sand, 3 to 5 percent slopes (HkC): Wilco loamy fine sand typically occurs on interfluves within coastal plains. The parent material consists of loamy fluviomarine deposits. In a typical profile, the soil layer is 16 inches of slightly acid loamy fine sand, 16 to 33 inches of slightly acid sandy clay loam, 33 to 40 inches of neutral sandy clay loam, and 40 to 60 inches of slightly alkaline sandy clay loam. Depth to a root restrictive layer is greater than 60 inches. The soil is well drained with a moderate shrink-swell potential. The minimum depth to a water table is greater than 6 feet. This soil does not meet hydric criteria.

Heiden clay, 1 to 3 percent slopes (HnB): The Heiden series typically occurs on linear gilgai on ridges on plains, and linear gilgai on plains on plains. The parent material consists of clayey residuum weathered from clayey shale of Eagleford Shale or Taylor Marl. In a typical profile, the soil layer is 80 inches of clay. Depth to a root restrictive layer is greater than 60 inches. The soil is well drained with a low shrink-swell potential. The minimum depth to a water table is greater than 60 inches. This soil does not meet hydric criteria.

Heiden-Ferris complex, 5 to 10 percent slopes, severely eroded (HoD3): The Heiden, severely eroded component makes up 75 percent of this map unit, while the Ferris, severely eroded component makes up 20 percent of the unit. These very shallow soils occupy long, narrow areas where the Heiden component occurs as strongly sloping areas that have been damaged by water erosion. The Ferris component is a gravelly clay that is very shallow and occurs as strongly sloping to steep, narrow ridges. The depth to a root restrictive layer is greater than 40 inches. This complex is well drained with very high shrink-swell

potential. This soil is not flooded or ponded and does not meet hydric criteria. (Note: previously known as Houston-Sumter clays)

Houston Black clay, 1 to 3 percent slopes (HsB): The Houston Black component makes up 100 percent of the map unit. This soil typically occurs on circular gilgai on ridges on plains. The parent material consists of residuum weathered from calcareous shale of Taylor Marl and Eagleford Shale. In a typical profile, the soil layer is 0 to 62 inches of clay. Depth to a root restrictive layer is greater than 60 inches. The soil is moderately well drained with a high shrink-swell potential. The minimum depth to a water table is greater than 6 feet. This soil does not meet hydric criteria.

Branyon clay, 0 to 1 percent slopes (HtA): Branyon clay typically occurs on circular gilgai on river valleys and stream terraces. The parent material consists of calcareous clayey alluvium derived from mudstone of Pleistocene age. In a typical profile, the soil layer is 0 to 80 inches of moderately alkaline clay. Depth to a root restrictive layer is greater than 60 inches. The soil is moderately well drained with a low shrink-swell potential. The minimum depth to a water table is greater than 80 inches. This soil does not meet hydric criteria.

Branyon clay, 1 to 3 percent slopes (HtB): Branyon clay typically occurs on circular gilgai on river valleys and stream terraces. The parent material consists of calcareous clayey alluvium derived from mudstone of Pleistocene age. In a typical profile, the soil layer is 0 to 80 inches of moderately alkaline clay. Depth to a root restrictive layer is greater than 60 inches. The soil is moderately well drained with a low shrink-swell potential. The minimum depth to a water table is greater than 80 inches. This soil does not meet hydric criteria.

Houston Black gravelly clay, 1 to 3 percent slopes (HuB): The Houston Black component makes up 100 percent of the map unit. This soil typically occurs on circular gilgai on ridges on plains. The parent material consists of residuum weathered from calcareous shale of Taylor Marl and Eagleford Shale. In a typical profile, the soil layer is 0 to 8 inches of gravelly clay and 8 to 62 inches of clay. Depth to a root restrictive layer is greater than 60 inches. The soil is moderately well drained with a high shrink-swell potential. The minimum depth to a water table is greater than 6 feet. This soil does not meet hydric criteria.

Houston Black gravelly clay, 3 to 5 percent slopes (HuC): The Houston Black component makes up 100 percent of the map unit. This soil typically occurs on linear gilgai on ridges on plains. The parent material consists of residuum weathered from calcareous shale of Taylor Marl and Eagleford Shale. In a typical profile, the soil layer is 0 to 8 inches of gravelly clay and 8 to 62 inches of clay. Depth to a root restrictive layer is greater than 60 inches. The soil is moderately well drained with a high shrink-swell potential. The minimum depth to a water table is greater than 6 feet. This soil does not meet hydric criteria.

Houston Black gravelly clay, 5 to 8 percent slopes (HuD): The Houston Black component makes up 100 percent of the map unit. This soil typically occurs on linear gilgai on ridges on plains. The parent material consists of residuum weathered from calcareous shale of Taylor Marl and Eagleford Shale. In a typical profile, the soil layer is 0 to 8 inches of gravelly clay and 8 to 62 inches of clay. Depth to a root restrictive layer is greater than 60 inches. The soil is moderately well drained with a high shrink-swell potential. The minimum depth to a water table is greater than 6 feet. This soil does not meet hydric criteria.

Atco loam, 1 to 3 percent slopes (KaB): This soil type is generally found on erosional remnants of stream terraces on coastal plains. In a typical soil profile, the soil layer consists of moderately alkaline

loam from 0 to 62 inches. Depth to a root restrictive layer is greater than 60 inches and is well drained. This soil does not meet the hydric criteria.

Atco clay loam, 3 to 5 percent slopes, eroded (KcC2): This soil type is generally found on erosional remnants of stream terraces on coastal plains. In a typical soil profile, the soil layer consists of 0 to 15 inches of clay loam and 15 to 60 inches of moderately alkaline loam. Depth to a root restrictive layer is greater than 80 inches and is well drained. This soil does not meet hydric criteria.

Lewisville silty clay, 0 to 1 percent slopes (LvA): Lewisville silty clay typically occurs on stream terraces on river valleys. The parent material consists of alluvium of Quaternary age derived from mixed sources. In a typical profile, the soil layer is from 0 to 62 inches of silty clay. Depth to a root restrictive layer is greater than 60 inches. The soil is well drained with a high shrink-swell potential. The minimum depth to a water table is greater than 72 inches. This soil does not meet hydric criteria.

Lewisville silty clay, 1 to 3 percent slopes (LvB): Lewisville silty clay typically occurs on stream terraces on river valleys. The parent material consists of alluvium of Quaternary age derived from mixed sources. In a typical profile, the soil layer is 0 to 62 inches of silty clay. Depth to a root restrictive layer is greater than 60 inches. The soil is well drained with a high shrink-swell potential. The minimum depth to a water table is greater than 72 inches. This soil does not meet hydric criteria.

Laparita clay loam, 0 to 1 percent slopes (OrA): Laparita clay loam typically occurs on footslopes on interfluves. The parent material consists of clayey residuum weathered from shale. In a typical profile, the soil layer is 0 to 12 inches of clay loam, 12 to 38 inches of sandy clay, and 38 to 72 inches of clay. Depth to a root restrictive layer greater than 80 inches. The soil is well drained with a moderately high shrink-swell potential. The minimum depth to a water table is greater than 80 inches. This soil does not meet hydric criteria.

Laparita clay loam, 1 to 3 percent slopes (OrB): Laparita clay loam typically occurs on ridges on interfluves. The parent material consists of clayey residuum weathered from shale. In a typical profile, the soil layer is 0 to 8 inches of clay loam, 8 to 40 inches of sandy clay, and 40 to 72 inches of clay. Depth to a root restrictive layer is greater than 80 inches. The soil is well drained with a moderately high shrink-swell potential. The minimum depth to a water table is greater than 80 inches. This soil does not meet hydric criteria.

Patrick soils, 3 to 5 percent slopes (PaC): Patrick soils typically occur on paleoterraces on plains. The parent material consists of clayey alluvium of Quaternary age derived from mixed sources and/or sandy alluvium of Quaternary age derived from mixed sources. In a typical profile, the soil layer is from 0 to 17 inches of gravelly clay loam and 17 to 60 inches of very gravelly sand. Depth to a root restrictive layer is greater than 60 inches. The soil is well drained with a low shrink-swell potential. The minimum depth to a water table is greater than 72 inches. This soil does not meet hydric criteria.

Pits and Quarries, 1 to 90 percent slopes (Pt): The Pits is a miscellaneous area where native soils and potentially parent material have been excavated and removed and comprises 100% of the complex. This land type consists of gravel pits, clay pits, and sand pits, limestone quarries, chalk quarries, and rock quarries, and city dumps (sanitary landfills). Areas of this land type occur throughout the county and range from 3 to 100 acres in size. The typical profile is from 0 to 80 inches and variable.

San Antonio clay loam, 1 to 3 percent slopes (SaB): San Antonio clay loam typically occurs on stream terraces on coastal plains. The parent material consists of loamy alluvium of quaternary age derived from mixed sources. In a typical profile, the soil layer is 0 to 10 inches of slightly acidic clay loam, 10 to 38

inches of neutral clay, and 38 to 60 inches of moderately alkaline clay loam. Depth to a root restrictive layer is greater than 80 inches. The soil is well drained with a moderate shrink-swell potential. The minimum depth to a water table is greater than 80 inches. This soil does not meet hydric criteria.

San Antonio clay loam, 3 to 5 percent slopes (SaC): San Antonio clay loam typically occurs on stream terraces on coastal plains. The parent material consists of loamy alluvium of Quaternary age derived from mixed sources. In a typical profile, the soil layer is 6 inches of slightly acid clay loam, 6 to 24 inches of neutral clay, and 28 to 60 inches of moderately alkaline clay loam. Depth to a root restrictive layer is greater than 80 inches. The natural drainage class is well drained with a moderate shrink-swell potential. The minimum depth to a water table is greater than 80 inches. This soil does not meet hydric criteria.

San Antonio clay loam, 3 to 5 percent slopes, eroded (SaC2): San Antonio clay loam typically occurs on stream terraces on coastal plains. The parent material consists of loamy alluvium of Quaternary age derived from mixed sources. In a typical profile, the soil layer is 4 inches of slightly acid clay loam, 4 to 24 inches of neutral clay, and 24 to 60 inches of moderately alkaline clay loam. Depth to a root restrictive layer is greater than 80 inches. The natural drainage class is well drained with a moderate shrink-swell potential. The minimum depth to a water table is greater than 80 inches. This soil does not meet hydric criteria.

Tinn clay, 0 to 1 percent slopes, occasionally flooded (Tc): Tinn soils typically occur on floodplains. The parent material consists of clayey alluvium of holocene age derived from mixed sources. In a typical profile, the soil layer is 0 to 80 inches of clay. Depth to a root restrictive layer is greater than 80 inches. This soil is moderately well drained with a very low to moderately low shrink-swell potential. The minimum depth to a water table is greater than 80 inches. This soil does not meet hydric criteria.

Tinn and Frio soils, 0 to 1 percent slopes, frequently flooded (Tf): The Tinn component makes up approximately 60% of the unit, and occurs on floodplains. The parent material consists of clayey alluvium of holocene age derived from mixed sources. In a typical profile, the soil layer is 0 to 80 inches of clay. Depth to a root restrictive layer is greater than 80 inches. This soil is moderately well drained with a very low to moderately low shrink-swell potential. The minimum depth to a water table is greater than 80 inches. This soil does not meet hydric criteria. The Frio component makes up approximately 40% of the unit, and occurs on floodplains. The parent material consists of loamy alluvium of holocene age derived from mixed sources. Depth to a root restrictive layer is greater than 80 inches. This soil is well drained with a moderately high shrink-swell potential. The minimum depth to a water table is greater than 6 feet. This soil does not meet hydric criteria.

Sunev clay loam, 0 to 1 percent slopes (VcA): Sunev clay loam typically occurs on stream terraces on plains. The parent material consists of loamy alluvium of Quaternary age derived from mixed sources. In a typical profile, the soil layer is 36 inches of clay loam, and 36 to 62 inches of loam. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained with a low shrink-swell potential. The minimum depth to a water table is greater than 6 feet. This soil does not meet hydric criteria.

Sunev clay loam, 1 to 3 percent slopes (VcB): Sunev clay loam typically occurs on stream terraces on plains. The parent material consists of loamy alluvium of Quaternary age derived from mixed sources. In a typical profile, the soil layer is 34 inches of clay loam and 34 to 62 inches of loam. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained with a low shrink-swell potential. The minimum depth to a water table is greater than 6 feet. This soil does not meet hydric criteria.

Sunev clay loam, 3 to 5 percent slopes (VcC): Sunev clay loam typically occurs on stream terraces on plains. The parent material consists of loamy alluvium of Quaternary age derived from mixed sources. In a typical profile, the soil layer is 32 inches of clay loam, and 32 to 62 inches of loam. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained with a low shrink-swell potential. The minimum depth to a water table is greater than 6 feet. This soil does not meet hydric criteria.

Floresville fine sandy loam, 1 to 3 percent slopes (WbB): This soil type is found on ridges and backslopes. The parent material consists of loamy residuum weathered from sandstone. In a typical profile, the soil layer is 0 to 10 inches of fine sandy loam, 10 to 30 inches of clay, and 30 to 80 inches of sandy clay loam. Depth to a root restrictive layer is greater than 60 inches, and the soil is well drained. This soil does not meet hydric criteria.

Floresville fine sandy loam, 3 to 5 percent slopes (WbC): This soil type is found on ridges and backslopes. The parent material consists of loamy residuum weathered from sandstone. In a typical profile, the soil layer is 0 to 10 inches of fine sandy loam, 10 to 30 inches of clay, and 30 to 80 inches of sandy clay loam. Depth to a root restrictive layer is greater than 60 inches, and the soil is well drained. This soil does not meet hydric criteria.

Floresville fine sandy loam, 1 to 5 percent slopes, eroded (WeC2): This soil type is found on ridges and backslopes. The parent material consists of loamy residuum weathered from sandstone. In a typical profile, the soil layer is 0 to 6 inches of fine sandy loam, 6 to 30 inches of clay, and 30 to 80 inches of sandy clay loam. Depth to a root restrictive layer is greater than 60 inches, and the soil is well drained. This soil does not meet hydric criteria.

Willacy loam, 0 to 1 percent slopes (WmA): Willacy loam is typically found on summits of interfluves. The parent material consists of calcareous loamy alluvium. In a typical profile, the soil layer is 0 to 15 inches of loam and 15 to 62 inches of sandy clay loam. Depth to a root restrictive layer is greater than 80 inches. The natural drainage class is well drained with a moderately high shrink-swell potential. The minimum depth to a root restrictive layer is greater than 80 inches. This soil does not meet hydric criteria.

Zavala and Gowen soils, 0 to 2 percent slopes, frequently flooded (Zg): Zavala and Gowen soils typically occur on flood plains on river valleys. The parent material consists of loamy alluvium. In a typical profile of the Zavala component, the soil layer is 16 inches of neutral fine sandy loam, 16 to 24 inches of slightly alkaline loam, and 24 to 80 inches of stratified loamy fine sand to sandy clay. In a typical profile of the Gowen profile, the soil layer is 7 inches of slightly alkaline clay loam, 7 to 47 inches of slightly alkaline clay loam, and 47 to 80 inches of stratified loamy fine sand to fine sandy loam to clay loam. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained with a moderate to low shrink-swell potential. The minimum depth to a water table is greater than 6 feet. This soil does not meet hydric criteria.

3.3.2 Prime Farmland Soils

The Secretary of Agriculture (7 Code of Federal Regulations [CFR] 657) defines prime farmland soils as soils that have the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. They have the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods. Additional potential prime farmland are those soils that meet most of the requirements of prime farmland but fail because they lack sufficient natural moisture or they lack the installation of water management facilities. Such soils would be considered

prime farmland if these practices were installed. Additionally, some soils are not quite classified as prime farmland soils but still produce at a high level, such soils are considered farmland soils of statewide importance. According to the NRCS (2016), approximately 33.4% (268,616 acres) of Bexar County contains prime farmland soils with an additional 17.5% (222,005 acres) containing prime farmland soils if irrigated.

Of the 37 soil groups underlying the approximately 18,140-acre transmission study area, eleven are rated as areas of prime farmland soil, six are rated as areas of prime farmland soil, if irrigated, three are rated as farmland soils of statewide importance, one is rated as farmland of statewide importance, if irrigated, and 16 are not prime farmland soils. Prime farmland soils make up approximately 6,971.6 acres, or 38.5% of the project area. These areas are located north and south of the Medina River that runs northwest to southeast through the project area. There are approximately 3,164.0 acres of prime farmland soil, if irrigated within the project area totaling approximately 17.5%. These areas are mostly located in the south to southwest portion of the project area, intertwined within areas of prime farmland soils. Farmland soils of statewide importance make up approximately 2,923.6 acres, or 16.1% of the project area, mostly confined to areas just outside of the Medina River 100-year Federal Emergency Management Agency (FEMA) floodplain. There are approximately 196.1 acres of farmland soils of statewide importance, if irrigated within the project area totaling approximately 1.1%. These areas are located centrally in small sections near the Medina River 100-year FEMA floodplain. Areas with non-prime farmland soils make up approximately 4,509.5 acres, or 24.8% of the project area. These areas are mostly confined within the FEMA 100-year floodplain for water bodies throughout the project area.

3.4 Water Resources

The following sections describe the water resources within the project area.

3.4.1 Surface Water

The National Hydrology Database map indicates that nine named creeks and waterways traverse throughout the project area with numerous confluences and tributaries (Figure 5). Elm Creek and Live Oak Creek both flow southeast through the southwestern corner of the project area. Post Oak Creek and Live Oak Slough start centrally, then flow to the southeast and exits the project area. Medio Creek crosses the far eastern edge of the project area. The Medina River enters the project area from the northwest, and eventually exits to the southeast. Potranca Creek, Lucas Creek, and Polecat Creek all enter the project area from the northwestern border and eventually confluence with the Medina River within the project area border.

Additionally, the NWI inventory identified a total of 224 wetland features and water bodies within the project area. The identified features include 15 freshwater emergent wetlands, 16 freshwater forested/shrub wetlands, 186 freshwater ponds, two lakes, and three riverine water bodies (USFWS 1983).

3.4.2 Floodplains

FEMA mapped floodplains are shown in Figure 5. Approximately 24.7% (5,566 acres) of the study area occurs within the 100-year floodplain. Most of the floodplain within the transmission study area occurs along the Medina River, Medio Creek, and Live Oak Slough.

3.4.3 Groundwater

The Edwards Limestone Group is the host rock of the Edwards Aquifer, one of the most permeable and productive carbonate aquifers in the United States, which is predominantly composed of limestone formed during the early Cretaceous Period. The study area lies above the Edwards Aquifer Artesian Zone. The project area is approximately 12.3 miles south from the Edwards Aquifer Recharge Zone.

There are a total of three groundwater wells, drawing from the Edwards Aquifer, located within proposed transmission line easements. One groundwater well located along Segment AJ is listed as unused. The two remaining wells are along Segment AK, used for a nursery, and along Segment AS, used for irrigation (Banks Environmental Data 2016). There are no groundwater wells reported as occurring on potential substation sites.

3.5 Vegetation

The transmission study area is within the Texas Blackland Prairie ecoregion of Texas and is mapped by the TPWD as occurring in the **Mesquite-Live Oak-Bluewood Parks** and **Crops** vegetation types (McMahan et al. 1984). The TPWD vegetation mapping is at a plant association level (i.e., community type described typically by one, two or three dominant species). The TPWD map was based on previous vegetation maps, geologic mapping, ground-truthing, and Landsat data flown between 1972 and 1981. The purpose of the mapping was to provide a general picture of vegetation community types throughout the state. In addition, since the TPWD maps are based on information from the 1970s and 1980s, it provides information on historical vegetation types for much of the state. The vegetation descriptions created by the TPWD were, by necessity, defined on a broad scale and may not accurately reflect micro-scale vegetation types or recent changes in vegetation and land use within the area.

The **Mesquite-Live Oak-Bluewood Parks** vegetation type includes: mesquite (*Prosopis glandulosa*), bluewood or condalia (*Condalia hookeri*), huisache (*Acacia farnesiana*), whitebrush (*Aloysia gratissima*), spiny hackberry (*Celtis pallida*), lotebush (*Ziziphus obtusifolia*), Berlander wolfberry (*Lycium berlandieri*), Texas prickly pear (*Opuntia engelmannii*), bumelia (*Sideroxylon lanuginosum*), tasajillo (*Opuntia leptocaulis*), agarita (*Mahonia trifoliolata*), and Texas persimmon (*Diospyros texana*).

Common species of the **Crops** vegetation type are cultivated cover crops or row crops providing food and/or fiber for either man or domestic animals. This type may also portray grassland associated with crop rotations.

3.6 Fish and Wildlife

The habitat in and adjacent to the transmission study area would be expected to support mammals such as coyote (*Canis latrans*), deer mouse (*Peromyscus maniculatus*), eastern cottontail (*Sylvilagus floridanus*), fox squirrel (*Sciurus niger*), gray fox (*Urocyon cinereoargenteus*), nine-banded armadillo (*Dasypus novemcinctus*), northern raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), Virginia opossum (*Didelphis virginiana*), white-footed mouse (*Peromyscus leucopus*), and white-tailed deer (*Odocoileus virginiana*) (Schmidly 2004).

Common year-round bird species are expected to include Bewick's wren *(Thryomanes bewickii),* black-crested titmouse *(Baeolophus atricristatus),* black vulture (*Coragyps atratus*), brown-headed cowbird (*Molothrus ater*), Carolina chickadee *(Poecile carolinensis),* Carolina wren *(Thryothorus ludovicianus),*

Cooper's hawk (*Accipiter cooperii*), eastern meadowlark (*Sturnella magna*), European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), mourning dove (*Zenaida macroura*), northern cardinal *(Cardinalis cardinalis),* northern mockingbird *(Mimus polyglottos),* red-tailed hawk (*Buteo jamaicensis*), red-winged blackbird (*Agelaius phoeniceus*), turkey vulture (*Cathartes aura*) and wild turkey (*Meleagris gallopavo*) (Lockwood and Freeman 2004; USFWS 2016a).

Migratory bird species that would be expected to occur during the breeding season include ash-throated flycatcher (*Myiarchus cinerascens*), bell's vireo (*Vireo bellii*), black-chinned hummingbird (*Archilochus alexandri*), dickcissel (*Spiza americana*), lark sparrow (*Chondestes grammacus*), painted bunting (*Passerina ciris*), scissor-tailed flycatcher (*Tyrannus forficatus*), western kingbird (*Tyrannus verticalis*), and yellow-billed cuckoo (*Coccyzus americanus*) (Quillin and Holleman 1918; USFWS 2016a). Common wintering bird species are expected to include American robin (*Turdus migratorius*), cedar waxwing (*Bombycilla cedrorum*), fox sparrow (Passerella iliaca), lark bunting (*Calamospiza melanocorys*), short-eared owl (*Asio flammeus*), Sprague's pipit (*Anthus spragueii*), ruby-crowned kinglet (*Regulus calendula*), and yellow-rumped warbler (*Setophaga coronata*) (Attwater 1892; USFWS 2016a).

Amphibian diversity within the project area is expected to be low in drier upland areas and higher in areas that have intermittent or perennial standing water, such as along the Medina River and major creeks. Amphibians that may occur in or near the project area include Rio Grande leopard frog (*Rana berlandieri*), green tree frog (*Hyla cinerea*), Blanchard's cricket frog (*Acris crepitans blanchardi*), American bullfrog (*Rana catesbeiana*), coastal plains toad (*Incilius nebulifer*), and the Great Plains narrowmouth toad (*Gastrophryne olivacea*) (Garret and Barker 1987; Dixon 2013).

Reptiles are expected to occur within the project area in greater diversity than amphibians. Anticipated species would likely include the coachwhip snake (*Masticophis flagellum*), flatheaded snake (*Tantilla gracilis*), southern prairie lizard (*Sceloporus consobrinus*), short-lined skink (*Plestiodon tetragrammus brevilineatus*), Texas patch-nosed snake (*Salvadora grahamiae*), Texas rat snake (*Pantherophis obsoletus lindheimeri*), Texas spiny lizard (*Sceloporus olivaceus*), Texas spotted whiptail (*Cnemidophorus gularis*), and western diamondback rattlesnake (*Crotalus atrox*) (Garret and Barker 1987; Dixon 2013).

3.7 Federally and State-Threatened and Endangered Species

Species listed as threatened or endangered by USFWS are protected by the Endangered Species Act (ESA). Section 9 of the ESA prohibits the "take" of threatened and endangered species. Take is defined as "harass, harm, pursue, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." Generally, USFWS considers modification of regularly occupied endangered species habitat to constitute "harm" and, therefore, a violation of the ESA.

The USFWS considers 22 federally listed threatened or endangered species and four candidate species as having the potential to occur or be affected by activities in Bexar County (USFWS 2016a). Additionally, the TPWD considers another 14 state-listed threatened or endangered species and two additional federally listed species as also having the potential to occur or be affected by activities in the project area (TPWD 2016). A summary of the 42 federally and state-listed species, and candidate species is provided in Table 2 along with a description of their range or habitat requirements and the potential for their occurrence within the project area. Species lists are provided in Appendix A.

Of the 42 federally and state-listed species and candidate species, only three federal candidate and/or state-listed mollusk species and one state-listed reptile species have the potential to occur within the project area: golden orb (*Quadrula aurea*), Texas fatmucket (*Lampsilis bracteata*), Texas pimpleback

(*Quadrula petrina*), and Texas indigo snake (*Drymarchon melanurus erebennus*) (see Table 2). Further discussions on these four species is provided in the following subsections. Eleven migratory bird species also have the potential to fly over the project area during their migrations, however suitable habitats are not present to result in any long-term presence. No karst zones occur within the project area and no designated critical habitats occur within the project area for any of the listed arachnid and invertebrate species or Edwards Aquifer species. The remaining 27 species are unlikely to occur within the project area due to the absence of suitable habitats as outlined in Table 2.

Element of Occurrence Records (EOR)[1] were obtained from the TPWD Texas Natural Diversity Database (TXNDD) to identify known sighting locations of both federally and state-listed species recorded by TPWD. A review of the EOR dated April 22, 2016 was conducted for the Macdona, Texas, USGS 7.5-minute topographic map and surrounding quadrangles (TXNDD 2016). The EOR contains no records of known occurrences of federally listed threatened or endangered species in the study area. Species that have been identified in the transmission study area are the state-threatened widemouth blindcat (*Satan eurystomus*) and eastern spotted skunk (*Spilogale putorius*), a non-listed state species of concern. Two specimens of the widemouth blindcat were collected in 1985 from deep (500 meters or more) wells in the Edwards Aquifer. The spotted skunk specimen dates from 1988 and does not have precise location data. Migratory birds, including species identified by the USFWS as "birds of conservation concern," may nest or winter in the study area. These species are most likely to occur in the small portions of the study area that contain native grasses, woody vegetation, and riparian areas.

Table 2. Threatened and Endangered Species Identified by USFWS and TPWD with the Potential to Occur or be Adversely Affected by Activities Occurring within Bexar County, Texas

Species Common Name (Scientific Name)	Listed Status*	Range or Habitat Requirements	Potential for Occurrence within the Project Area
AMPHIBIANS			
Cascade Caverns salamander (*Eurycea latitans complex*)	ST	Springs and caves in Medina River, Guadalupe River, and Cibolo Creek watersheds within Edwards Aquifer area.	Unlikely to occur or be adversely affected by the project. The project area is not located within the Edwards Aquifer area.
Comal blind salamander (*Eurycea tridentifera*)	ST	Springs and waters of caves in Bexar and Comal Counties.	Unlikely to occur or be adversely affected by the project. The necessary cave habitat for this species is not located within the project area.
San Marcos Salamander (*Eurycea nana*)	FT Edwards Aquifer listed species	Endemic to the San Marcos Springs and nearby surface and subterranean aquatic habitats. Critical habitat has been established for this species wherever it is found.	Unlikely to occur or be adversely affected by the project. The project area is located approximately 30 miles southwest of the supporting spring systems for this species.

[1] A negative TXNDD EOR search result does not equate to absence of actual species occurrence because the presence of records is dependent on if searches for species were previously conducted and, if results are positive, the result of those searches then being reported to the TPWD. Furthermore, locations of EORs are only as accurate as the information reported to the TPWD and may encompass a large area to ensure that occurrences occur inside boundaries.

Species Common Name (Scientific Name)	Listed Status*	Range or Habitat Requirements	Potential for Occurrence within the Project Area
Texas Blind Salamander (*Typhlomolge rathbuni*)	FE Edwards Aquifer listed species	Restricted in its distribution mainly to the subterranean aquatic habitats of the Edwards aquifer artesian and recharge zone in the vicinity of San Marcos, Hays County.	Unlikely to occur or be adversely affected by the project. The project area is located approximately 45 miles southwest of the supporting aquatic habitats for this species.
BIRDS			
American peregrine falcon (*Falco peregrinus anatum)*	DL/ST	Nests in tall cliff eyries; 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.	Individuals may fly over the project area during migration; however, the project area does not provide suitable long-duration habitats for this species.
Black-capped vireo *(Vireo atricapilla)*	FE/SE (proposed for delisting December 2016)	Utilizes rangelands with scattered clumps of shrubs and patches of open grassland. Found throughout the Edwards Plateau and eastern Trans-Pecos regions.	Individuals may fly over the project area during migration; however; the project area does not provide suitable long-duration habitats for this species.
Golden-cheeked warbler (*Dendroica chrysoparia*)	FE/SE	Found in woodlands with tall Ashe juniper, oaks, and other hardwood trees. Nests only in the central Texas woodlands, using juniper bark for their nests.	Individuals may fly over the project area during migration; however; the project area does not provide suitable Ashe juniper woodland habitats for this species.
Least tern (*Sterna antillarum*)	FE/SE	Nests along sand and gravel bars within braided streams, rivers; also known to nest on human-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.	May fly over during migration. However, unlikely to be adversely affected by the project. Potential siting areas for the substation would not be located within or near suitable habitats along the Medina River or large creeks.
Peregrine falcon (*Falco peregrinus)*	DL/ST	Both subspecies migrate across the state from more northern breeding areas in United States and Canada to winter along coast and farther south.	May fly over during migration. However, unlikely to occur since the project area does not contain coastal habitats normally utilized by this species.
Piping plover (*Charadrius melodus*)	FT/ST	Prefer sandy beaches on the coast and inland lakes. Seagrass debris is an important feature of roosting sites in Texas.	May fly over during migration. However, unlikely to occur since the project area does not contain beach habitat or any inland lakes normally utilized by this species.
Red knot (*Calidris canutus rufa*)	FT	Utilize sandy and muddy coastal beaches and tidal flats. Areas with sparse vegetation are necessary for protection from predation.	May fly over during migration. However, unlikely to occur since the project area does not contain coastal beaches or tidal flats normally utilized by this species.
White-faced ibis (*Plegadis chihi*)	ST	Freshwater marshes, sloughs, irrigated rice fields, brackish and saltwater marshes; nests in marshes, in low trees.	May fly over during migration. However, unlikely to be adversely affected by the project. Potential siting areas for the substation would not be located within or near suitable marshy habitats.

Species Common Name (Scientific Name)	Listed Status*	Range or Habitat Requirements	Potential for Occurrence within the Project Area
Whooping crane (*Grus americana)*	FE/SE	Prefers salt flats and marshes of rolling coastal prairies in its southern migratory ranges and wetland areas in its northern migratory ranges.	May fly over during migration. However, unlikely to occur since the project area does not contain extensive wetland habitats normally utilized by this species.
Wood Stork (*Mycteria americana*)	ST	Prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt water.	May fly over during migration. However, unlikely to be adversely affected by the project. Potential siting areas for the substation would not be located within or near suitable wetland habitats.
Zone-tailed hawk (*Buteo albonotatus*)	ST	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.	May fly over during migration. However, unlikely to be adversely affected by the project. Potential siting areas for the substation would not be located within or near suitable habitats.
FISHES			
Fountain darter *(Etheostoma fonticola)*	FE Edwards Aquifer listed species	Occurs only within the Comal Springs-River system and the San Marcos Springs-River system.	Unlikely to occur or be adversely affected by the project. The project area is located outside of designated critical habitat.
Toothless blindcat (*Trogloglanis pattersoni*)	ST	Limited to the subterranean aquatic habitats of five artesian wells (around 900–1,800 feet deep) penetrating the San Antonio Pool of the Edwards Aquifer.	Unlikely to be adversely affected by the project. The project would not reach the habitat depths of this species and implementation of the project is in response to population growth and would not stimulate population growth or water demands (i.e., over pumping) from the aquifer.
Widemouth blindcat (*Satan eurystomus*)	ST	Limited to the subterranean aquatic habitats of five artesian wells (around 900–1,800 feet deep) penetrating the San Antonio Pool of the Edwards Aquifer.	Unlikely to be adversely affected by the project. The project would not reach the habitat depths of this species and implementation of the project is in response to population growth and would not stimulate population growth or water demands (i.e., over pumping) from the aquifer.
CRUSTACEANS			
Peck's Cave amphipod (*Stygobromus pecki)*	FE Edwards Aquifer listed species	Limited to the aquatic habitats of the Edwards Aquifer and stream bottoms in and around the Comal and Hueco Springs.	Unlikely to occur or be adversely affected by the project. The project area is located outside of designated critical habitat.
FLOWERING PLANTS			
Bracted twistflower (*Streptanthus bracteatus)*	FC	Oak-juniper woodlands on slopes or canyon bottoms with thin, well-drained, gravelly clay or clay-loam soils developed over massive layers of low-porosity limestone or dolomite. Critical habitat has not been designated for this species.	Unlikely to occur or be adversely affected by the project. Suitable oak-juniper woodlands and limestone canyons do not occur within the project area.

Species Common Name (Scientific Name)	Listed Status*	Range or Habitat Requirements	Potential for Occurrence within the Project Area
Texas wild rice (*Zizania texana)*	FE Edwards Aquifer listed species	A clumping perennial grass that roots underwater in riverbeds. Only known to occur in the upper 2-mile segment of the San Marcos River in Hays County.	Unlikely to occur or be adversely affected by the project. The project area is located outside of designated critical habitat.
ARACHNIDS / INVERTEBRATES			
Braken Bat Cave meshweaver (*Cicurina venii)*	FE	Known range is currently limited to the Braken Bat Cave and adjacent karst habitat. However, critical habitat has been established for this species wherever it is found.	Unlikely to occur or be adversely affected by the project. The project area is not located within any karst zones and is located outside of designated critical habitat.
Cokendolpher Cave harvestman (*Texella cokendolpheri)*	FE	Known range is currently limited to the Robber Baron Cave. However, critical habitat has been established for this species wherever it is found.	Unlikely to occur or be adversely affected by the project. The project area is not located within any karst zones and is located outside of designated critical habitat.
Comal Springs dryopid beetle (*Stygoparnus comalensis)*	FE Edwards Aquifer listed species	Habitat is limited to the aquatic subterranean area of Comal Springs and Fern Bank Springs.	Unlikely to occur or be adversely affected by the project. The project area is located outside of designated critical habitat.
Comal Springs riffle beetle (*Heterelmis comalensis)*	FE Edwards Aquifer listed species	Habitat is limited to the aquatic headwaters of the Comal and San Marcos rivers.	Unlikely to occur or be adversely affected by the project. The project area is located outside of designated critical habitat.
Government Canyon Bat Cave meshweaver (*Cicurina vespera)*	FE	Known range is currently limited to the Government Canyon karst faunal region. However, critical habitat has been established for this species wherever it is found.	Unlikely to occur or be adversely affected by the project. The project area is not located within any karst zones and is located outside of designated critical habitat.
Government Canyon Bat Cave spider *(Tayshaneta microps)*	FE	Known range is currently limited to the Government Canyon karst faunal region. However, critical habitat has been established for this species wherever it is found.	Unlikely to occur or be adversely affected by the project. The project area is not located within any karst zones and is located outside of designated critical habitat.
Ground beetle [No Common Name] (*Rhadine exilis)*	FE	Found in 51 cave systems within four karst faunal regions in Bexar County. Critical habitat has been established for this species wherever it is found.	Unlikely to occur or be adversely affected by the project. The project area is not located within any karst zones and is located outside of designated critical habitat.
Ground beetle [No Common Name] (*Rhadine infernalis)*	FE	Found in 39 cave systems within five karst faunal regions in Bexar County. Critical habitat has been established for this species wherever it is found.	Unlikely to occur or be adversely affected by the project. The project area is not located within any karst zones and is located outside of designated critical habitat.
Helotes mold beetle (*Batrisodes venyivi)*	FE	Found in eight cave systems within three karst faunal regions in Bexar County. Critical habitat has been established for this species wherever it is found.	Unlikely to occur or be adversely affected by the project. The project area is not located within any karst zones and is located outside of designated critical habitat.
Madla's Cave meshweaver *(Cicurina madla)*	FE	Found in 22 cave systems within four karst faunal regions in Bexar County. Critical habitat has been established for this species wherever it is found.	Unlikely to occur or be adversely affected by the project. The project area is not located within any karst zones and is located outside of designated critical habitat.

Species Common Name (Scientific Name)	Listed Status*	Range or Habitat Requirements	Potential for Occurrence within the Project Area
Robber Baron Cave meshweaver (*Cicurina baronia)*	FE	Known range is currently limited to two cave systems in the Alamo Heights karst faunal region. However, critical habitat has been established for this species wherever it is found.	Unlikely to occur or be adversely affected by the project. The project area is not located within any karst zones and is located outside of designated critical habitat.
MAMMALS			
American black bear (*Ursus americanus*)	ST	Desert lowlands and high elevation forests and woodlands.	Unlikely to be adversely affected by the project. Suitable habitat is not present within the project area.
Gray wolf (*Canis lupus*)	FE/SE	Found in forests, brushlands, and grassland areas that provide suitable cover and denning sites.	Currently believed to be extirpated in Texas. Therefore, it is unlikely to occur or be adversely affected by the project.
Red wolf (*Canis rufus*)	FE/SE	Found in brushy and forested areas along with coastal prairies of east Texas.	Currently believed to be extirpated in Texas. Therefore, it is unlikely to occur or be adversely affected by the project.
MOLLUSKS			
Golden orb (*Quadrula aurea)*	FC/ST	Endemic to Texas freshwater systems within the Guadalupe-San Antonio and Nueces-Frio river basins.	Tributaries to the San Antonio River are located within the project area and may provide suitable habitat for this species. However, it is unlikely to be adversely affected by the project since potential siting areas for the substation facilities would not be located within or adjacent to suitable habitats.
Texas fatmucket (*Lampsilis bracteata)*	FC	Endemic to the freshwater systems of the San Antonio, Guadalupe, and Colorado Rivers in Central Texas.	Tributaries to the San Antonio River are located within the project area and may provide suitable habitat for this species. However, it is unlikely to be adversely affected by the project since potential siting areas for the substation facilities would not be located within or adjacent to suitable habitats.
Texas pimpleback (*Quadrula petrina)*	FC	Endemic to the central Texas freshwater systems of Concho River and San Saba River and San Marcos River.	Tributaries to the San Antonio River are located within the project area and may provide suitable habitat for this species. However, it is unlikely to be adversely affected by the project since potential siting areas for the substation facilities would not be located within or adjacent to suitable habitats.
REPTILES			
Texas horned lizard (*Phrynosoma cornutum*)	ST	Open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees.	Unlikely to be adversely affected by the project. Suitable habitat is not present within the project area.

Species Common Name (Scientific Name)	Listed Status*	Range or Habitat Requirements	Potential for Occurrence within the Project Area
Texas indigo snake (*Drymarchon melanurus erebennus*)	ST	South of the Guadalupe River and Balcones Escarpment; thorn bush-chaparral woodlands of south Texas, especially dense riparian corridors; suburban areas and irrigated croplands.	Riparian corridors occur within the project area and may provide suitable habitat for this species. However, it is unlikely to be adversely affected by the project since potential siting areas for the substation facilities would not be located within or adjacent to suitable habitats.
Texas tortoise (*Gopherus berlandieri*)	ST	Prefers open, brushy areas with a grassy understory.	Unlikely to be adversely affected by the project. Suitable habitat is not present within the project area.
Timber rattlesnake (*Crotalus horridus*)	ST	Swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland, and limestone bluffs in east and central-east portions of Texas.	There are no known records of timber rattlesnakes in Bexar County (Werler and Dixon 2000). Unlikely to be adversely affected by the project.

* FE = Federal Endangered; FT = Federal Threatened; DL = Federally Delisted; FC = Federal Candidate; SE = State Endangered; ST = State Threatened (U.S. Fish and Wildlife Service 2016; Texas Parks and Wildlife Department 2016).

3.7.1 Golden Orb

The golden orb mussel is endemic to Texas and occurs within the Guadalupe-San Antonio and Nueces-Frio drainages of Central Texas. Maximum shell length is about 3 inches. The shell shape is rectangular, quadrate, oval, to nearly round. External color is yellow-brown, gold, orangish-brown, to dark brown or black. Shell is moderately thick and very slightly inflated. Beak is narrow and elevated above the hinge. Beak sculpture typically consists of 2 to 3 irregular, nodular ridges. Pustules are typically absent from the shell surface but sometimes vaguely occurring centrally. The left valve has two pseudocardinal teeth and the right valve has one with teeth slightly heavy. The lateral teeth (two left valve, one right valve) are also slightly heavy. Internally the nacre is white to iridescent posteriorly (Howells 2014). Glochidial hosts are unknown but, similar to other *Quadrula* species, are likely catfishes (Howells 2014).

The golden orb occurs in firm mud, sand, and gravel within moderately size flowing creeks and rivers at depths up to 3 meters. The species is typically intolerant of impoundments but has been found in Lake Corpus Christi in areas of wind swept currents (Howells 2014).

3.7.2 Texas Fatmucket

The Texas fatmucket is endemic to Texas and occurs in the Guadalupe-San Antonio and Colorado drainages of the Edwards Plateau. Maximum shell length is about 4 inches. The shell shape is elliptical to subrhomboidal and without sculpture. Texas fatmuckets are sexually dimorphic with males more round-pointed and females more bluntly truncate posteriorly. External color is yellowish- or greenish-tan with black or brown rays that broaden toward the margins. The rays are often broken. Beaks are elevated above hinge line with fine V-shaped ridges. The left valve has two pseudocardinal teeth and the right valve has one. The pseudocardinal teeth are thin and compressed. The lateral teeth (two left valve, one right valve) are slightly curved and lamellar. Internally the nacre is white with occasional salmon or yellow tint. Glochidial host are known to include bluegill sunfish (*Lepomis macrochirus*), green sunfish (*L. cyanellus*), and Guadalupe and largemouth bass (*Micropterus treculii* and *M. salmoides*). Females have mantle flaps used to lure fish for glochidial dispersal. The size, color, and shape of these flaps can vary by location (Howells 2014).

The Texas fatmucket occurs in shallow flowing creeks and smaller rivers with firm mud, stable sand, and gravel. Some populations inhabit bedrock cracks or bald cypress (*Taxodium distichum*) roots. This species is not typically found in impoundments (Howells 2014).

3.7.3 Texas Pimpleback

The maximum shell length of this species is approximately 4 inches. The shell moderately inflated and is subquadrate to suboval or nearly round. External color is yellow to tan or brown to black. The shell can occasionally have green rays or concentric blotches. The beak is full (not narrow) and elevated well above the hinge line. Beak sculpture consists of 2 to 4 rows of nodules or sometimes a cross-hatched pattern. The left valve has two pseudocardinal teeth and the right valve has one. The pseudocardinal teeth are large. The lateral teeth (two left valve, one right valve) are heavy and straight to slightly curved. Internally the nacre is white to iridescent posteriorly. Glochidial hosts are unknown but, similar to other *Quadrula* species, are likely catfishes (Howells 2014).

The Texas pimpleback is endemic to Texas and occurs within the Guadalupe-San Antonio and Colorado River drainages. It typically occurs in flowing, moderate to large creeks and rivers within mud, sand, or gravel bottoms and cracks. The Texas pimpleback appears to be intolerant of impoundments (Howells 2014).

3.7.4 Texas Indigo Snake

The Texas indigo snake is a large (up to 8 feet or more in length) snake that is limited in occurrence to South Texas, south of the Edwards Plateau and Guadalupe River. This species is generally limited to the thornbrush country of southern Texas, characterized as mesquite and grassland savanna, in areas with adequate moisture. It most frequently occurs in woody riparian corridors or along the margins of stock ponds, resacas, and streams. Indigo snakes are diurnal and typically feed upon vertebrates, including lizards, frogs, birds, small mammals, and other snakes. According to Werler and Dixon (2000), although the Texas indigo snake historically occurred in Bexar County as late as the 1950's, it no longer occurs in the county.

3.7.5 Critical Habitat

Bexar County contains critical habitat for nine endangered karst invertebrate species; however, the project area contains none of this critical habitat. Therefore, this issue is not carried forward for analysis.

3.8 Socioeconomics

The following sections provide population, economic, and environmental justice information for Bexar County and the City of San Antonio.

3.8.1 Population and Economic Trends

Bexar County's population has grown more than 26% over the past 15 years from 1,392,935 residents to 1,897,753 residents as of 2015 (U.S. Census Bureau 2015). During the same time period, the average number of people per household also increased from 2.78 to 2.90. The Texas Water Development Board (TWDB) (2017) predicts that by 2070, Bexar County population will continue to grow by more than 50%. Likewise, the estimated population for San Antonio in 2000 was 1,144,646 people (U.S. Census Bureau

2008) but the TWDB (2017) predicts that by 2070, the San Antonio population will almost double its current numbers (Table 3).

Table 3. Population Projections for Bexar County and San Antonio through 2070

Projected Year	Bexar County	San Antonio
2020	1,974,041	1,528,129
2030	2,231,550	1,727,491
2040	2,468,254	1,910,744
2050	2,695,668	2,086,803
2060	2,904,319	2,248,336
2070	3,094,726	2,395,743

Primary employment sectors in Bexar County and the City of San Antonio include tourism, educational, health and social services; retail trade; professional, scientific, management, administrative, and waste management services; arts, entertainment, recreation, accommodation and food services; finance, insurance, real estate, and rental and leasing; and construction (U.S. Census Bureau 2017a). Estimated per capita personal income in Bexar County was $24,735 (U.S. Census Bureau 2017a) with a 7.4% unemployment rate from 2011–2015 (U.S. Census Bureau 2017a). The U.S. Census Bureau (2017a) reported a per capita personal income of $22,960 for the City of San Antonio in 2015 with a 7.9% unemployment rate for the same time period.

3.8.2 Environmental Justice

According to the U.S. Environmental Protection Agency's (EPA's) Environmental Justice (EJ) Screen (2017a), the Hispanic or Latino population represented the largest minority population in the region, accounting for 59% of the total population for Bexar County (EJScreen 2017a). The EJ Screen (2017a) indicates that 40% of Bexar County's total population could be designated as low income. Based on the EPA's EJ Screen (2017b), approximately 81% of the Shepherd study area's total population could be designated as minority, and 73% as Hispanic or Latino, while 49% could be designated as low income.

3.9 Human Development

3.9.1 Transportation /Aviation / Communications Facilities

The major transportation features within the study area are IH 35 and Loop 1604. IH 35 runs parallel to the southeastern project area boundary for approximately 4.25 miles. Loop 1604 crosses the study area in a generally north to south direction through the east-central portion of the project area.

A review of the Airport/Facility Directory for the South Central U.S. (Federal Aviation Administration [FAA] 2014) and the Texas Airport Directory (TxDOT 2012) found one private airfield within the project area, the Star Smith Field, located in the southeast central portion of study area, southeast of the intersection of Kinney and Pearsall Roads.

A review of GIS data provided by the Federal Communications Commission (2013) found that there are no AM radio towers, FM radio transmitters, microwave, or other electronic installations located within the study area.

3.9.2 Land Use

Historically, ranching was the predominant land use in Bexar County; however, the acreage dedicated to ranching operations continues to decrease as farms and ranches are subdivided for residential and commercial development. The total land area in farms decreased 3% from 441,206 acres in 2002 to 425,909 acres in 2007 (USDA 2007). Based on the latest land cover data (Homer et al. 2011) Bexar County is primarily composed of low to high development (20%), natural vegetation[2] (44%), and cropland or pasture land (16%). It is likely, however, that since these estimates were published the percentage of developed lands has increased due to rapid commercial and residential development in the region.

Based on aerial and National Land Cover Database (NLCD) data, land use within the project area is still mostly undeveloped, consisting predominately of shrub/scrub, crops, pasture, and developed open space. Approximately 8% of the project area is classified as low- to high-intensity developed lands (Table 4).

Table 4. Land Cover Data for the Study Area.

Land Cover Category	Acres	Percentage of Total Land Cover
Open Water	393	2%
Developed, Open Space	1,419	8%
Developed, Low Intensity	773	4%
Developed, Medium Intensity	458	3%
Developed, High Intensity	230	1%
Barren Land (Rock/Sand/Clay)	59	<1%
Deciduous Forest	830	5%
Evergreen Forest	43	<1%
Mixed Forest	220	1%
Shrub/Scrub	4,468	25%
Grassland/Herbaceous	654	4%
Pasture/Hay	2,598	14%
Cultivated Crops	4,600	25%
Woody Wetlands	1,276	7%
Emergent Herbaceous Wetlands	117	1%
Grand Total*	**18,140**	**100%**

The Public Utility Commission of Texas defines habitable structures as:

> …single-family and multifamily dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a daily or regular basis.

[2] Consisting of forest, shrub/scrub, grassland, or wetland land cover types.

Of the eight potential substation sites, four have habitable structures within 300 feet of the proposed location boundary: Substations 5 and 6 each have four structures within 300 feet. Substation 7 has structures on the parcel which has an interested seller; in addition, structures occur within 300 feet of the Substation 7 site boundary. Substation 8 has one structure on the parcel that has also been offered for sale to CPS Energy. Habitable structures are also present adjacent to transmission routes that parallel local streets within the project area, including along Shepherd Road, Edwards Road, Pearsall Road/Old Pearsall Road, Jarratt Road, and Kearney Road.

3.9.3 Parks and Recreation

No public parks or recreation areas occur within the substation study area. Within the transmission study area, one parcel identified as Salas Family Park occurs on Nelson Road along the Medina River; this property occurs over 0.25 mile north of Segment AU. One property that was recently acquired by San Antonio River Authority (SARA) occurs within the transmission study area; this property is planned by for eventual park development; transmission Segments AS and AR occur along this parcel.

3.10 Aesthetics

Aesthetics is included as a factor for consideration in the evaluation of transmission facilities in Section 37.056(c)(4) of the Texas Utilities Code. The term "aesthetics" refers to the subjective perception of natural beauty in the landscape and attempts to define and measure an area's scenic qualities. Aesthetic values considered in this analysis, which combine to give an area its aesthetic identity, include

- topographical variation (hills, valleys, etc.),
- prominence of water in the landscape,
- vegetation variety (forests, pasture, etc.),
- diversity of scenic elements,
- degree of human development or alteration, and
- overall uniqueness of the scenic environment compared to the larger region.

Based on the above criteria, the project area generally exhibits a low to moderate degree of aesthetic quality for this region due to the presence of crops and shrub/cropland/pastureland as predominant vegetation types.

3.11 Cultural Resources

SWCA conducted a cultural resources constraints analysis on behalf of CPS Energy for the Shepherd Substation to 1) gather available information on previously recorded archaeological surveys, archaeological sites, and historic resources within the project area plus a 1-mile buffer, and 2) assess the potential for the presence of significant cultural resources and possible future work that may be required for regulatory compliance. CPS Energy is a political subdivision of the State of Texas; therefore, cultural resources investigations were conducted to satisfy the requirements of the Antiquities Code of Texas (ACT). At this time and for the foreseeable future, there is no federal funding, permitting, or entities involved in this undertaking.

SWCA's review of the soils, geology, previous work, and aerial photographs indicate that the study area has a moderate to high probability of containing significant cultural resources consisting of historic-age resources and prehistoric archaeological sites (Figure 6). The majority of the study area consists of large, undeveloped rural tracts of land interspersed with single-family residences and farm/ranch complexes. The highest density of development is focused along the Loop 1604 and Pearsall Road intersection, with industrial and commercial development.

The previous cultural resources investigations are concentrated within the eastern and southeastern quadrants of the study area (Figure 6). Much of the study area west of Loop 1604 has not been previously investigated for cultural resources. The study area contains a high probability of containing significant archaeological resources focused along the Medina River, Medio Creek, and Polecat Creek waterways and associated tributaries. These alluvial settings along the creeks have the potential to contain deeply buried intact cultural resources. The adjacent terraces and uplands along the waterways have the potential to contain prehistoric archaeological sites such as campsites and lithic scatters typical of the region. These sites are typically shallow and disturbed due to the previous disturbances related to agricultural land-clearing activities. Most of the previously recorded archaeological sites within the study area consist of lithic scatters and farmsteads that are recommended as ineligible for listing on the National Register of Historic Places. However, multiple sites within the study area have an eligibility status as undetermined with recommendations of further work. In total, nine previous cultural resources investigations, 33 previously recorded sites, eight cemeteries, and one historical markers occur within the study area.

In addition, the study area has a moderate potential of containing historic-age resources based on the results of the historic map review. Historic-age buildings and complexes are evident on maps dating from 1903 to 1953. Some of these buildings correspond to those identified as habitable structures in the environmental constraints analysis. The age and significance of these resources can only be confirmed via a pedestrian survey. Also, several cemeteries, including the San Isidro, Hermann Sons, McCulloch, Becker, Mann Road, Lessing, Tripp, and Arnold occur within the study area. Based on this information, the scope of cultural resources investigations for cultural resources compliance of the location of the proposed Shepherd Substation and proposed utility lines would likely require an intensive pedestrian survey augmented by shovel testing.

4.0 ENVIRONMENTAL IMPACT OF THE PROJECT

4.1 IMPACT ON NATURAL RESOURCES

4.1.1 Impact on Geological Resources

Vegetation clearing and ground-disturbing activities would be required for project construction. However, construction of new structures is anticipated to disturb only small amounts of near surface geologic materials: 0.0012 acre per transmission tower and approximately 6 acres of surface disturbance for the substation. Therefore, the project would impact less than 0.05% of the geological resources underlying the project area.

4.1.2 Impact on Soils

Construction of the 6-acre substation site and estimated 55-acre transmission line would result in surface disturbance and increase the potential for soil erosion and compaction to occur. Construction projects that exceed 1 acre of ground disturbance must comply with the TCEQ Texas Pollutant Discharge Elimination

System (TPDES) program which regulates discharges of pollutants, including sediments from soil erosion, from entering into Texas surface waters. In accordance with the TPDES regulations, CPS Energy would obtain permit coverage under the TPDES Construction General Permit (TXR150000) for the proposed project and would implement a stormwater pollution prevention plan (SWPPP) for construction activities in accordance with the permit requirements prior to construction activities commencing. A Notice of Intent (NOI) would need to be submitted to TCEQ since the project area exceeds 5 acres. The SWPPP would outline the process of implementing pollution prevention procedures as required by the TPDES Construction General Permit, including Best Management Practices (BMP) to be implemented on site where needed prior to and during construction activities to reduce the potential of pollutants discharging from the project area (e.g., soil erosion, waste materials). BMPs would include preservation of existing vegetation wherever feasible, erosion and sediment controls (e.g., silt fencing, erosion matting, etc.), good housekeeping practices, control measures for hazardous materials, and post-construction stabilization measures to restore disturbed areas following the construction activities. In accordance with the TPDES Construction General Permit, routine inspections would be conducted throughout the duration of construction to ensure BMP measures are operating efficiently and that no pollutant discharges are occurring from the construction activities. Erosion and sediment control measures would be maintained and inspections conducted until all disturbed sites are sufficiently revegetated, as required by the SWPPP.

Soil disturbance would be caused by the use of heavy machinery, vehicle compaction, the removal of vegetation, and the intermixing of topsoil and subsoil during grading, placement of fill and stockpiling for the substation and potentially for the transmission line construction. Due to construction of permanent structures and access roads, soils associated with the 6-acre substation site would likely be compacted and removed from productivity for the life of the project. However, this impact represents less than 0.05% of soils within the project area.

As vegetative cover is removed and the structural stability of the soil is disrupted, potential for erosion typically increases. This potential degree of erosion depends upon slope, runoff probability, soil texture, and soil structure. Finely textured soils with poor structure are generally more prone to water erosion than are coarse, sandy soils. Silts are particularly vulnerable to water erosion because of their fine particle size and decreased cohesiveness. However, elevated sandy textures make soils more sensitive to wind erosion. The project area includes some soils that are susceptible to erosive forces, especially in the absence of vegetative cover resulting from grading and compaction from heavy machinery. The SWPPP will address these areas and outline BMP measures to reduce potential wind erosion (e.g., wetting soils down).

If grading is required for transmission line construction, slopes would be returned to preconstruction conditions or graded parallel to landscape contours in a manner that conforms to natural topography, except to the extent necessary to establish appropriate ROW, structure sites, and access for the transmission line.

Post-construction stabilization measures would be outlined in the project SWPPP and would include measures such as revegetation, landscaping, or hardscaping (e.g., concrete/asphalt cover). It is anticipated that disturbed areas, outside the footprint of the structures and access road, would naturally revegetate the majority of the transmission ROW over time, thereby eliminating exposed soils. Given the rapid regrowth of native Texas vegetation for the project area, it is anticipated that natural revegetation would occur within the required timeframes outlined in the TPDES Construction General Permit. If natural revegetation does not establish sufficient ground cover in a reasonable length of time, seeding, sprigging or hydroseeding of restored areas could be initiated to encourage growth of select grasses and other vegetation. Where factors such as topography make it difficult to establish a protective vegetative cover, other restoration procedures could be advisable to prevent erosion, such as the use of gravel, rocks, or concrete. Implementation of SWPPP requirements is anticipated to avoid and minimize erosion during

construction and revegetation of exposed areas is anticipated to avoid or minimize erosion and long-term effects to disturbed soils. Overall, the small footprint necessary for the substation and transmission line would permanently convert only a small portion of soils to impervious cover within the larger project area.

Prime farmland soils, as defined by the NRCS, are present within the project area. However, projects are only subject to the Farmland Protection Policy Act if actions completed by a federal agency or with assistance from a federal agency would irreversibly convert farmland to nonagricultural use. Since construction of the Shepherd Substation project would not represent an irreversible loss and CPS Energy is not a federal agency or using federal funds, this act is not applicable to the project (NRCS 2016b). CPS Energy would employ previously discussed BMP measures to minimize impacts to farmland soils.

4.1.3 Impact on Water Resources

4.1.3.1 SURFACE WATER

All substation alternative sites would avoid direct impacts to streams, wetlands, and other water bodies. CPS Energy would also avoid and/or minimize the placement of transmission structures within streambeds, wetlands, or other types of drainage features. If temporary impacts to stream banks, wetlands and/or streambeds are required during construction, CPS Energy would seek a permit from the U.S. Army Corps of Engineers (USACE) in accordance with Section 404 of the Clean Water Act, which would include measures to avoid and minimize potential effects to jurisdictional wetlands and/or waterways. If clearing of vegetation is necessary at stream crossings, CPS Energy could employ selective clearing (i.e., use of chain saws instead of heavy machinery) to minimize erosion impacts. Construction crews would also avoid stream impacts by transporting machinery and equipment around these areas along existing roads, where feasible.

Construction activities could result in slight increases in erosion within disturbed areas during construction, leading to elevated sediment yields to streams within or near the construction sites during heavy rainfall events. However, only small areas would be disturbed at any one time and CPS Energy would control runoff from construction areas using appropriate best management practices (BMPs) in accordance with the SWPPP. CPS Energy would also preserve streamside vegetated buffers when practicable. Although there is potential for impacts from hazardous materials or petroleum products from construction equipment leaks or spills, CPS Energy or their contractors would implement proper control and handling of any petroleum or other chemical products per the SWPPP and these impacts are considered unlikely.

4.1.3.2 FLOODPLAIN

FEMA-designated 100-year floodplains are present within the project area. However, all substation site alternatives are located outside of the 100-year floodplain. Transmission structures and any maintenance access routes could require construction within the floodplain, regardless of substation choice. If so, CPS Energy would seek City of San Antonio (where within the ETJ) and/or Bexar County (outside ETJ) Floodplain Development permits and all structures within the floodplain would be located to minimize any effects to flooding. CPS Energy would also place structures in a manner that would eliminate any possible scour to occur around the structures during heavy rains or flood events to avoid affecting the function of the floodplain or affect adjacent or downstream properties.

4.1.3.3 GROUNDWATER

Potential groundwater impacts that could occur during construction activities include accidental spills of hazardous materials or petroleum products (e.g., fuels, lubricants, solvents, etc.). However, SWPPP requirements include proper storage and containment of hazardous materials, as well as construction site housekeeping requirements and other measures to minimize and mitigate for any spills.

4.1.4 Impact on Ecosystems

4.1.4.1 VEGETATION

Vegetation impacts would occur during site preparation and/or construction activities. These impacts would consist of permanent removal of all vegetation within the 6-acre substation site, short-term removal of woody vegetation within the approximate 55-acre transmission line construction area, and long-term vegetation maintenance within a 60- to 100-foot-wide ROW. Where possible, woody vegetation removal would be limited to an approximately 50-foot radius around transmission line towers and a minimum 30-foot-wide clearing along conductor alignments.

CPS Energy has committed to minimizing impacts on both flora and fauna when encountered during the construction and maintenance of the substation and transmission lines. Post construction, CPS Energy would determine whether reseeding of the transmission ROW would be necessary for erosion control. CPS Energy would also coordinate with landowners for their input prior to reseeding and prioritize use of native seed mixes that are certified weed free. Utilizing these types of soil conservation practices help maintain native vegetation, which would provide a higher success rate in the restoration of disturbed areas. It is anticipated that disturbed areas would naturally revegetate; however, if natural revegetation would not occur within a reasonable length of time, especially in areas with steeper slopes, seeding, sprigging or hydroseeding could be required in order to provide sufficient ground cover.

4.1.4.2 WILDLIFE

The impacts of construction on wildlife would include habitat disturbance or removal and associated noise and human activity, as well as collisions or injury from impact with project components or equipment/vehicles. Construction activities associated with a new substation and transmission line would alter or remove up to 61 acres of wildlife habitat, which represents less than 1% of habitat available in the study area. The proposed transmission line would be routed along existing ROWs and land parcel boundaries, where feasible, to minimize project impacts to wildlife species.

Clearing could reduce forage material and cover from predators for some wildlife; however, revegetation in the transmission ROW after construction and availability of surrounding habitat would minimize the overall adverse effect for grassland- or shrub-dependent wildlife species. Clearing would also increase edge habitat, which could result in adverse or beneficial impacts depending on the species. Some avian species prefer large, undisturbed forest habitats and studies have shown detrimental effects of habitat fragmentation on these species (Robbins et al. 1989; Terborgh 1989). These species requiring undisturbed forest habitat are typically more sensitive to and could be vulnerable to predation, brood parasitism, and other impacts on nesting success from increased edge adapted species. Ravens, jays and cowbirds are among edge-adapted species that could impact passerines nesting within the impacted area (Robbins et al. 1989; Terborgh 1989; Faaborg and Ardemt 1992; Hagan et al. 1996; Rochelle et al. 1999; Herkert et al. 2003).

In contrast, edge species would gain additional habitat through the increased cover of small shrubs, perennial forbs, and grasses in the transmission ROW. Substation and transmission line structures can

provide resting and hunting perches, particularly in open, treeless habitats that are beneficial to some bird species, especially raptors. (Olendorff et al. 1981; Avian Power Line Interaction Committee [APLIC] 1994, 1996). Transmission line structures often serve as nesting sites for red-tailed hawks, other raptors and corvids (ravens and crows). Species that use the structures for roosting sites and hunting or resting perches include vultures, corvids, red-tailed hawk, American kestrel (*Falco sparverius*), mourning dove, loggerhead shrike (*Lanius ludovicianus*), and meadowlarks (*Sturnella* spp.). Raptor populations in several areas of the United States have increased due to addition of transmission lines (APLIC 1994). As stated previously, clearing of the ROW would increase edge habitat. Edge-adapted avian species (e.g., blue jay (*Cyanocitta cristata*), some flycatchers, northern cardinal, northern bobwhite [*Colinus virginianus*], Cooper's hawk [*Accipiter cooperii*], brown-headed cowbird, and northern mockingbird) could see increased success in the altered areas along the ROW (Rochelle et al. 1999). The danger of electrocution to birds from this project would be insignificant because the distance between conductors or conductor and structure or ground wire on 138-kV transmission lines is greater than the wingspan of any bird in the area.

Increased noise and activity levels during construction could potentially disturb the daily activities (e.g., breeding, foraging, etc.) of species inhabiting the areas adjacent to the substation and transmission line ROW. However, given the presence of residential and commercial activity and vehicle traffic noise in the project area, it is expected that local species are likely acclimatized to higher noise levels. Construction-related traffic could also injure or kill smaller, low-mobility species, particularly amphibians, reptiles, and small mammals that cannot move out of the way of moving equipment and vehicles.

The substation and transmission line structures and wires could also present a hazard to flying birds, with collisions possibly resulting in disorientation, injury, or mortality (New York Power Authority 2005). Mortality increases in structure height; number of guy wires, conductors, and ground wires; and/or use of solid or pulsating red lights (an FAA requirement on some structures) (Erickson et al. 2005). Attractive habitat such as wetlands and edge habitat can increase collision hazards. Fall migrations can also increase collisions due to lower flight altitudes associated with cold air masses, fog, and inclement weather. Periods of low ceiling, poor visibility, and drizzle are the most dangerous when birds are flying low and they could have difficulty seeing obstructions (Electric Power Research Institute 1993).

Collision risk for the proposed project is considered to be low, since proposed transmission structures are much lower than typical flight altitudes (Wouldard 1978; Gauthreaux 1978). Waterfowl species represent to highest risk due to a combination of their low-altitude flight and high speed. Species that travel in large flocks, such as blackbirds and many shorebirds, are also highly vulnerable, as this style of travel makes it more difficult for individuals to move around obstacles (APLIC 1994). Despite waterfowl being at a higher risk for wire strikes (Faanes 1987; Erickson et al. 2005), it has been estimated that wire strikes (including distribution lines) account for less than 0.1% of waterfowl non-hunting mortality, while 88% of waterfowl non-hunting mortality is attributable to diseases and poisoning and 7.4% is due to weather (Stout and Cornwell 1976). Raptors are normally not victims of wire strikes – because of their highly sharpened visual acuity, raptors very rarely fall victim to transmission lines collisions (Thompson 1978). Their heightened eyesight is furthermore benefitted by sufficient sunlight, as they usually are active in the late morning after sufficient thermal currents have developed (Avery 1978).

Substation and transmission line construction would, for the most part, have little effect on aquatic species. The proposed substation would be constructed in an upland area away from existing streams, creeks, and potential wetland areas. Additionally CPS Energy would implement a SWPPP and install stormwater controls to minimize the potential for erosion or sedimentation to enter nearby aquatic features and indirectly affect suitable habitat or individual species that may be present.

4.1.4.3 ENDANGERED AND THREATENED SPECIES

Of the 42 federally and state-listed species and candidate species identified in Table 2, only three mollusk species (one state threatened, all three federal candidates) and one state-threatened reptile species have the potential to occur within the project area; these include the golden orb, Texas fatmucket, Texas pimpleback, and the Texas indigo snake. However, suitable habitats for these four species is limited to the aquatic ecosystems and riparian habitats within the project area. The proposed substation would be constructed in an upland area away from existing streams, creeks, and potential wetland areas. Additionally CPS Energy would implement a SWPPP and install stormwater controls to minimize the potential for erosion or sedimentation to enter nearby aquatic features and indirectly affect suitable habitat or individual species that may be present.

The 11 migratory bird species identified in Table 2 would only be expected to occur in Bexar County during their migration periods. All of these migratory bird species require specific habitats which do not occur within the project area (i.e., dense woodlands, coastal shores, marshes). Although these species may fly over the project area on an occasional basis during migration, no impacts to these species are expected.

4.2 IMPACT ON HUMAN RESOURCES

4.2.1 Socioeconomic Impact

Because CPS Energy normally uses its own employees or subcontractors during the clearing and construction phase of substation and transmission line projects, this EA assumes that the project would not generate new short-term local employment within Bexar County. A portion of the construction staff wages, however, would find its way into the local economy through purchases such as fuel, food, lodging, and possibly building materials. The cost of permitting, designing, and constructing the line would be paid for through revenue generated by the sale of electrical service.

Potential long-term economic benefits to the community resulting from construction of this project are based on the requirement of electric utilities to provide an adequate and reliable level of electrical transmission and distribution service throughout their service areas. Economic growth and development rely heavily on adequate public utilities, including a reliable electrical power supply system. The proposed project is intended to ensure that a reliable power supply system would be available to not only current users but future users as well. The project area would benefit socioeconomically from a reliable power source, without which potential for economic growth would likely be constrained.

The Shepherd Substation project would be constructed in an area with a low-income and minority environmental justice population. These two populations could experience an increase in construction noise, traffic, and activity during the construction phase. However, these impacts would cease when construction is complete. Placement of a 6-acre substation will result in a change in land use from undeveloped or residential to industrial land use. Construction of the 55-acre transmission line would affect land use at the tower locations, although most of the transmission easement area would remain consistent with current land use; for example, easement could continue to be used for agriculture or grazing. CPS Energy would not allow construction of permanent structures within the utility easement. The project would not result in adverse, long-term impacts to air or water quality, traffic and noise conditions, or introduce hazardous materials into the area. CPS Energy would negotiate property acquisition or ROW easements based on appraisal value for all affected landowners, but reserves the right to use the eminent domain process if negotiations are unsuccessful. Once construction is complete, it is

expected that implementation of the proposed project would provide benefits to these two populations through more reliable electrical service.

4.2.2 Impact on Land Use

Land use impacts can be categorized in two ways. The first would be considered a direct impact—the change from the existing land use to industrial (substation) use and utility ROW. The second type of impact would be an indirect impact and would be circumstances where the new land use would not be compatible with the surrounding land uses.

Construction of the proposed substation would convert 6 acres from residential lands to industrial use for the duration of the project. Construction of the transmission line would also impact an estimated 46 acres of non-developed lands (shrubland, forest, herbaceous, planted/cultivated, and wetlands). However, generally, the transmission ROW would be unfenced and landowners would have access to easements located on their land to continue previous land uses, once construction is complete. Therefore, no long-term land use conversion would occur outside of the transmission tower footprints.

Proposed project components would be consistent with existing distribution lines and other commercial and light industrial activities present in the project area. During construction, temporary affects to residents and businesses in the area immediately adjacent to the substation site and ROW could include construction noise, dust, and disruption of traffic patterns. However, impacts would be limited in scope and duration; all impacts would cease when construction is complete. Coordination between CPS Energy, contractors, and adjacent landowners regarding access issues and the construction scheduling would also help minimize these impacts.

4.2.3 Impact on Recreation

Potential impacts to recreational land use would include impacts and/or changes that would disrupt or prohibit recreational activities. No substation sites would be located within or adjacent to any parks or recreational areas. Two of the transmission line alternatives (Segments AR and AS) occur along a SARA property that is planned for future park development. As discussed in Section 7.0, in a meeting between SARA staff and CPS Energy, SARA staff stated that monopole towers are preferred and wouldn't be expected to have a large visual impact (see Section 4.2.5). SARA staff also stated that the two agencies could coordinate on access roads if required for transmission line construction. The Salas Family Park is located over 0.25 mile from any proposed transmission line segment and would not be directly affected. Visual impacts would be expected to be minor due to the distance to the line and existing woodlands surrounding the park.

4.2.4 Impact on Transportation / Aviation / Communications Facilities

Construction impacts to major transportation features would consist of temporary disruption of travel patterns due to traffic control during construction when crossing the existing roadways. Traffic generated by construction vehicles would only be temporary and would resume to normal after construction has been completed. No post-construction impacts are expected; sufficient transmission line clearances would be required and maintained to ensure there would be no impacts to vehicular traffic.

Project structure heights would generally range from 85 to 125 feet, depending upon location and design. According to Federal Aviation Regulations, Part 77 (FAA 1975), FAA would need to be notified only if

any of the proposed structures exceed 200 feet in height. Therefore, construction of the proposed transmission line along the existing route would not require FAA notification.

No AM radio towers, FM radio transmitters, or microwave towers would be affected by the proposed project.

4.2.5 Impact on Aesthetics

Aesthetic impacts, or impacts on visual resources, exist when the substation or the transmission line system directly impact the existing view-shed, by altering the character and/or create a visual impairment of the existing view-scape. The type and severity of the impact is related directly to the quality of the view-scape, and the reduction in the quality relating to the natural setting or use and enjoyment of the view-scape. This includes the importance of the view-scape to the surrounding community and/or recreational areas.

Construction of the proposed substation and 138-kV transmission line would have both temporary and permanent aesthetic effects. Temporary impacts would include views of the actual assembly and erection of the structures. Permanent impacts from the project would involve the addition of a new substation structure and new transmission line to the exiting view-shed. The new substation would add a small industrial facility to an area that is currently largely residential or agricultural. In general, as previously noted, the observed presence of a new transmission line is expected to be compatible with other land uses in the project area, but will affect views for some residents. CPS Energy is proposing to use steel monopole structures for the transmission line, which are considered to be less visually obtrusive than lattice structure transmission towers. Vegetation removal in new ROW would also be limited to those areas necessary for construction and maintenance of the transmission lines.

4.3 IMPACT ON CULTURAL RESOURCES

Although this project is currently being conducted without the need for federal funding, federal permitting (USACE) may be required; therefore, federal guidelines established under Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended, provide a useful and generally applied standard for considering the severity of possible direct and indirect cultural resource impacts. According to the Secretary of the Interior's Guidelines for protection of historical and archaeological resources (36 CFR 800), adverse impacts may occur directly or indirectly when a project causes changes in archaeological, architectural, or cultural qualities that contribute to a resource's historical or archaeological significance.

Cultural resource sites, historic and prehistoric, located on lands owned or controlled by the State of Texas or one of its political subdivisions, are also protected by the ACT. The ACT requires state agencies and political subdivisions of the state, including cities, counties, and utilities to notify the Texas Historical Commission (THC) of any action on public land involving five or more acres of ground disturbance; 5,000 or more cubic yards of earth moving; or those that have the potential to disturb recorded archaeological sites. The THC's Archeology Division manages compliance with the ACT, including the issuance of formal Antiquities Permits, which stipulate the conditions under which scientific investigations will occur. Under the ACT, any historic or prehistoric property located on state land may be determined eligible as a State Antiquities Landmark.

Depending on location and the type of activity, the proposed undertaking may also require review and approval by the SA-OHP. That office regulates local compliance within historic districts, for individual

historic buildings, as well as for the City of San Antonio's Historic Preservation and Design Section of the Unified Development Code (Article VI 35-360 to 35-364).

Prior to construction of the substation and transmission line, CPS Energy would perform a site-specific evaluation of cultural resources to identify any resources that may require avoidance and/or mitigation to resolve impacts. A formal unanticipated discoveries plan would also be developed and supplied to CPS Energy and its construction contractors. In the event that unanticipated cultural resources are revealed during construction, work would cease immediately in the vicinity of the resource, the discovery reported to the THC and the SA-OHP, and action taken as directed by the THC and SA-OHP.

Indirect impacts include those effects caused by the project that are farther removed in distance or which occur later in time but are reasonably foreseeable. These indirect impacts may include introduction of visual or audible elements that are out of character with the resource or its setting. Indirect impacts may also occur as a result of alterations in the pattern of land use, changes in population density, accelerated growth rates, or increased pedestrian or vehicular traffic. Since most of CPS Energy's easements would be located on private property and inaccessible to the general public, vandalism of sites should not be a significant problem. Consideration of other indirect effects is provided in previous EA sections.

5.0 AGENCY CONSULTATION AND PUBLIC INVOLVEMENT

On behalf of CPS Energy, SWCA contacted the following local, state, and federal agencies and officials by letter in August 2016 to solicit comments, concerns, and information regarding potential environmental impacts, permits, or approvals for the construction of CPS Energy's proposed Shepherd Substation project. A map of the project area was included with each letter. Sample copies of the letters and responses received are included in Appendix B.

Federal Agencies

- FAA
- NRCS Texas State Office
- EPA
- FEMA
- USFWS
- U.S. Army Corps of Engineers (USACE) - Fort Worth District
- Public Affairs Office, Randolph Air Force Base

Federal Delegation

- The Honorable Will Hurd

State Agencies

- TPWD
- Texas Water Development Board (TWDB)
- THC
- Division of Aviation - TxDOT
- Environmental Affairs Division - TxDOT

- District Engineer - TxDOT, San Antonio District
- TCEQ
- Texas General Land Office

State Delegation

- The Honorable Carlos I. Uresti
- The Honorable Rick Galindo
- The Honorable John Lujan

Bexar County

- Bexar County Economic Development
- Bexar County Manager
- Bexar County Judge
- Mr. Sergio Rodriguez, Bexar County Commissioner, Precinct 1
- Mr. Paul Elizondo, Bexar County Commissioner, Precinct 2
- Mr. Kevin Wolff, Bexar County Commissioner, Precinct 3
- Mr. Tommy Calvert, Bexar County Commissioner, Precinct 4
- Bexar County Justice of the Peace
- Bexar County Farm Service Agency
- Bexar County Farm Bureau
- Bexar County Public Works Department
- Bexar County Chief of Staff
- Bexar County Environmental Engineer

City/Local

- San Antonio River Authority
- San Antonio Water System
- City of San Antonio Economic Development Department
- City of San Antonio Department of Planning & Community Development
- City of San Antonio Transportation & Capital Improvements
- City of San Antonio Office of Historic Preservation
- Ms. Ivy R. Taylor, Mayor, City of San Antonio
- Mr. Roberto C. Trevino, Councilman, District 1, City of San Antonio
- Mr. Alan E. Warrick, II, Councilman, District 2, City of San Antonio
- Ms. Rebecca J. Viagran, Councilwoman, District 3, City of San Antonio
- Mr. Rey Saldana, Councilman, District 4, City of San Antonio
- Ms. Shirley Gonzales, Councilwoman, District 5, City of San Antonio
- Mr. Ray Lopez, Councilman, District 6, City of San Antonio
- Mr. Cris Medina, Councilman, District 7, City of San Antonio
- Mr. Ron Nirenberg, Councilman, District 8, City of San Antonio
- Mr. Joe Krier, Councilman, District 9, City of San Antonio
- Mr. Mike Gallagher, Councilman, District 10, City of San Antonio
- City of Lytle

Others

- School Board President, Southwest Independent School District (ISD) Board of Trustees
- School Board Vice-President, Southwest ISD Board of Trustees
- School Board Secretary, Southwest ISD Board of Trustees
- Ms. Ida Sudolcan, School Board Member, Southwest ISD Board of Trustees
- Mr. James Sullivan, Jr., School Board Member, Southwest ISD Board of Trustees
- Ms. Florinda Bernal, School Board Member, Southwest ISD Board of Trustees
- Mr. Keith Byrom, School Board Member, Southwest ISD Board of Trustees
- Ms. Yolanda Garza-Lopez, School Board Member, Southwest ISD Board of Trustees
- Superintendent, Southwest ISD
- President, Medina Valley ISD Board of Trustees
- Vice President, Medina Valley ISD Board of Trustees
- Secretary, Medina Valley ISD Board of Trustees
- Superintendent, Medina Valley ISD
- Deputy Superintendent, Medina Valley ISD
- President, Somerset ISD Board of Trustees
- Vice President, Somerset ISD Board of Trustees
- Secretary, Somerset ISD Board of Trustees
- Superintendent, Somerset ISD

Agency responses are summarized in Table 5. Agencies not listed in Table 5 did not submit a response to the agency letter as of the date of this EA.

Table 5. Agency Responses.

Agency and Point of Contact	Date	Comment Summary
Carlos J. Villarreal, Natural Resources Conservation Service (NRCS), State Office	7/14/16	Comment notes that provisions of the Farmland Protection Policy Act are not applicable and that the NRCS does not consider transmission lines to be a conversion of farmland. Comment also encourages the use of acceptable erosion control methods to address concerns associated with potential of water erosion, flooding hazards, soils with high amounts of clay with shrink-swell potential.
Melanie King, Federal Emergency Management Agency	7/20/16	Comment requests that the community floodplain administration be contacted for review and possible permitting. If federally funded, the project should comply with Executive Orders 11988 and 11990.
Ronnie Hernandez, San Antonio River Authority (SARA)	7/21/16	A permanent easement must be obtained from SARA prior to crossing the Medina River. All federal, state, and local permits must be procured for work in the floodplain; and implement stormwater BMPs to reduce impact to waterways.
Andy Winter, Bexar County environmental engineer	9/6/16	Project area contains flood zone, likely has septic systems but the county has no records. Construction over 1 acre will require a county Storm Water Quality Permit, and post-construction water quality features.
Stephen L. Brooks, U.S. Army Corps of Engineers	7/18/16	Letter requests additional project information to determine whether Department of Army authorization will be required, and if so, in what form. General permit information is provided for reference. Letter requests the CPS Energy minimize impacts to streams, wetlands, and other waters of the U.S., and consider project impacts to cultural resources and endangered species.
Cameron Lopez, Texas Commission on Environmental Quality	8/5/16	Noted solid waste facilities identified in the study area: Covel Gardens Landfill, Nelson Gardens Landfill/Brush Recycling Center, and Alamo Commercial Properties/Standard Industries.

Agency and Point of Contact	Date	Comment Summary
Russell Hooten Wildlife Habitat Assessment Program Texas Parks and Wildlife	8/22/2016	Provides detailed recommendations to avoid or minimize impacts to habitats and wildlife resources. Recommend clearing outside of nesting season and performing pre-construction surveys for migratory birds and state-listed species if habitat would be impacted. Locating transmission line as close to existing disturbed corridors as possible.
Claude Harding and Matthew Driffil, San Antonio River Authority (SARA)	8/25/16	At meeting between SARA and CPS Energy staff, stated that monopole towers are preferred and didn't think they would have a large visual impact. Interested in having access off Trawalter Road, would be interested in "piggy-backing" with CPS Energy on this access route, if potentially used for transmission construction.
Texas General Land Office Glenn Rosenbaum	7/15/16	Did not identify environmental or land use constraints. Requested that CPS Energy provide the final site for them to determine if any easements are required.
Kelvin Solco, Federal Aviation Administration (FAA)	7/25/16	Notes that if CPS Energy is planning to sponsor construction that may affect navigable airspace, must provide documentation to FAA.
TxDOT - Aviation	8/17/16	Noted FAA notification requirements, states that there are no public use airports or heliports in or near study area.
Mike Frisbie, P.E., City of San Antonio Transportation and Capital Improvements	7/25/16	States that the city has no previous environmental studies in the project area from past and recent bond programs, recommends contacting the city Office of Historic Preservation.

CPS Energy hosted an open-house format public meeting on August 25, 2016. Fourteen landowner questionnaires were completed and returned; an additional one was sent by e-mail, and eight were submitted through the CPS Energy web site. The primary concerns identified by respondents were proximity of facilities to residential structures, schools, churches/cemeteries, floodplains, and effects on views and property values. Comments on specific substation sites and transmission line route segments were the following:

- Substation Site 1 is on land used to grow irrigated vegetables; concern about losing irrigated land.
- Substation Site 2 is on land with agricultural exemption; loss of 6 acres would affect the exemption.
- Substation Site 5 – concern about removing large trees in area and loss of property use.
- Landowner has 8 acres in study area willing to sell – became Substation Site 7.
- Transmission Route Segment D could affect aesthetics and value of property.
- Transmission Route Segment AR and AS could affect aesthetics and value of property.
- Transmission Route Segment BF will affect dove hunting operation on property.
- Substation Site 7 is adjacent to properties with residents, while Site 1 would have no close neighbors.

CPS Energy hosted a Board of Trustees Public Input meeting on June 22, 2017. Related to this meeting, commenters submitted six additional landowner questionnaires, seven letters, one e-mail comment, three CPS Energy web site forms, and two meeting comment cards. The primary concerns identified by respondents were proximity of facilities to residential structures, floodplains/wetlands, drainage, wildlife habitat/woodlands, churches/cemeteries, traffic around site, electromagnetic fields, and effects on views and property values. CPS Energy staff reviewed comments and followed up through conversations with

individual landowners to address concerns. Landowner comments and questions, along with CPS Energy responses (in blue), are summarized below:

1. Can CPS Energy take a less destructive transmission line route on my property?

Project team met with landowner and discussed adjusting the route on landowner's property.

2. The landowner was not aware of the project and wanted to understand the need for the substation and transmission line.

Due to expected growth in the area, CPS Energy has identified the need to install an electrical substation to better serve our customers and improve reliability.

3. The transmission line will decrease property values. How are easement values determined?

Property values are determined through appraisals.

4. Will trees on our property may be damaged or destroyed due during construction?

CPS Energy's construction methods minimize impacts to heritage trees and abide by the City of San Antonio Tree Ordinance which prohibits CPS Energy from clear cutting the transmission easement.

5. Shepherd Road is expected to be widened in the next 20 years from MacDona-LaCoste Road to IH-35, was this considered in the analysis?

Project team confirmed with Bexar County Public Works that they have no plans to widen Shepherd Rd in the foreseeable future.

6. The landowner was not aware of the project and wanted to understand the need for the substation and transmission line.

Due to expected growth in the area, CPS Energy has identified the need to install an electrical substation to better serve our customers and improve reliability.

7. Why not consider a transmission line route over the San Isidro Cemetery?

Project team determined routing a transmission line over a cemetery introduces a high risk complexity to obtaining an easement.

8. The landowner did not want transmission line poles on her property.

Project team reviewed the concern and determined we can avoid placing a pole on her property. This was communicated with the landowner.

9. How will the transmission line affect a planned center-pivot irrigation system?

Project team informed the landowner that the transmission line and pole locations will be as close as possible to the paralleling road (Shepherd Rd). Estimated span lengths were discussed with the landowner. Therefore, working with the landowner the potential pole locations will have no impact on the irrigation system.

10. What are the restrictions for landowner use of easement?

The easement will not be fenced, therefore the land can be used to graze or farm. CPS Energy does not allow permanent structures to be built in the easement.

11. Clearing of trees on our road-frontage exposes homes to Shepherd Road and the landowner would like to build a new house near the proposed transmission line.

We are committed to working with the landowner and discussed options to mitigate this concern.

12. At the Open House, only six substation sites were presented to the public. The (previous) recommended site/route (#7) was not located on their property.

True. At the Open House, the project team learned of an interested seller for the substation site. This property and associated transmission route segments were added as an option to be included in the overall evaluation. The team contacted nine additional property owners that fell within 300 ft of this site/route addition.

13. Is it safe to live next to a substation? Does EMF pose health risk to people or animals near substation or transmission lines? Will the new substation impact medical devices, cellphone service, or TV service?

Design and construction will be performed within industry and CPS Energy standards. External studies conducted on EMF effects have not definitively linked power line frequency to health concerns. The new substation will not impact medical devices, cellphone or TV service.

14. Storm water drainage at the site.

As with all substation projects, storm water drainage will be designed and constructed to not cause drainage issues to adjacent properties.

15. How much noise will be associated with the constructing, maintenance, and operation of the substation?

Construction primarily occurs Monday through Friday during daylight hours. Routine maintenance is also performed during normal business hours. However, crews must respond to emergency situations as necessary.

16. Why was this site chosen over the other sites? Did CPS Energy select this site simply because of the willing seller? Why aren't more options being presented to the Board?

Each option was evaluated based on environmental factors and projected costs. Based on these rankings, one preferred route/site is selected and presented to the Board for approval per the General Facility Routing & Siting process. In addition, general evaluation information on all sites/routes were provided in the May 2017 Board presentation package.

17. Will the substation increase heat and consequently our energy costs?

Heat generated from the power transformers will generally stay within the substation and will dissipate vertically upward. In addition, the substation site will be evaluated to include a vegetated "buffer" area to help mitigate the concern.

18. Will trees on our property may be damaged or destroyed due during construction?

CPS Energy's construction methods minimize impacts to heritage trees and abide by the CoSA Tree Ordinance which prohibits CPS Energy from clear cutting the transmission easement. The substation site layout will also be evaluated to include a vegetated "buffer" area.

19. How will traffic be impacted in proximity of substation site?

Traffic will increase slightly during construction and subdue after. Traffic control will be utilized as required by CoSA.

20. The landowner is concerned is that the information presented by some of the speakers at the June 22nd Board Input Session about preferred substation site #7 property is false.

The project team informed the landowner that all public input is evaluated and only valid concerns are considered in the selection process of the preferred route and site. We also informed the landowner that newly added site #8 will be evaluated as a potential substation site.

21. The landowner is concerned about the safety of the oil well in proximity to substation and electric lines.

The oil well would not be impacted by the proposed substation, transmission line, or distribution lines.

Full copies of the landowner letters, e-mails, and completed questionnaires are included in Appendix C.

6.0 PERMITTING

The proposed project would require acquisition of new substation property and transmission easement. CPS Energy would obtain the required federal, state, and local permits. Limited portions of the project area are within the City of San Antonio extra-territorial jurisdiction (ETJ), therefore City permits may also be required depending on final site selection. CPS Energy would perform environmental baseline studies and a regulatory review of the final selected site to determine specific permitting requirements. Table 6 provides a summary of potential regulatory and environmental permitting requirements for the proposed project.

Table 6. Potential Regulatory/Environmental Permitting Requirements.

Regulatory Trigger	Agency	Permit/Authorization
Soil disturbance/placement of fill in streams, ponds, or wetlands	U.S. Army Corps of Engineers	Section 404 Permit
Grading/excavation in stream channels	Texas Parks and Wildlife Department	Sand and Gravel Permit
Impacts to potentially significant cultural resources	Texas Historical Commission (THC) City of San Antonio Office of Historic Preservation (SA-OHP)	Texas Antiquities Permit/THC review and concurrence SA-OHP review
Impacts to threatened/endangered species	U.S. Fish and Wildlife Service Texas Parks and Wildlife Department City of San Antonio	Informal Section 7 consultation/review State-listed species review/avoidance Habitat compliance process
Construction/fill in 100-year floodplains	Federal Emergency Management Agency Bexar County City of San Antonio	Flood Plain Development Permit
Construction area >5 acres	Texas Commission on Environmental Quality Bexar County City of San Antonio	Texas Pollutant Discharge Elimination System (TPDES) Stormwater Construction General Permit NOI submittal Storm Water Quality Site Development Permit Storm Water Permit/MS4 Notification
Impacts to significant or heritage trees (in extra-territorial jurisdiction [ETJ])	City of San Antonio	Tree affidavit/permit
Utility crossing of Medina River	San Antonio River Authority	Easement

7.0 PREFERRED SITE/ROUTE SELECTION

SWCA evaluated eight potential substation sites and 90 potential combinations of substation sites and transmission alignments for the proposed Shepherd Substation project, based on environmental/land use criteria (as described in Section 2.3). CPS Energy then used this environmental evaluation and took into consideration engineering factors, cost, distribution requirements, operation and maintenance factors, as well as future needs. Tables and information summarizing the environmental rankings, engineering costs, and distribution planning site preference are provided in Appendix D.

The substation site/transmission line routes in the top 12 (including ties) of the environmental rankings are summarized in Table 7.

Table 7. Top Environmental Rankings for Substation Site/Route Alternatives.

Substation	Site/Route ID	Environmental Rank (1 = environmentally preferred)	Cost Rank (1 = lowest cost)
8	8-A	1	1
1	1-H	2	29
2	2-C	3	14
1	1-C	4 (tie)	21
3	3-J	4 (tie)	62
7	7-H	4 (tie)	17
2	2-G	5 (tie)	15
7	7-C	5 (tie)	12
1	1-G	6 (tie)	34
2	2-A	6 (tie)	9
2	2-B	6 (tie)	16
3	3-D	6 (tie)	68

As Table 7 illustrates, none of the top environmentally preferred site/route combinations were associated with substation sites 4, 5 or 6. Based on review of engineering, cost, environmental criteria and public/agency input, substation alternatives 8, 1, and 2 were determined to be the preferred substation sites. In evaluating transmission routes to serve these sites, SWCA ranked Routes 8-A, 1-H and 2-C as the top three environmentally preferred routes. Environmental rankings were very close with many ties. Like the environmental rankings, cost rankings were similar for most of these sites/routes. Route 8-A had the lowest overall estimated cost of the 10 environmental preferred sites/routes (see cost summary in Appendix D).

Routes associated with sites 4, 5, and 6 have environmental and cost uncertainties related to large areas of 100-year floodplain, high probability areas for archaeological sites, Union Pacific railroad property, and an active hazardous materials management/disposal facility crossed by the proposed route. Because of these uncertainties, these alternatives were considered less favorable when considering all criteria looked at by CPS Energy and the SWCA evaluation.

7.1 PREFERRED ROUTE/SITE

Route 8-A had the lowest total cost of all of the alternatives evaluated, and was tied for second in the environmental ranking. Route 8-A also lacks the environmental and cost uncertainties associated with sites 4, 5, and 6 Overall, based on all of the environmental and cost factors used in this evaluation, Route 8-A was designated as the preferred route/site (Figure 7).

Figure 7. Preferred substation site and transmission line route.

8.0 REFERENCES

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APPENDIX A

THREATENED AND ENDANGERED SPECIES LISTS

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Austin Ecological Services Field Office
10711 BURNET ROAD, SUITE 200
AUSTIN, TX 78758
PHONE: (512)490-0057 FAX: (512)490-0974
URL: www.fws.gov/southwest/es/AustinTexas/;
www.fws.gov/southwest/es/EndangeredSpecies/lists/

Consultation Code: 02ETAU00-2017-SLI-0430 February 06, 2017
Event Code: 02ETAU00-2017-E-00655
Project Name: 37946 - Shepherd Substation and T-Line Study Area

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

To Whom It May Concern:

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

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

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

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

While a Federal agency may designate a non-Federal representative to conduct informal consultation or prepare a biological assessment, the Federal Agency must notify the Service in writing of any such designation. The Federal agency shall also independently review and evaluate the scope and content of a biological assessment prepared by their designated non-Federal representative before that document is submitted to the Service.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by a federally funded, permitted or authorized activity, the agency is required to consult with the Service pursuant to 50 CFR 402. The following definitions are provided to assist you in reaching a determination:

- *No effect* - the proposed action will not affect federally listed species or critical habitat. A "no effect" determination does not require section 7 consultation and no coordination or contact with the Service is necessary. However, if the project changes or additional information on the distribution of listed or proposed species becomes available, the project should be reanalyzed for effects not previously considered.
- *May affect, but is not likely to adversely affect* - the project may affect listed species and/or critical habitat; however, the effects are expected to be discountable, insignificant, or completely beneficial. Certain avoidance and minimization measures may need to be implemented in order to reach this level of effect. The Federal agency or the designated non-Federal representative should consult with the Service to seek written concurrence that adverse effects are not likely. Be sure to include all of the information and documentation used to reach your decision with your request for concurrence. The Service must have this documentation before issuing a concurrence.
- *Is likely to adversely affect* - adverse effects to listed species may occur as a direct or indirect result of the proposed action. For this determination, the effect of the action is neither discountable nor insignificant. If the overall effect of the proposed action is beneficial to the listed species but the action is also likely to cause some adverse effects to individuals of that species, then the proposed action "is likely to adversely affect" the listed species. The analysis should consider all interrelated and interdependent actions. An "is likely to adversely affect" determination requires the Federal action agency to initiate formal section 7 consultation with our office.

Regardless of the determination, the Service recommends that the Federal agency maintain a complete record of the evaluation, including steps leading to the determination of effect, the qualified personnel conducting the evaluation, habitat conditions, site photographs, and any other related information. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:
http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF.

Migratory Birds

For projects that may affect migratory birds, the Migratory Bird Treaty Act (MBTA) implements various treaties and conventions for the protection of these species. Under the MBTA, taking, killing, or possessing migratory birds is unlawful. Migratory birds may nest in trees, brushy areas, or other areas of suitable habitat. The Service recommends activities requiring vegetation removal or disturbance avoid the peak nesting period of March through August to avoid destruction of individuals, nests, or eggs. If project activities must be conducted during this time, we recommend surveying for nests prior to conducting work. If a nest is found, and if possible, the Service recommends a buffer of vegetation remain around the nest until the young have fledged or the nest is abandoned.

For additional information concerning the MBTA and recommendations to reduce impacts to migratory birds please contact the U.S. Fish and Wildlife Service Migratory Birds Office, 500 Gold Ave. SW, Albuquerque, NM 87102. A list of migratory birds may be viewed at https://www.fws.gov/birds/management/managed-species/migratory-bird-treaty-act-protected-spe . Guidance for minimizing impacts to migratory birds for projects including communications towers can be found at: https://www.fws.gov/birds/management/project-assessment-tools-and-guidance/guidance-docume . Additionally, wind energy projects should follow the wind energy guidelines

https://www.fws.gov/birds/management/project-assessment-tools-and-guidance/guidance-docume) for minimizing impacts to migratory birds and bats.

Finally, please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan https://www.fws.gov/birds/management/project-assessment-tools-and-guidance/guidance-docume .

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

Attachment

United States Department of Interior
Fish and Wildlife Service

Project name: 37946 - Shepherd Substation and T-Line Study Area

Official Species List

Provided by:

Austin Ecological Services Field Office
10711 BURNET ROAD, SUITE 200
AUSTIN, TX 78758
(512) 490-0057
http://www.fws.gov/southwest/es/AustinTexas/
http://www.fws.gov/southwest/es/EndangeredSpecies/lists/

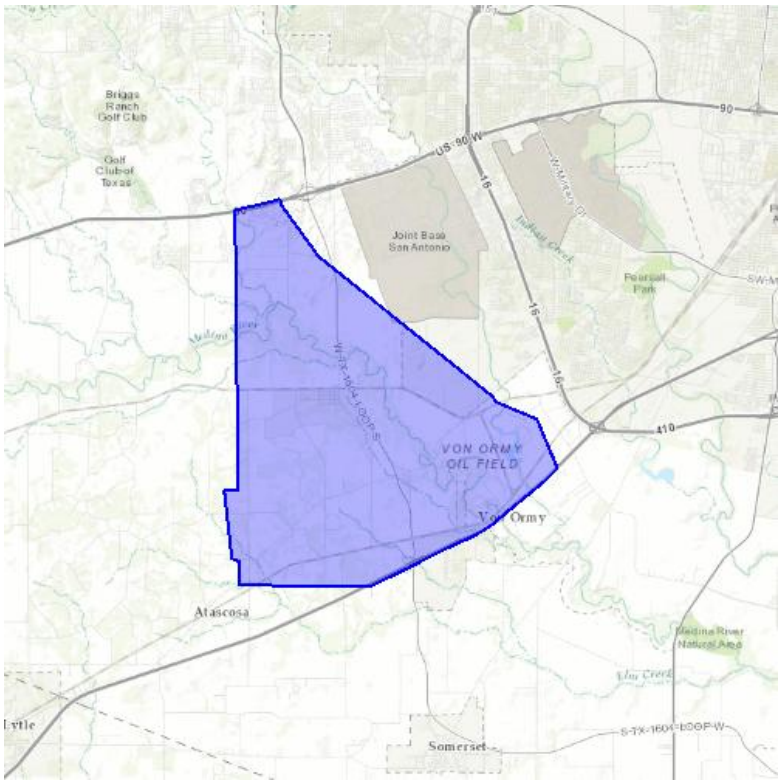
Consultation Code: 02ETAU00-2017-SLI-0430
Event Code: 02ETAU00-2017-E-00655

Project Type: TRANSMISSION LINE

Project Name: 37946 - Shepherd Substation and T-Line Study Area
Project Description: Southeast Bexar County

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.

Project Location Map:



Project Coordinates: The coordinates are too numerous to display here.

Project Counties: Bexar, TX

Endangered Species Act Species List

There are a total of 26 threatened, endangered, or candidate species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 3 of these species should be considered only under certain conditions. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Amphibians	**Status**	**Has Critical Habitat**	**Condition(s)**
San Marcos salamander *(Eurycea nana)* Population: Wherever found	Threatened	Final designated	
Texas Blind salamander *(Typhlomolge rathbuni)* Population: Wherever found	Endangered		
Arachnids			
Braken Bat Cave Meshweaver *(Cicurina venii)* Population: Wherever found	Endangered	Final designated	
Cokendolpher Cave Harvestman *(Texella cokendolpheri)* Population: Wherever found	Endangered	Final designated	
Government Canyon Bat Cave Meshweaver *(Cicurina vespera)* Population: Wherever found	Endangered	Final designated	
Government Canyon Bat Cave Spider *(Neoleptoneta microps)*	Endangered	Final designated	

Population: Wherever found			
Madla's Cave Meshweaver *(Cicurina madla)* Population: Wherever found	Endangered	Final designated	
Robber Baron Cave Meshweaver *(Cicurina baronia)* Population: Wherever found	Endangered	Final designated	
Birds			
Black-Capped Vireo *(Vireo atricapilla)* Population: Wherever found	Endangered		
golden-cheeked warbler *(Dendroica chrysoparia)* Population: Wherever found	Endangered		
Least tern *(Sterna antillarum)* Population: interior pop.	Endangered		Wind Energy Projects
Piping Plover *(Charadrius melodus)* Population: except Great Lakes watershed	Threatened	Final designated	Wind Energy Projects
Red Knot *(Calidris canutus rufa)* Population: Wherever found	Threatened		Wind Energy Projects
Whooping crane *(Grus americana)* Population: Wherever found, except where listed as an experimental population	Endangered	Final designated	
Clams			
golden orb *(Quadrula aurea)* Population: Wherever found	Candidate		
Texas Fatmucket *(Lampsilis bracteata)*	Candidate		

Population: Wherever found			
Texas Pimpleback *(Quadrula petrina)* Population: Wherever found	Candidate		
Crustaceans			
Peck's Cave amphipod *(Stygobromus (=stygonectes) pecki)* Population: Wherever found	Endangered	Final designated	
Fishes			
Fountain darter *(Etheostoma fonticola)* Population: Wherever found	Endangered	Final designated	
Flowering Plants			
Bracted twistflower *(Streptanthus bracteatus)* Population: Wherever found	Candidate		
Texas wild-rice *(Zizania texana)* Population: Wherever found	Endangered	Final designated	
Insects			
Comal Springs Dryopid beetle *(Stygoparnus comalensis)* Population: Wherever found	Endangered	Final designated	
Comal Springs Riffle beetle *(Heterelmis comalensis)* Population: Wherever found	Endangered	Final designated	
Helotes Mold beetle *(Batrisodes venyivi)* Population: Wherever found	Endangered	Final designated	
[no common name] Beetle *(Rhadine*	Endangered	Final designated	

exilis) Population: Wherever found			
[no common name] Beetle *(Rhadine infernalis)* Population: Wherever found	Endangered	Final designated	

Critical habitats that lie within your project area

There are no critical habitats within your project area.

Last Revision: 12/30/2016 10:31:00 AM

BEXAR COUNTY

AMPHIBIANS		Federal Status	State Status
Cascade Caverns salamander	*Eurycea latitans complex*		T

endemic; subaquatic; springs and caves in Medina River, Guadalupe River, and Cibolo Creek watersheds within Edwards Aquifer area

Comal blind salamander	*Eurycea tridentifera*		T

endemic; semi-troglobitic; found in springs and waters of caves

Texas salamander	*Eurycea neotenes*		

endemic; troglobitic; springs, seeps, cave streams, and creek headwaters; often hides under rocks and leaves in water; restricted to Helotes and Leon Creek drainages

ARACHNIDS		Federal Status	State Status
Bracken Bat Cave meshweaver	*Cicurina venii*	LE	

small, eyeless, or essentially eyeless spider; karst features in north and northwest Bexar County

Cokendolpher cave harvestman	*Texella cokendolpheri*	LE	

small, eyeless harvestman; karst features in north and northwest Bexar County

Government Canyon Bat Cave meshweaver	*Cicurina vespera*	LE	

small, eyeless, or essentially eyeless spider; karst features in north and northwest Bexar County

Government Canyon Bat Cave spider	*Tayshaneta microps*	LE	

small, eyeless, or essentially eyeless spider; karst features in north and northwest Bexar County

Madla Cave meshweaver	*Cicurina madla*	LE	

small, eyeless, or essentially eyeless spider; karst features in north and northwest Bexar County

Robber Baron Cave meshweaver	*Cicurina baronia*	LE	

small, eyeless, or essentially eyeless spider; karst features in north and northwest Bexar County

BIRDS		Federal Status	State Status
American Peregrine Falcon	*Falco peregrinus anatum*	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.

BEXAR COUNTY

BIRDS

		Federal Status	State Status
Arctic Peregrine Falcon	*Falco peregrinus tundrius*	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.

Black-capped Vireo	*Vireo atricapilla*	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

Golden-cheeked Warbler	*Setophaga chrysoparia*	LE	E

juniper-oak woodlands; dependent on Ashe juniper (also known as cedar) for long fine bark strips, only available from mature trees, used in nest construction; nests are placed in various trees other than Ashe juniper; only a few mature junipers or nearby cedar brakes can provide the necessary nest material; forage for insects in broad-leaved trees and shrubs; nesting late March-early summer

Interior Least Tern	*Sterna antillarum athalassos*	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

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

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.

Red Knot	*Calidris canutus rufa*	T	

BEXAR COUNTY

BIRDS

Federal Status State Status

Red knots migrate long distances in flocks northward through the contiguous United States mainly April-June, southward July-October. A small plump-bodied, short-necked shorebird that in breeding plumage, typically held from May through August, is a distinctive and unique pottery orange color. Its bill is dark, straight and, relative to other shorebirds, short-to-medium in length. After molting in late summer, this species is in a drab gray-and-white non-breeding plumage, typically held from September through April. In the non-breeding plumage, the knot might be confused with the omnipresent Sanderling. During this plumage, look for the knot's prominent pale eyebrow and whitish flanks with dark barring. The Red Knot prefers the shoreline of coast and bays and also uses mudflats during rare inland encounters. Primary prey items include coquina clam (Donax spp.) on beaches and dwarf surf clam (Mulinia lateralis) in bays, at least in the Laguna Madre. Wintering Range includes- Aransas, Brazoria, Calhoun, Cameron, Chambers, Galveston, Jefferson, Kennedy, Kleberg, Matagorda, Nueces, San Patricio, and Willacy. Habitat: Primarily seacoasts on tidal flats and beaches, herbaceous wetland, and Tidal flat/shore.

Sprague's Pipit *Anthus spragueii*

only in Texas during migration and winter, mid September to early April; short to medium distance, diurnal migrant; strongly tied to native upland prairie, can be locally common in coastal grasslands, uncommon to rare further west; sensitive to patch size and avoids edges.

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

White-faced Ibis *Plegadis chihi* T

prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats

Whooping Crane *Grus americana* LE E

potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties

Wood Stork *Mycteria americana* T

forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e. active heronries); breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960

Zone-tailed Hawk *Buteo albonotatus* T

arid open country, including open deciduous or pine-oak woodland, mesa or mountain county, 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

BEXAR COUNTY

CRUSTACEANS

		Federal Status	State Status
A cave obligate crustaean	*Monodella texana*		

subaquatic, subterranean obligate; underground freshwater aquifers

FISHES

		Federal Status	State Status
Guadalupe bass	*Micropterus treculii*		

endemic to perennial streams of the Edward's Plateau region; introduced in Nueces River system

Toothless blindcat	*Trogloglanis pattersoni*		T

troglobitic, blind catfish endemic to the San Antonio Pool of the Edward's Aquifer

Widemouth blindcat	*Satan eurystomus*		T

troglobitic, blind catfish endemic to the San Antonio Pool of the Edward's Aquifer

INSECTS

		Federal Status	State Status
A ground beetle	*Rhadine exilis*	LE	

small, essentially eyeless ground beetle; karst features in north and northwest Bexar County

A ground beetle	*Rhadine infernalis*	LE	

small, essentially eyeless ground beetle; karst features in north and northwest Bexar County

Helotes mold beetle	*Batrisodes venyivi*	LE	

small, eyeless mold beetle; karst features in northwestern Bexar County and northeastern Medina County

Manfreda giant-skipper	*Stallingsia maculosus*		

most skippers are small and stout-bodied; name derives from fast, erratic flight; at rest most skippers hold front and hind wings at different angles; skipper larvae are smooth, with the head and neck constricted; skipper larvae usually feed inside a leaf shelter and pupate in a cocoon made of leaves fastened together with silk

MAMMALS

		Federal Status	State Status
Black bear	*Ursus americanus*		T

bottomland hardwoods and large tracts of inaccessible forested areas

Cave myotis bat	*Myotis velifer*		

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

Gray wolf	*Canis lupus*	LE	E

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

BEXAR COUNTY

MAMMALS

		Federal Status	State Status
Plains spotted skunk	*Spilogale putorius interrupta*		

catholic; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie

Red wolf	*Canis rufus*	LE	E

extirpated; formerly known throughout eastern half of Texas in brushy and forested areas, as well as coastal prairies

MOLLUSKS

		Federal Status	State Status
Golden orb	*Quadrula aurea*	C	T

sand and gravel in some locations and mud at others; found in lentic and lotic; Guadalupe, San Antonio, Lower San Marcos, and Nueces River basins

Mimic cavesnail	*Phreatodrobia imitata*		

subaquatic; only known from two wells penetrating the Edwards Aquifer

REPTILES

		Federal Status	State Status
Spot-tailed earless lizard	*Holbrookia lacerata*		

central and southern Texas and adjacent Mexico; moderately open prairie-brushland; fairly flat areas free of vegetation or other obstructions, including disturbed areas; eats small invertebrates; eggs laid underground

Texas garter snake	*Thamnophis sirtalis annectens*		

wet or moist microhabitats are conducive to the species occurrence, but is not necessarily restricted to them; hibernates underground or in or under surface cover; breeds March-August

Texas horned lizard	*Phrynosoma cornutum*		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; breeds March-September

Texas indigo snake	*Drymarchon melanurus erebennus*		T

Texas south of the Guadalupe River and Balcones Escarpment; thornbush-chaparral woodlands of south Texas, in particular dense riparian corridors; can do well in suburban and irrigated croplands if not molested or indirectly poisoned; requires moist microhabitats, such as rodent burrows, for shelter

Texas tortoise	*Gopherus berlandieri*		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; longevity greater than 50 years; active March-November; breeds April-November

Timber rattlesnake	*Crotalus horridus*		T

swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland; limestone bluffs, sandy soil or black clay; prefers dense ground cover, i.e. grapevines or palmetto

BEXAR COUNTY

PLANTS

Federal Status State Status

Big red sage *Salvia pentstemonoides*

Texas endemic; moist to seasonally wet, steep limestone outcrops on seeps within canyons or along creek banks; occasionally on clayey to silty soils of creek banks and terraces, in partial shade to full sun; basal leaves conspicuous for much of the year; flowering June-October

Bracted twistflower *Streptanthus bracteatus* C

Texas endemic; shallow, well-drained gravelly clays and clay loams over limestone in oak juniper woodlands and associated openings, on steep to moderate slopes and in canyon bottoms; several known soils include Tarrant, Brackett, or Speck over Edwards, Glen Rose, and Walnut geologic formations; populations fluctuate widely from year to year, depending on winter rainfall; flowering mid April-late May, fruit matures and foliage withers by early summer

Buckley tridens *Tridens buckleyanus*

GLOBAL RANK: G3 ; Occurs in juniper-oak woodlands on rocky limestone slopes; Perennial; Flowering/Fruiting April-Nov

Burridge greenthread *Thelesperma burridgeanum*

GLOBAL RANK: G3; Sandy open areas; Annual; Flowering March-Nov; Fruiting March-June

Correll's false dragon-head *Physostegia correllii*

wet, silty clay loams on streamsides, in creek beds, irrigation channels and roadside drainage ditches; or seepy, mucky, sometimes gravelly soils along riverbanks or small islands in the Rio Grande; or underlain by Austin Chalk limestone along gently flowing spring-fed creek in central Texas; flowering May-September

Elmendorf's onion *Allium elmendorfii*

Texas endemic; grassland openings in oak woodlands on deep, loose, well-drained sands; in Coastal Bend, on Pleistocene barrier island ridges and Holocene Sand Sheet that support live oak woodlands; to the north it occurs in post oak-black hickory-live oak woodlands over Queen City and similar Eocene formations; one anomalous specimen found on Llano Uplift in wet pockets of granitic loam; Perennial; Flowering March-April, May

Glass Mountains coral-root *Hexalectris nitida*

GLOBAL RANK: G3; Apparently rare in mixed woodlands in canyons in the mountains of the Brewster County, but encountered with regularity, albeit in small numbers, under Juniperus ashei in woodlands over limestone on the Edwards Plateau, Callahan Divide and Lampasas Cutplain; Perennial; Flowering June-Sept; Fruiting July-Sept

Gravelbar brickellbush *Brickellia dentata*

GLOBAL RANK: G3; Essentially restricted to frequently-scoured gravelly alluvial beds in creek and river bottoms; Perennial; Flowering June-Nov; Fruiting June-Oct

Hairy sycamore-leaf snowbell *Styrax platanifolius var. stellatus*

GLOBAL RANK: G3T3; Rare throughout range, in habitats similar to those of var. platanifolius - usually in oak-juniper woodlands on steep rocky banks and ledges along intermittent or perennial streams, rarely far from some reliable source of moisture; Perennial; Flowering April-Oct; Fruiting May-Sept

BEXAR COUNTY

PLANTS

Federal Status State Status

Heller's marbleseed *Onosmodium helleri*

GLOBAL RANK: G3; Occurs in loamy calcareous soils in oak-juniper woodlands on rocky limestone slopes, often in more mesic portions of canyons; Perennial; Flowering March-May

Hill Country wild-mercury *Argythamnia aphoroides*

Texas endemic; mostly in bluestem-grama grasslands associated with plateau live oak woodlands on shallow to moderately deep clays and clay loams over limestone on rolling uplands, also in partial shade of oak-juniper woodlands in gravelly soils on rocky limestone slopes; Perennial; Flowering April-May with fruit persisting until midsummer

Low spurge *Euphorbia peplidion*

GLOBAL RANK: G3; Occurs in a variety of vernally-moist situations in a number of natural regions; Annual; Flowering Feb-April; Fruiting March-April

Narrowleaf brickellbush *Brickellia eupatorioides var. gracillima*

GLOBAL RANK: G5T3; Moist to dry gravelly alluvial soils along riverbanks but also on limestone slopes; Perennial; Flowering/Fruiting April-Nov

Net-leaf bundleflower *Desmanthus reticulatus*

GLOBAL RANK: G3; Mostly on clay prairies of the coastal plain of central and south Texas; Perennial; Flowering April-July; Fruiting April-Oct

Osage Plains false foxglove *Agalinis densiflora*

GLOBAL RANK: G3; Most records are from grasslands on shallow, gravelly, well drained, calcareous soils; Prairies, dry limestone soils; Annual; Flowering Aug-Oct

Parks' jointweed *Polygonella parksii*

Texas endemic; mostly found on deep, loose, whitish sand blowouts (unstable, deep, xeric, sandhill barrens) in Post Oak Savanna landscapes over the Carrizo and Sparta formations; also occurs in early successional grasslands, along right-of-ways, and on mechanically disturbed areas; flowering June-late October or September-November

Plateau loosestrife *Lythrum ovalifolium*

GLOBAL RANK: G4; Banks and gravelly beds of perennial (or strong intermittent) streams on the Edwards Plateau, Llano Uplift and Lampasas Cutplain; Perennial; Flowering/Fruiting April-Nov

Plateau milkvine *Matelea edwardsensis*

GLOBAL RANK: G3 ; Occurs in various types of juniper-oak and oak-juniper woodlands; Perennial; Flowering March-Oct; Fruiting May-June

Sandhill woollywhite *Hymenopappus carrizoanus*

Texas endemic; disturbed or open areas in grasslands and post oak woodlands on deep sands derived from the Carrizo Sand and similar Eocene formations; flowering April-June

Siler's huaco *Manfreda sileri*

GLOBAL RANK: G3; Rare in a variety of grasslands and shrublands on dry sites; Perennial; Flowering April-July; Fruiting June-July

BEXAR COUNTY

PLANTS

Federal Status State Status

Spreading leastdaisy *Chaetopappa effusa*

GLOBAL RANK: G3; Limestone cliffs, ledges, bluffs, steep hillsides, sometimes in seepy areas, oak-juniper, oak, or mixed deciduous woods, 300-500 m elevation; Perennial; Flowering (May) July-Oct

Sycamore-leaf snowbell *Styrax platanifolius ssp. platanifolius*

GLOBAL RANK: G3T3; Rare throughout range, usually in oak-juniper woodlands on steep rocky banks and ledges along intermittent or perennial streams, rarely far from some reliable source of moisture; Perennial; Flowering April-May; Fruiting May-Aug

Texas almond *Prunus minutiflora*

GLOBAL RANK: G3; Wide-ranging but scarce, in a variety of grassland and shrubland situations, mostly on calcareous soils underlain by limestone but occasionally in sandier neutral soils underlain by granite; Perennial; Flowering Feb-May & Oct; Fruiting Feb-Sept

Texas amorpha *Amorpha roemeriana*

GLOBAL RANK: G3; Juniper-oak woodlands or shrublands on rocky limestone slopes, sometimes on dry shelves above creeks; Perennial; Flowering May-June; Fruiting June-Oct

Texas fescue *Festuca versuta*

GLOBAL RANK: G3; Occurs in mesic woodlands on limestone-derived soils on stream terraces and canyon slopes; Perennial; Flowering/Fruiting April-June

Texas peachbush *Prunus texana*

GLOBAL RANK: G3; Occurs at scattered sites in various well drained sandy situations; deep sand, plains and sand hills, grasslands, oak woods, 0-200 m elevation; Perennial; Flowering Feb-Mar; Fruiting Apr-Jun

Texas seymeria *Seymeria texana*

GLOBAL RANK: G3; Found primarily in grassy openings in juniper-oak woodlands on dry rocky slopes but sometimes on rock outcrops in shaded canyons; Annual; Flowering May-Nov; Fruiting July-Nov

Tree dodder *Cuscuta exaltata*

GLOBAL RANK: G3; Parasitic on various Quercus, Juglans, Rhus, Vitis, Ulmus, and Diospyros species as well as Acacia berlandieri and other woody plants; Annual; Flowering May-Oct; Fruiting July-Oct

APPENDIX B

AGENCY CORRESPONDENCE

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United States Department of Agriculture

Natural Resources
Conservation Service

State Office

101 S. Main Street
Temple, TX 76501
Voice 254.742.9800
Fax 254.742.9819

July 14, 2016

SWCA Environmental Consultants
6200 UTSA Blvd, Suite 102
San Antonio, Texas 78249

Attention: Christine Westerman, Senior Project Manager

Subject: Proposed CPS Energy Shepard Substation Project
37946
Environmental Assessment
Bexar County, Texas
Cc. CPS Energy

We have reviewed the information provided in your correspondence dated July 7, 2016 concerning the proposed substation and transmission lines located in southwest Bexar County, Texas. This review involves an environmental assessment of resources for SWCA Environmental Consultants on behalf of CPS Energy. At this time, provisions of the Farmland Protection Policy Act (FPPA) are not applicable because there is no mention of federal funding or assistance involved with this project.

Regarding the Transmission Study Area, we do not consider transmission lines to be a conversion of farmland because the site can still be used after construction. The study area includes the Medina River and several contributories that are associated with flooding hazards as well as areas of hydric soils. Wetlands may also be present in these areas; an on-site investigation would be required for this determination. Additionally, “wet spots” are present near the center of the study area. Slope is also a concern for the study area. Some areas have slopes between 5 and 10 percent where erosion risk is moderate. We strongly encourage the use of acceptable erosion control methods during the construction of this project.

The precise location of the proposed substation is not presented at this time; however, there are areas of Prime Farmland within the study area. If the proposed facility contains Prime Farmland soils and the project will be supported with federal funding, a Farmland Conversion Impact Rating form (AD-1006) should be completed prior to construction. The soils involved with the Substation Study Area have high amounts of clay and shrink-swell potential should be taken into consideration for site selection. Linear Extensibility is a measurement we use to quantify shrink-swell potential. These areas are synonymous with soil cracking, which may damage concrete slabs.

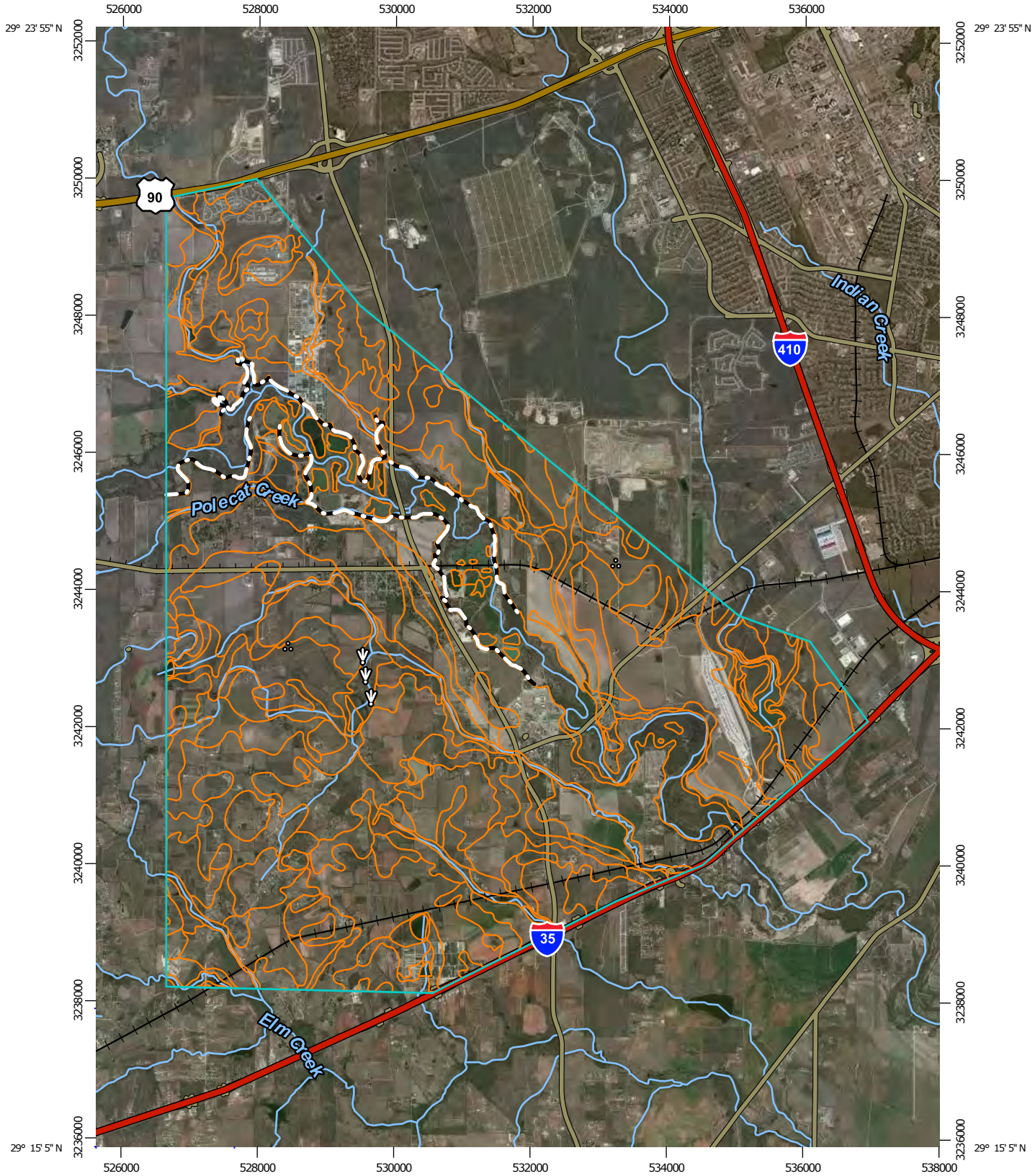
Again, thank you for the opportunity to provide input for your proposed project sites. If you have any questions, please contact me at 254.742.9836 or by email at carlos.villarreal@tx.usda.gov.

Sincerely,

Carlos J. Villarreal
NRCS Soil Scientist

Attachment

Soil Map—Bexar County, Texas
(Transmission Study Area)



Map Scale: 1:79,800 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 1000 2000 4000 6000

Feet
0 3500 7000 14000 21000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 14N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Bexar County, Texas
Survey Area Data: Version 18, Sep 23, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 6, 2011—Nov 17, 2014

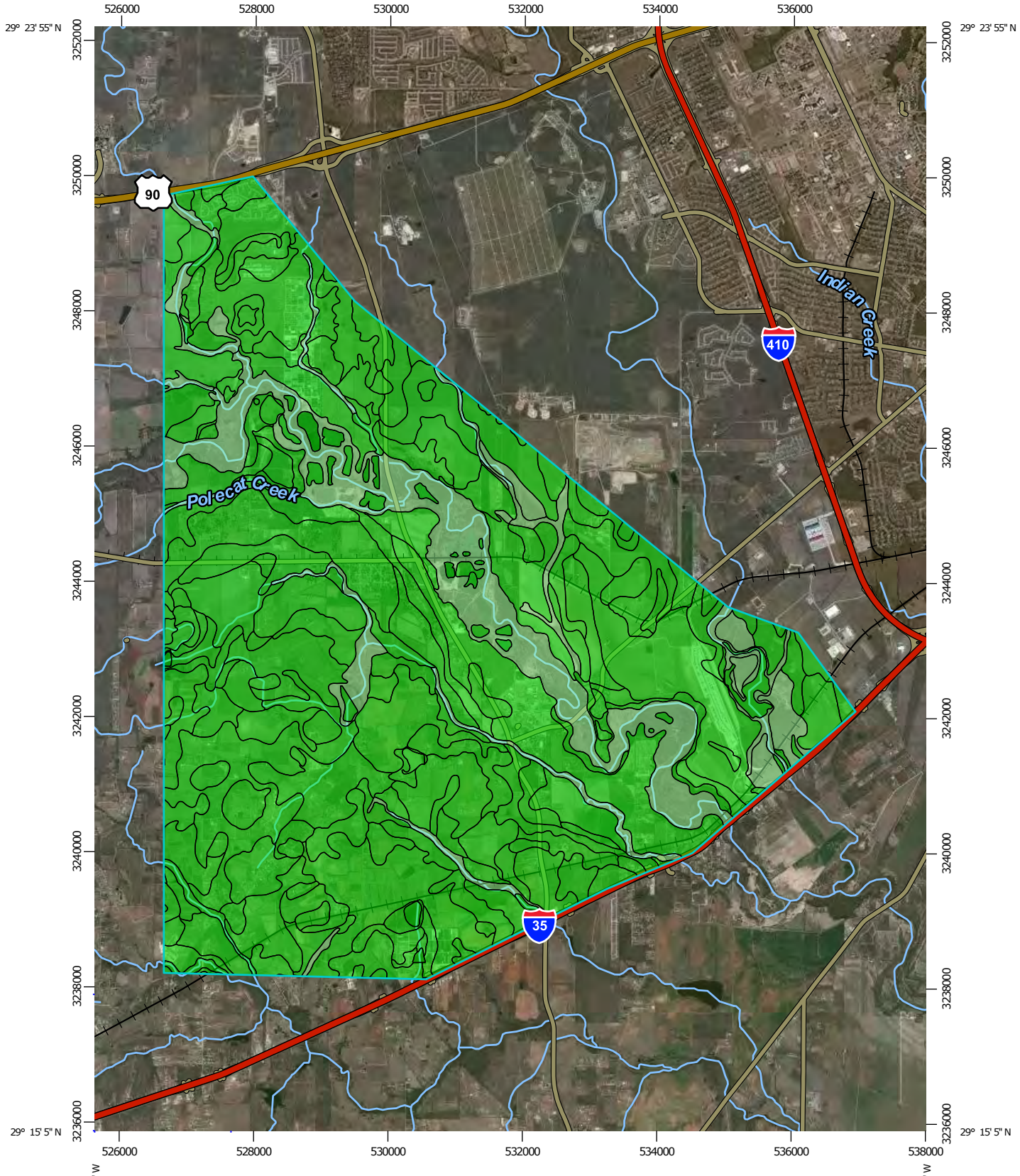
The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Bexar County, Texas (TX029)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
BsC	Whitewright-Austin complex, 1 to 5 percent slopes	17.7	0.1%
CfA	Miguel fine sandy loam, 0 to 1 percent slopes	362.2	2.0%
CfB	Miguel fine sandy loam, 1 to 3 percent slopes	1,045.9	5.7%
Fr	Loire clay loam, 0 to 2 percent slopes, occasionally flooded	1,800.2	9.9%
Gu	Gullied land-Sunev complex, 3 to 20 percent slopes	137.9	0.8%
HgD	Rock outcrop-Olmos complex, 5 to 25 percent slopes	41.4	0.2%
HkB	Wilco loamy fine sand, 0 to 3 percent slopes	505.0	2.8%
HkC	Wilco loamy fine sand, 3 to 5 percent slopes	11.5	0.1%
HnB	Heiden clay, 1 to 3 percent slopes	17.8	0.1%
HoD3	Heiden-Ferris complex, 5 to 10 percent slopes, severely eroded	76.4	0.4%
HsB	Houston Black clay, 1 to 3 percent slopes	299.6	1.6%
HtA	Branyon clay, 0 to 1 percent slopes	592.3	3.2%
HtB	Branyon clay, 1 to 3 percent slopes	353.4	1.9%
HuB	Houston Black gravelly clay, 1 to 3 percent slopes	894.4	4.9%
HuC	Houston Black gravelly clay, 3 to 5 percent slopes	573.8	3.1%
HuD	Houston Black gravelly clay, 5 to 8 percent slopes	413.9	2.3%
KaB	Atco loam, 1 to 3 percent slopes	196.1	1.1%
KcC2	Atco clay loam, 3 to 5 percent slopes, eroded	80.2	0.4%
LvA	Lewisville silty clay, 0 to 1 percent slopes	1,723.7	9.4%
LvB	Lewisville silty clay, 1 to 3 percent slopes	367.5	2.0%
OrA	Laparita clay loam, 0 to 1 percent slopes	95.8	0.5%
OrB	Laparita clay loam, 1 to 3 percent slopes	351.9	1.9%

Bexar County, Texas (TX029)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
PaC	Patrick soils, 3 to 5 percent slopes, rarely flooded	11.5	0.1%
Pt	Pits and Quarries, 1 to 90 percent slopes	39.7	0.2%
SaB	San Antonio clay loam, 1 to 3 percent slopes	1,839.3	10.1%
SaC	San Antonio clay loam, 3 to 5 percent slopes	185.5	1.0%
SaC2	San Antonio clay loam, 3 to 5 percent slopes, eroded	156.4	0.9%
Tc	Tinn clay, 0 to 1 percent slopes, occasionally flooded	333.5	1.8%
Tf	Tinn and Frio soils, 0 to 1 percent slopes, frequently flooded	635.5	3.5%
VcA	Sunev clay loam, 0 to 1 percent slopes	2,067.7	11.3%
VcB	Sunev clay loam, 1 to 3 percent slopes	855.6	4.7%
VcC	Sunev clay loam, 3 to 5 percent slopes	39.5	0.2%
W	Water	380.2	2.1%
WbB	Floresville fine sandy loam, 1 to 3 percent slopes	1,319.9	7.2%
WbC	Floresville fine sandy loam, 3 to 5 percent slopes	122.5	0.7%
WeC2	Floresville fine sandy loam, 1 to 5 percent slopes, eroded	177.5	1.0%
WmA	Willacy loam, 0 to 1 percent slopes	74.5	0.4%
Zg	Zavala and Gowen soils, 0 to 2 percent slopes, frequently flooded	67.5	0.4%
Totals for Area of Interest		**18,264.7**	**100.0%**

Hydric Rating by Map Unit—Bexar County, Texas
(Transmission Study Area)



Map Scale: 1:79,800 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 1000 2000 4000 6000

Feet
0 3500 7000 14000 21000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 14N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Lines
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Points
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

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Survey Area Data: Version 18, Sep 23, 2015

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Hydric Rating by Map Unit

Hydric Rating by Map Unit— Summary by Map Unit — Bexar County, Texas (TX029)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
BsC	Whitewright-Austin complex, 1 to 5 percent slopes	0	17.7	0.1%
CfA	Miguel fine sandy loam, 0 to 1 percent slopes	0	362.2	2.0%
CfB	Miguel fine sandy loam, 1 to 3 percent slopes	0	1,045.9	5.7%
Fr	Loire clay loam, 0 to 2 percent slopes, occasionally flooded	1	1,800.2	9.9%
Gu	Gullied land-Sunev complex, 3 to 20 percent slopes	0	137.9	0.8%
HgD	Rock outcrop-Olmos complex, 5 to 25 percent slopes	0	41.4	0.2%
HkB	Wilco loamy fine sand, 0 to 3 percent slopes	0	505.0	2.8%
HkC	Wilco loamy fine sand, 3 to 5 percent slopes	0	11.5	0.1%
HnB	Heiden clay, 1 to 3 percent slopes	0	17.8	0.1%
HoD3	Heiden-Ferris complex, 5 to 10 percent slopes, severely eroded	0	76.4	0.4%
HsB	Houston Black clay, 1 to 3 percent slopes	0	299.6	1.6%
HtA	Branyon clay, 0 to 1 percent slopes	0	592.3	3.2%
HtB	Branyon clay, 1 to 3 percent slopes	0	353.4	1.9%
HuB	Houston Black gravelly clay, 1 to 3 percent slopes	0	894.4	4.9%
HuC	Houston Black gravelly clay, 3 to 5 percent slopes	0	573.8	3.1%
HuD	Houston Black gravelly clay, 5 to 8 percent slopes	0	413.9	2.3%
KaB	Atco loam, 1 to 3 percent slopes	0	196.1	1.1%
KcC2	Atco clay loam, 3 to 5 percent slopes, eroded	0	80.2	0.4%

Hydric Rating by Map Unit— Summary by Map Unit — Bexar County, Texas (TX029)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
LvA	Lewisville silty clay, 0 to 1 percent slopes	0	1,723.7	9.4%
LvB	Lewisville silty clay, 1 to 3 percent slopes	0	367.5	2.0%
OrA	Laparita clay loam, 0 to 1 percent slopes	0	95.8	0.5%
OrB	Laparita clay loam, 1 to 3 percent slopes	0	351.9	1.9%
PaC	Patrick soils, 3 to 5 percent slopes, rarely flooded	0	11.5	0.1%
Pt	Pits and Quarries, 1 to 90 percent slopes	0	39.7	0.2%
SaB	San Antonio clay loam, 1 to 3 percent slopes	0	1,839.3	10.1%
SaC	San Antonio clay loam, 3 to 5 percent slopes	0	185.5	1.0%
SaC2	San Antonio clay loam, 3 to 5 percent slopes, eroded	0	156.4	0.9%
Tc	Tinn clay, 0 to 1 percent slopes, occasionally flooded	5	333.5	1.8%
Tf	Tinn and Frio soils, 0 to 1 percent slopes, frequently flooded	1	635.5	3.5%
VcA	Sunev clay loam, 0 to 1 percent slopes	0	2,067.7	11.3%
VcB	Sunev clay loam, 1 to 3 percent slopes	0	855.6	4.7%
VcC	Sunev clay loam, 3 to 5 percent slopes	0	39.5	0.2%
W	Water	0	380.2	2.1%
WbB	Floresville fine sandy loam, 1 to 3 percent slopes	0	1,319.9	7.2%
WbC	Floresville fine sandy loam, 3 to 5 percent slopes	0	122.5	0.7%
WeC2	Floresville fine sandy loam, 1 to 5 percent slopes, eroded	0	177.5	1.0%
WmA	Willacy loam, 0 to 1 percent slopes	0	74.5	0.4%
Zg	Zavala and Gowen soils, 0 to 2 percent slopes, frequently flooded	0	67.5	0.4%
Totals for Area of Interest			**18,264.7**	**100.0%**

Description

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

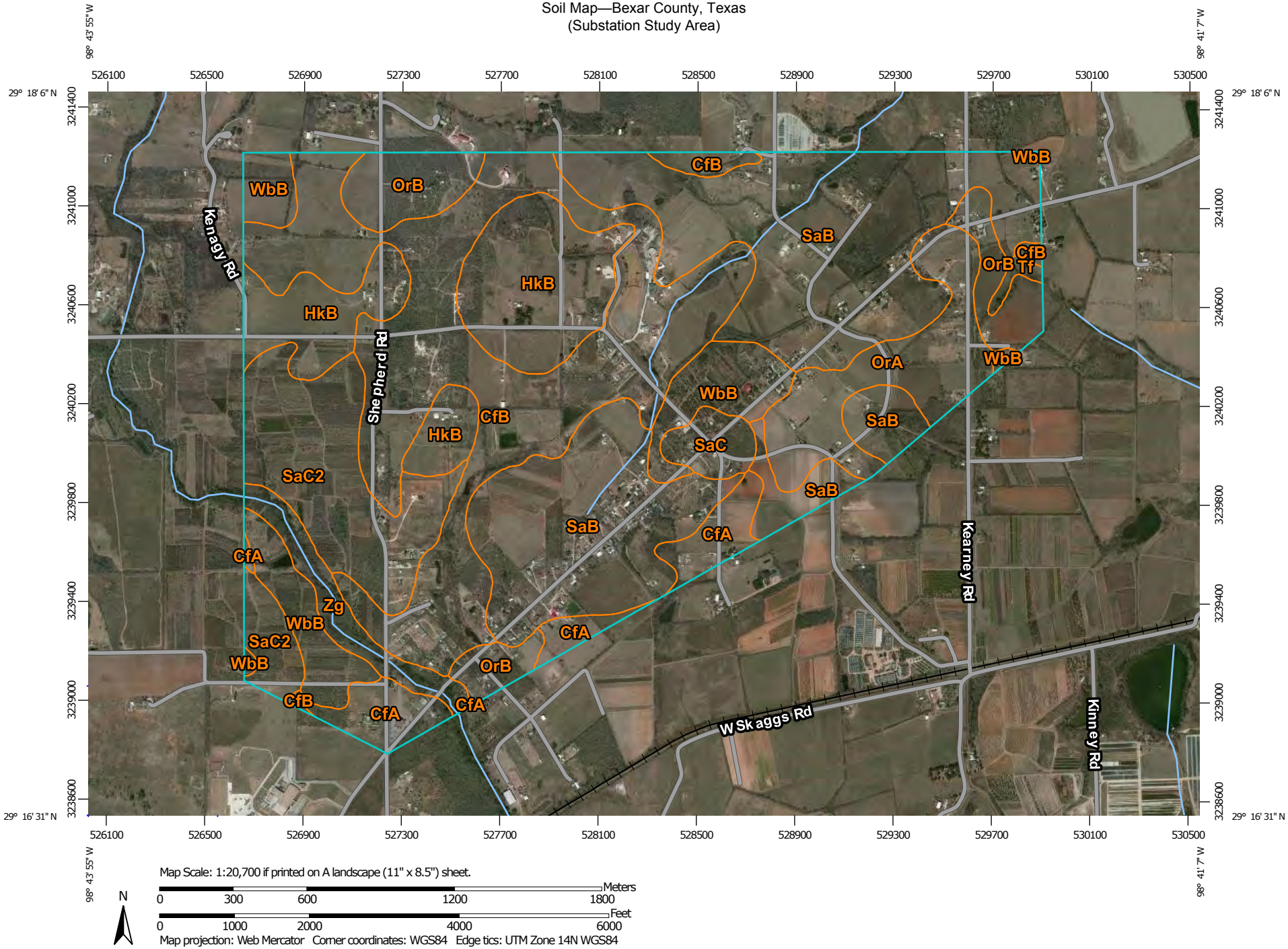
Rating Options

Aggregation Method: Percent Present

Component Percent Cutoff: *None Specified*

Tie-break Rule: Lower

Soil Map—Bexar County, Texas
(Substation Study Area)



Map Scale: 1:20,700 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 300 600 1200 1800

Feet
0 1000 2000 4000 6000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 14N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Bexar County, Texas
Survey Area Data: Version 18, Sep 23, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

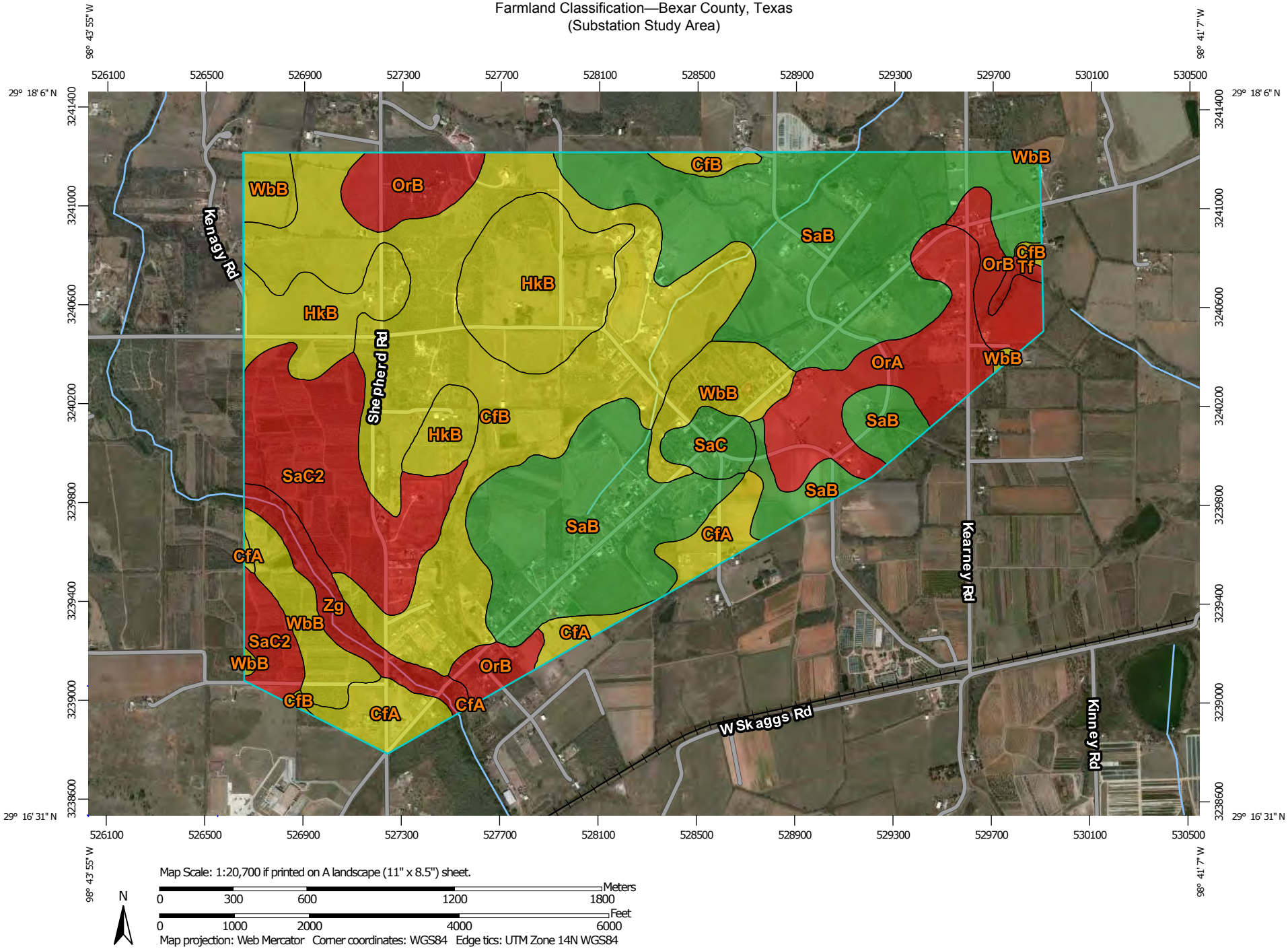
Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Bexar County, Texas (TX029)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
CfA	Miguel fine sandy loam, 0 to 1 percent slopes	55.7	3.9%
CfB	Miguel fine sandy loam, 1 to 3 percent slopes	341.0	24.0%
HkB	Wilco loamy fine sand, 0 to 3 percent slopes	154.5	10.9%
OrA	Laparita clay loam, 0 to 1 percent slopes	89.1	6.3%
OrB	Laparita clay loam, 1 to 3 percent slopes	76.2	5.4%
SaB	San Antonio clay loam, 1 to 3 percent slopes	423.2	29.7%
SaC	San Antonio clay loam, 3 to 5 percent slopes	20.0	1.4%
SaC2	San Antonio clay loam, 3 to 5 percent slopes, eroded	136.6	9.6%
Tf	Tinn and Frio soils, 0 to 1 percent slopes, frequently flooded	4.2	0.3%
WbB	Floresville fine sandy loam, 1 to 3 percent slopes	89.0	6.3%
Zg	Zavala and Gowen soils, 0 to 2 percent slopes, frequently flooded	33.3	2.3%
Totals for Area of Interest		**1,422.8**	**100.0%**

Farmland Classification—Bexar County, Texas
(Substation Study Area)



MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Soil Rating Lines

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Soil Rating Points

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Water Features

MAP INFORMATION

Streams and Canals

Transportation


Rails


Interstate Highways


US Routes

Major Roads

Local Roads

Background


Aerial Photography

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

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Soil Survey Area: Bexar County, Texas
Survey Area Data: Version 18, Sep 23, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Farmland Classification

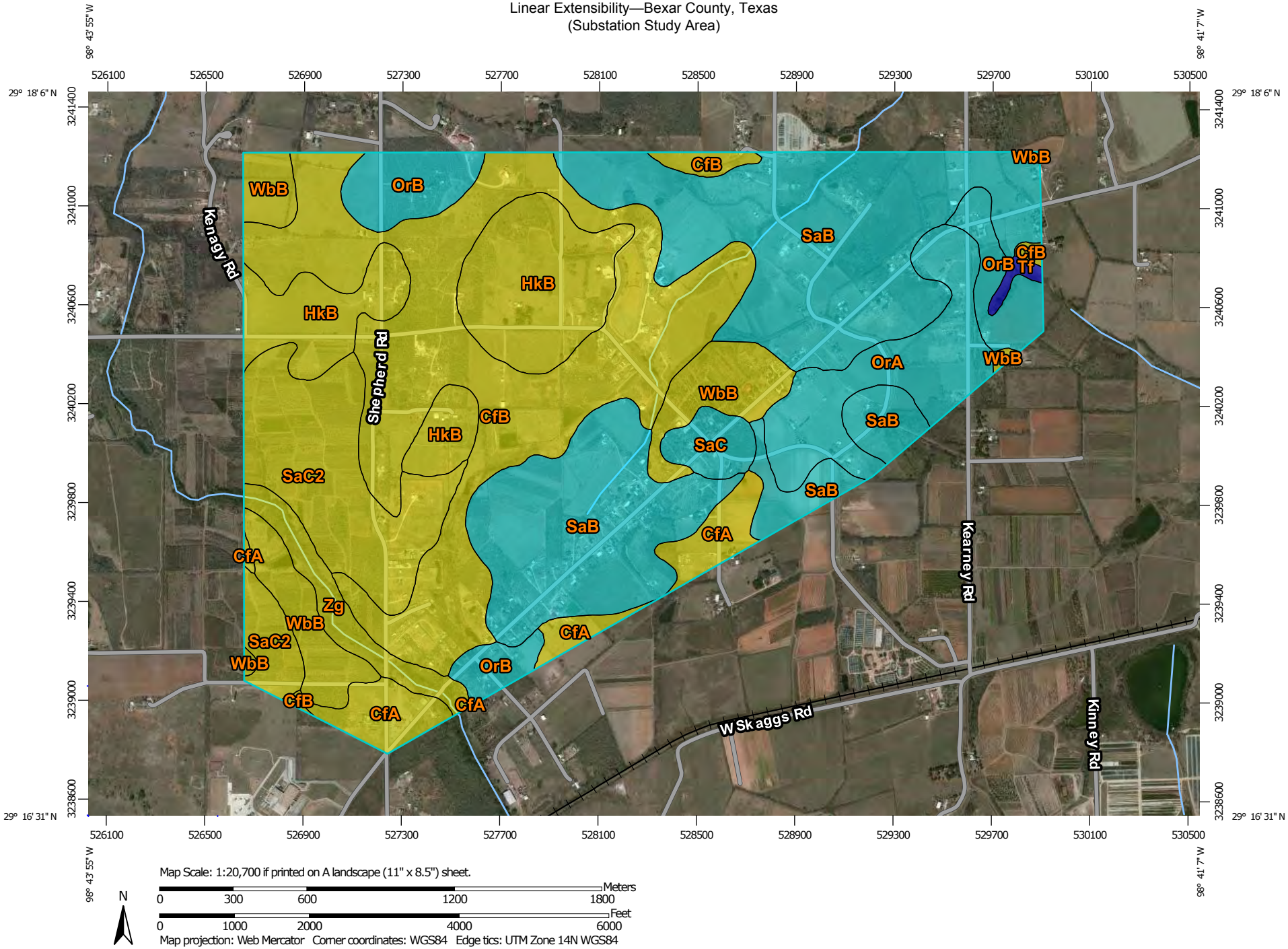
Farmland Classification— Summary by Map Unit — Bexar County, Texas (TX029)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
CfA	Miguel fine sandy loam, 0 to 1 percent slopes	Prime farmland if irrigated	55.7	3.9%
CfB	Miguel fine sandy loam, 1 to 3 percent slopes	Prime farmland if irrigated	341.0	24.0%
HkB	Wilco loamy fine sand, 0 to 3 percent slopes	Prime farmland if irrigated	154.5	10.9%
OrA	Laparita clay loam, 0 to 1 percent slopes	Not prime farmland	89.1	6.3%
OrB	Laparita clay loam, 1 to 3 percent slopes	Not prime farmland	76.2	5.4%
SaB	San Antonio clay loam, 1 to 3 percent slopes	All areas are prime farmland	423.2	29.7%
SaC	San Antonio clay loam, 3 to 5 percent slopes	All areas are prime farmland	20.0	1.4%
SaC2	San Antonio clay loam, 3 to 5 percent slopes, eroded	Not prime farmland	136.6	9.6%
Tf	Tinn and Frio soils, 0 to 1 percent slopes, frequently flooded	Not prime farmland	4.2	0.3%
WbB	Floresville fine sandy loam, 1 to 3 percent slopes	Prime farmland if irrigated	89.0	6.3%
Zg	Zavala and Gowen soils, 0 to 2 percent slopes, frequently flooded	Not prime farmland	33.3	2.3%
Totals for Area of Interest			**1,422.8**	**100.0%**

Rating Options

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

Linear Extensibility—Bexar County, Texas
(Substation Study Area)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Low (0 - 3)
- Moderate (3 - 6)
- High (6 - 9)
- Very High (9 - 30)
- Not rated or not available

Soil Rating Lines
- Low (0 - 3)
- Moderate (3 - 6)
- High (6 - 9)
- Very High (9 - 30)
- Not rated or not available

Soil Rating Points
- Low (0 - 3)
- Moderate (3 - 6)
- High (6 - 9)
- Very High (9 - 30)
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

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Soil Survey Area: Bexar County, Texas
Survey Area Data: Version 18, Sep 23, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Linear Extensibility

Linear Extensibility— Summary by Map Unit — Bexar County, Texas (TX029)				
Map unit symbol	**Map unit name**	**Rating (percent)**	**Acres in AOI**	**Percent of AOI**
CfA	Miguel fine sandy loam, 0 to 1 percent slopes	3.4	55.7	3.9%
CfB	Miguel fine sandy loam, 1 to 3 percent slopes	3.8	341.0	24.0%
HkB	Wilco loamy fine sand, 0 to 3 percent slopes	3.3	154.5	10.9%
OrA	Laparita clay loam, 0 to 1 percent slopes	6.6	89.1	6.3%
OrB	Laparita clay loam, 1 to 3 percent slopes	6.9	76.2	5.4%
SaB	San Antonio clay loam, 1 to 3 percent slopes	6.7	423.2	29.7%
SaC	San Antonio clay loam, 3 to 5 percent slopes	6.2	20.0	1.4%
SaC2	San Antonio clay loam, 3 to 5 percent slopes, eroded	6.0	136.6	9.6%
Tf	Tinn and Frio soils, 0 to 1 percent slopes, frequently flooded	17.0	4.2	0.3%
WbB	Floresville fine sandy loam, 1 to 3 percent slopes	3.5	89.0	6.3%
Zg	Zavala and Gowen soils, 0 to 2 percent slopes, frequently flooded	4.5	33.3	2.3%
Totals for Area of Interest			**1,422.8**	**100.0%**

Description

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported as percent change for the whole soil. The amount and type of clay minerals in the soil influence volume change.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Rating Options

Units of Measure: percent

Aggregation Method: Dominant Component

Component Percent Cutoff: 0

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

Top Depth: 0

Bottom Depth: 100

Units of Measure: Centimeters

Christine Westerman

From: King, Melanie <melanie.king1@fema.dhs.gov>
Sent: Wednesday, July 20, 2016 7:46 AM
To: Christine Westerman
Subject: Response for Proposed CPS Energy Shepherd Substation Prj (37946)

U. S. Department of Homeland Security
FEMA Region 6
800 North Loop 288
Denton, TX 76209-3698

FEMA

July 20, 2016

FEDERAL EMERGENCY MANAGEMENT AGENCY
REGION 6
MITIGATION DIVISION

NOTICE REVIEW/ENVIRONMENTAL CONSULTATION

Reference: Proposed CPS Energy Shepherd Substation Project (37946)

We offer the following comments:

WE WOULD REQUEST THAT THE COMMUNITIES' FLOODPLAIN ADMINISTRATOR BE CONTACTED FOR THE REVIEW AND POSSIBLE PERMIT REQUIREMENTS FOR THIS PROJECT. IF FEDERALLY FUNDED, WE WOULD REQUEST PROJECT TO BE IN COMPLIANCE WITH EO11988 & EO 11990.

REVIEWER:

Mayra G. Diaz
Floodplain Management and Insurance Branch
Mitigation Division
(940) 898-5541

Melanie King
FEMA Region 6 Mitigation
800 North Loop 288
Denton, TX 76209
940-898-5165 office
940-536-5732 mobile

Christine Westerman

From: Ronnie Hernandez <ronnie@sara-tx.org>
Sent: Thursday, July 21, 2016 3:48 PM
To: Christine Westerman
Cc: Marianne Kumley; Austin Snell; Claude Harding
Subject: Proposed CPS Energy Shepard Substation Project (37946)
Attachments: ShepherdSubstationProject.pdf; Land-Use-Application_2014.pdf

Christine,

On behalf of our General Manager Suzanne Scott, I'm submitting the following comments on the proposed CPS Energy project:

1) A Permanent Easement(s) must be obtained from the San Antonio River Authority (SARA) prior to crossing the Medina River;
2) Procure all federal, state, and local permits needed to work in the floodplain; and
3) Implement stormwater best management practices to reduce impact to nearby waterways.

To apply for a SARA easement, please fill out and submit the attached Land Use Application.

Thank you for the opportunity to comment.

Sincerely,

Ronald G. Hernandez, REM, CSEM, CFM
Environmental Investigations Specialist
San Antonio River Authority
210-227-1373
210-302-3609 direct
210-215-9202 mobile
210-858-0265 fax
ronnie@sara-tx.org

SAN ANTONIO RIVER AUTHORITY
LAND USE APPLICATION

TO BE COMPLETED BY APPLICANT:

1. Applicant: (Name and Address of entity acquiring land right)

   _____

   _____

   _____

   Contact Information: _____

2. APPLICANT'S STATUS:

   ☐ Individual ☐ Partnership ☐ Corporation ☐ Government ☐ Other

3. LAND RIGHT REQUESTED: ☐ Purchase by Deed ☐ Easement ☐ Easement to Cross River/Creek
   ☐ License Agreement ☐ Joint Use Agreement ☐ Other

3. **PROJECT DESCRIPTION** & **DOCUMENTATION CHECKLIST** (Detailed description should be on separate page or cover letter and all applicable documentation must accompany the application)

   ☐ (a) Type of system, facility, or use, (e.g. pipeline, road)
   ☐ (b) Related structures and facilities
   ☐ (c) Physical specifications (length, width, grading, etc.)
   ☐ (d) Duration of use
   ☐ (e) Volume or amount of product to be transported
   ☐ (f) Duration and timing of construction
   ☐ (g) Temporary work areas needed for construction (This does not apply to River/Creek Crossings)
   ☐ (h) Survey with metes and bounds property description (Surveying Standards posted on Website)
   ☐ (i) Plan & Profile of Installation (Engineering Standards for River Crossings are posted on Website)
   ☐ (j) Methods of environmental protection (spills, maintenance, etc.)
   ☐ (k) Vicinity map showing exact location including lats and longs
   ☐ (l) If available, please include copies of deeds of adjacent properties to subject property
   ☐ (m) If applicable, please include copies of access easements adjacent to proposed easement

   APPLICATION FOR RIVER/CREEK CROSSING MUST INCLUDE ALL APPLICABLE DOCUMENTATION TO BE CONSIDERED COMPLETE. INCOMPLETE APPLICATIONS WILL BE RETURNED TO APPLICANT.

4. Administrative fees are prescribed by the San Antonio River Authority Ordinance. The administrative fee for this application is $5,000. Only checks are accepted and should be payable to the San Antonio River Authority. Payment of administrative fee must accompany the land use application.

5. APPLICANT'S OR AGENT'S SIGNATURE:

   _____ DATE: _____

FOR SARA USE ONLY:

Administrative fee received by: _____ DATE: _____

Christine Westerman

From: Winter, Andrew <awinter@bexar.org>
Sent: Friday, July 15, 2016 6:54 AM
To: Christine Westerman
Subject: FW: SWCA Proposed CPS Energy Shepherd Substation Project (37946)

Christine,
Bexar County doesn't have much to offer on this parcel

Our research shows that:

1) parts of it are in the flood zone, so your client will need a flood study and flood permit before starting work
2) The area is over 1 acre, I anticipate that your client will disturb over an acre when constructing so they will also need a Storm Water Quality permit
3) The construction will require Post Construction Water Quality features
4) This parcel very likely has abandon septic systems but we have NO records. If your client encounters abandon septic systems they will need to be pumped, crushed and filled.

Thanks,
Andy

DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

July 18, 2016

Regulatory Division

SUBJECT: Project Number SWF-2016-00256, CPS Energy Shepherd Substation

Christine Westerman
SWCA Environmental Consultants
San Antonio Office
6200 UTSA Boulevard, Suite 102
San Antonio, TX 78249

Dear Ms. Westerman:

Thank you for your letter received July 12, 2016 concerning a proposal by CPS Energy to construct a new electric substation located in Bexar County, Texas. This project has been assigned Project Number SWF-2016-00256. Please include this number in all future correspondence concerning this project.

Mr. Frederick Land has been assigned as the regulatory project manager for your request and will be evaluating it as expeditiously as possible.

We are unable to determine from the information provided whether Department of the Army authorization will be required. Please provide a more detailed description of the entire proposed project, a suitable map of the proposed project area showing the location of proposed discharges, the type and amount of material (temporary or permanent), if any, to be discharged, and plan and cross-section views of the proposed project. Please refer to the enclosed guidance for Department of the Army submittals for additional details about what you should submit for this and future projects.

If a Department of the Army permit is required, the project may be authorized by one or more general permits. For work to be authorized by general permit it must comply with the specifications and conditions of the permit. Projects that would not meet the specifications and conditions of a general permit may require authorization by individual permit.

We encourage you to avoid and minimize adverse impacts to streams, wetlands, and other waters of the United States in planning this project. Please forward your response to us as soon as possible so that we may continue our evaluation of your request. If we do not receive the requested information within 30 days of the date of this letter, we will consider your application administratively withdrawn. If withdrawn, you may re-open your application at a later date by submitting the requested information.

Please note that it is unlawful to start work without a Department of the Army permit when one is required.

You may be contacted for additional information about your request. For your information, please refer to the Fort Worth District Regulatory Branch homepage at http://www.swf.usace.army.mil/Missions/regulatory and particularly guidance on submittals at http://media.swf.usace.army.mil/pubdata/environ/Regulatory/introduction/submital.pdf, and mitigation at http://www.swf.usace.army.mil/Missions/Regulatory/Permitting/Mitigation that may help you supplement your current request or prepare future requests.

If you have any questions about the evaluation of your submittal or would like to request a copy of one of the documents referenced above, please contact Mr. Frederick Land at the address above or telephone (817) 886-1729 and refer to your assigned project number.

If you have any questions about the evaluation of your submittal or would like to request a copy of one of the documents referenced above, please refer to our website at http://www.swf.usace.army.mil/Missions/Regulatory or contact Mr. Frederick Land at the address above or telephone 817-886-1729 and refer to your assigned project number. Please note that it is unlawful to start work without a Department of the Army permit if one is required.

Please help the regulatory program improve its service by completing the survey on the following website: http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey

Stephen L Brooks
Chief, Regulatory Division

Christine Westerman

From: Cameron Lopez <cameron.lopez@tceq.texas.gov>
Sent: Friday, August 05, 2016 9:26 AM
To: Christine Westerman
Cc: Joel Anderson; Jorge Salazar
Subject: Facilities of Concern for CPS Energy Shepherd Substation Project

Hello Ms. Westerman,

As I mentioned during our phone discussion, there are some facilities of concern that were identified within the Transmission Study Area for the referenced project, as follows:

---COVEL GARDENS LANDFILL, Active Type I Municipal Solid Waste (MSW) Permit No. 2093B, **8611 COVEL RD, SAN ANTONIO**

---NELSON GARDENS LANDFILL/BRUSH RECYCLING CENTER, Closed Type I MSW Permit No. 1237, Active Type V Registration No. 100305, **8339 COVEL RD, SAN ANTONIO**

---ALAMO COMMERCIAL PROPERTIES/STANDARD INDUSTRIES, Solid Waste Registration No. 87517, EPA ID No. TXR000060442, **8189 NELSON RD, SAN ANTONIO**

Please let me know if you need anything else.

HAVE TEXAS PRIDE, TAKE THE PLEDGE!

CAMERON LOPEZ
Waste Section Manager
TCEQ Region 13 – San Antonio
210-490-3096

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Carter P. Smith
Executive Director

August 22, 2016

Christine Westerman
SWCA Environmental Consultants
San Antonio Office
6200 UTSA Boulevard, Suite 102
San Antonio, TX 78249

RE: Request for information for proposed CPS Energy Shepard Substation, Bexar County
Project #37946

Dear Ms. Westerman:

This letter is in response to your request for comments concerning natural, cultural, and human resources in the study area. SWCA Environmental Consultants (SWCA) is preparing an Alternatives Analysis and Environmental Assessment (EA) for the proposed project.

Project Description

CPS Energy proposes to construct a new electric substation in southwestern Bexar County near the intersection of Shepard Road and Old Pearsall Road. Within an approximate 1,700 acre study area, a six acre tract would be developed for the new electric substation. Additionally, the new substation would be connected to the existing Valley Road to Cagnon 138-kV transmission line by a new transmission line. The new transmission line would be constructed within a 60 to 100-foot wide permanent right-of-way (ROW).

Texas Parks and Wildlife Department (TPWD) staff reviewed the information provided and offer the following comments regarding potential impacts upon fish, wildlife, and plant resources or other land use concerns associated with the proposed construction of a new electric substation and transmission line.

Recommendation: When new construction is the only feasible option, TPWD recommends locating new substations in previously disturbed areas and routing new transmission lines along existing road, pipeline, transmission line or other utility ROW or easements to reduce habitat fragmentation. By utilizing previously disturbed areas, existing utility corridors, county roads, and highway ROW, adverse impacts to fish and wildlife resources would be mitigated by avoiding and/or minimizing impacts to undisturbed habitats. Please see the *TPWD Recommendations for Electrical Transmission/Distribution Line Design and Construction*, available at: **http://tpwd.texas.gov/huntwild/wild/wildlife_diversity/habitat_assessment/media/tpwd_electrical_transmission.pdf**.

4200 SMITH SCHOOL ROAD
AUSTIN, TEXAS 78744-3291
512.389.4800
www.tpwd.texas.gov

Federal Regulations

Clean Water Act

Section 404 of the Clean Water Act (CWA) establishes a federal program to regulate the discharge of dredged and fill material into waters of the U.S., including wetlands. The U.S. Army Corps of Engineers (USACE) and the Environmental Protection Agency (EPA) are responsible for making jurisdictional determinations and regulating wetlands and other waters under Section 404 of the CWA.

TPWD identified several aquatic resources in the project study area. These include:

- Medina River
- Live Oak Creek
- Tributaries of Live Oak
- Live Oak Slough
- Potranca Creek
- Lucas Creek
- Polecat Creek
- Elm Creek

as well as named and unnamed ponds, lakes, potential wetlands and other features, both natural and manmade.

Recommendation: TPWD recommends selecting a substation site and developing a route for the proposed transmission line that avoids or minimizes the number of water body crossings. Many of the creeks and tributaries in the study area have well developed riparian corridors that provide important nesting, loafing, and feeding areas for waterfowl, wading birds, raptors, and migrating songbirds. Similarly, adjacent wetlands and marsh habitat in the study area may hold water and provide important loafing and feeding areas for waterfowl, shorebirds, wading birds, and migrating birds.

All waterways and associated floodplains, riparian corridors and wetlands, regardless of their jurisdictional status, provide valuable wildlife habitat and should be preserved to the maximum extent possible. Natural buffers contiguous to any wetland or aquatic system should remain undisturbed to preserve wildlife cover, food sources, and travel corridors. Transmission line support structures should be located as far from waterbodies as possible to preserve riparian and/or marsh vegetation. Necessary waterway crossings should be made perpendicular to channels, where applicable, to minimize disturbance of riparian habitat.

Best management practices (BMPs) for erosion control and sediment runoff should be installed prior to construction and maintained until disturbed areas are permanently revegetated using site-specific native vegetation, if applicable. BMPs should be properly installed in order to effectively minimize the amount of sediment and other debris entering the waterways.

During construction, trucks and other heavy equipment should access project sites in a way that would avoid and/or minimize impacts to aquatic resources including wetlands. Equipment staging areas should be located in previously disturbed areas away from aquatic sites.

If the proposed project would impact waterways or associated wetlands, TPWD recommends consulting with the USACE for potential impacts to waters of the U.S. including jurisdictional determinations, delineations, and mitigation

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) implicitly prohibits intentional and unintentional take of migratory birds, including their nests and eggs, except as permitted by the U.S. Fish and Wildlife Service (USFWS). This protection applies to most native bird species, including ground nesting species. Although not documented in the Texas Natural Diversity Database (TXNDD), many bird species which are not listed as *threatened* or *endangered* are protected by the MBTA and are known to be year-round or seasonal residents or seasonal migrants through the proposed project area. Additional information regarding the MBTA is available from the USFWS-Southwest Regional Office (Region 2) at (505) 248-7882.

Review of aerial photography and the Ecological Mapping Systems of Texas (EMST), indicate that the study area is located in the Texas Blackland Prairies. The area consists of a mosaic of habitats dominated by mixed shrubland, oak woodland, riparian forests, and grasslands.

Biologically, this area of southcentral Texas is highly productive and provides a range of habitats including tracts of undeveloped land, grasslands, cropland, woodlands, riparian areas, and wetlands. The majority of the substation and transmission line study areas consist of a diversity of habitats suitable to support a diversity of wildlife species. In particular, the range of habitats provides areas of cover, feeding, nesting and loafing areas for many species of birds including grassland birds, Neo-tropical migrants, raptors and waterfowl. Additionally, the project area is in the middle of the Central Migratory Flyway through which millions of birds pass during spring and fall migration.

Recommendation: In order to avoid potential negative impacts to birds and wildlife habitat, TPWD recommends identifying existing or previously disturbed areas to locate the proposed substation and transmission line, if possible. Selecting previously disturbed areas for the substation site and transmission line minimizes the necessity of clearing trees. TPWD also recommends identifying existing utility corridors or other previously disturbed areas (e.g., existing roads) to parallel the proposed transmission line. The location of the transmission line should avoid bisecting bird roosting and feeding areas that are identified during pre-construction avian surveys. Also, impacts to vegetation associated with aquatic habitats should be avoided.

Regardless of where the substation is located, TPWD recommends scheduling any vegetation clearing or trampling outside of the April 1-July 15 migratory bird nesting season in order to fully comply with the MBTA. Contractors should be made aware of the potential of encountering migratory birds (either nesting or wintering) in the proposed project site and be instructed to avoid negatively impacting them.

If construction activities must be scheduled to occur during the nesting season, TPWD recommends that the vegetation to be impacted should be surveyed for active nests by a qualified biologist prior to clearing. If active nests are observed during surveys, TPWD recommends a 150-foot buffer of vegetation remain around the nests until the young have fledged or the nest is abandoned.

Regardless of the location of the substation and associated transmission line, due to the high bird diversity in the area and the number of resident and migrant birds that occur in the area, TPWD recommends the transmission line be marked with line markers or bird flight diverters (BFD) to reduce the potential of birds flying into the lines.

Also, to prevent electrocution of perching birds, TPWD recommends utilizing avian-safe designs that provide appropriate separation between two energized phases or between an energized phase and grounded equipment. TPWD recommends covering energized components with appropriate bird protection materials where adequate spacing cannot be achieved, such as installing insulated jumper wires, insulator covers, bushing caps, and arrester caps.

Line alterations to prevent bird electrocutions should not necessarily be implemented *after* such events occur as all electrocutions may not be known or documented. Incorporation of preventative measures along portions of the routes that are most attractive to birds (as indicated by frequent sightings) prior to any electrocutions is a much preferred alternative.

TPWD recommends the transmission line design should utilize avian safety features described in the revised:

Avian Power Line Interaction Committee (APLIC). 2012. *Reducing Avian Collisions with Power Lines: The State of the Art in 2012*. Edison Electric Institute and APLIC. Washington, D.C.

In particular, the overhead ground wire should be marked with line markers to increase its visibility. Additional recommendations are available in the previously mentioned document entitled, "*TPWD Recommendations for Electrical Transmission/Distribution Line Design and Construction.*"

Endangered Species Act

Federally-listed animal species and their habitat are protected from "take" on any property by the Endangered Species Act (ESA). Take of a federally-listed species can be allowed if it is "incidental" to an otherwise lawful activity and must be permitted in accordance with Section 7 or 10 of the ESA. Federally-listed plants are not protected from take except on lands under federal/state jurisdiction or for which a federal/state nexus (i.e., permits or funding) exists. Any take of a federally-listed species or its habitat without the required take permit (or allowance) from the USFWS is a violation of the ESA.

Whooping Crane

The proposed project is located within the western edge of the Whooping Crane migration corridor. Structures more than 15 feet in height can be considered hazardous obstructions to Whooping Cranes within the migration corridor.

Recommendation: TPWD recommends incorporating operational measures listed above under "Migratory Bird Treaty Act" to avoid and/or minimize potential impacts to Whooping Cranes. Additionally, due to the location of the project within the migration corridor, TPWD recommends coordinating with the local USFWS Ecological Services Field Station in Austin (512-490-0057) if you have not already done so.

State Regulations

Aquatic Resources

TPW Code § 1.011 grants TPWD the authority to regulate and conserve aquatic animal life in public waters. TPW Code § 12.301 of identifies liability for wildlife taken in violation of TPW Code or a regulation adopted under TPW Code.

It appears that any route developed within the study area would cross water to install the transmission line between the proposed substation and the existing 138-kV transmission line.

> **Recommendation:** TPWD encourages the developer to consider and evaluate all possible alternatives of installation techniques in order to identify one method that would best minimize potential impacts to aquatic resources. During project planning and construction, TPWD recommends implementing measures to avoid impacts to aquatic organisms.

Under TPW Code § 12.015, 12.019, 66.015 and TAC 52.101-52.105, 52.202, and 57.251-57.259, TPWD regulates the introduction and stocking of fish, shellfish, and aquatic plants into public waters of the state. The Permit to Introduce Fish, Shellfish or Aquatic Plants into Public Waters allows for movement (i.e., introduction, stocking, transplant, relocation) of aquatic species in waters of the state. Movement of aquatic species has potential natural resources risks (e.g., exotics, timing for survival success).

> **Recommendation:** If dewatering aquatic sites in the project area is anticipated in order to complete the project (e.g., installing support structure foundations), TPWD recommends coordinating those activities with TPWD Kills and Spills Team (KAST) for the appropriate authorization. For more information on KAST and the appropriate point of contact, please visit **http://www.tpwd.state.tx.us/landwater/water/environconcerns/kills_and_spills/regions**.

Parks and Wildlife Code

State law prohibits the capture, trap, take or kill (incidental or otherwise) of state-listed species. Laws and regulations pertaining to state-listed endangered or threatened animals are contained in Chapters 67 and 68 of the Texas Parks and Wildlife (TPW) Code; laws pertaining to endangered or threatened plants are contained in Chapter 88 of the TPW Code. There are penalties, which may include fines and/or jail time in addition to payment of restitution values, associated with

take of state-listed species. Please see "Laws and Regulations Applicable to TPWD Review" at: **http://www.tpwd.state.tx.us/huntwild/wild/wildlife_diversity/habitat_assessment/laws.phtml**.

For purposes of relocation, surveys, monitoring, and research, terrestrial state-listed species may only be handled by persons permitted through the TPWD Wildlife Permits Program. For more information regarding Wildlife Permits, please visit TPWD's Wildlife Permits website at: **http://www.tpwd.state.tx.us/business/permits/land/wildlife/** or call the Wildlife Permits Office at (512) 389-4647. For the above-listed activities that involve aquatic species please contact the TPWD KAST for the appropriate authorization. As previously stated, for more information on KAST please visit **http://www.tpwd.state.tx.us/landwater/water/environconcerns/kills_and_spills/regions**.

State-listed Species

The potential occurrence of state-listed species in the project area is primarily dependent upon the availability of suitable habitat. Direct impacts to high quality or suitable habitat therefore are directly proportional to the magnitude and potential to directly impact state-listed species. State-listed reptiles that are typically slow moving or unable to move due to cool temperatures are especially susceptible to being directly impacted during ROW clearing and construction of the transmission line.

> **Recommendation:** Environmental documents prepared for the project should include an inventory of existing natural resources within the alternative transmission line routes; specific evaluations should be designed to predict project impacts upon these natural resources including potential impacts to state-listed species.

The following state-listed species have the potential to occur within the study area if suitable habitat is available:

Wood stork (*Mycteria americana*)
Zoned-tailed hawk (*Buteo albonotatus*)
Golden Orb (*Quadrula aurea*)
Texas horned lizard (*Phrynosoma cornutum*)
Texas indigo snake (*Drymarchon melanurus erebennus*)
Texas tortoise (*Gopherus berlandieri*)

Wood stork, Zoned-tailed hawk

The project areas contains suitable foraging and nesting habitat for these state-listed birds.

> **Recommendation:** Incorporating the recommendations provided under the "Migratory Bird Treaty Act" section of this letter would help avoid and/or minimize potential impacts to white-tailed hawks and gray hawks.

Golden orb

The golden orb is a small, round-shaped freshwater mussel that has declined significantly in the Nueces-Frio watersheds. Review of the TXNDD indicates there is evidence of its occurrence downstream of the project area in the Medina watershed. Habitat destruction and impoundment modifications are the greatest threats to the golden orb followed by decreased water quality, sedimentation, dewatering, and sand/gravel mining.

> **Recommendation:** TPWD recommends ensuring that precipitation runoff, which could potentially carry sediments and pollutants, is intercepted and treated before reaching any water bodies by installing storm water BMPs. TPWD recommends installing erosion and sediment control BMPs that would aide in construction stabilization. Erosion and sediment control measures include temporary or permanent seeding (with native plants), mulching, earth dikes, silt fences, sediment traps, and sediment basins. Examples of post-construction BMPs include vegetation systems (biofilters) such as grass filter strips and vegetated swales as well as retention basins capable of treating any additional runoff.

Texas horned lizard

Suitable habitat for the Texas horned lizard may be present in the project area. The Texas horned lizard can be found in open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees. Based on aerial photographs it appears that portions of the project area may provide suitable habitat for the state-listed Texas horned lizard.

If present in the project area, the Texas horned lizard could be impacted by ground disturbing activities, including ROW clearing. A useful indication that the Texas horned lizard may occupy the area is the presence of Harvester ant (*Pogonomyrmex* sp.) nests as they are the primary food source of horned lizards. Texas horned lizards may hibernate on-site in loose soils a few inches below ground during the

cooler months from September/October to March /April. Construction in these areas could harm hibernating lizards. Horned lizards are active above ground when temperatures exceed 75 degrees Fahrenheit. If horned lizards (nesting, gravid females, newborn young, lethargic from cool temperatures or hibernation) cannot move away from noise and approaching construction equipment, they could be negatively affected by construction activities.

Recommendation: TPWD recommends that a pre-construction survey be conducted to determine if horned lizards are present within the selected substation site and preferred transmission line corridor. As stated above, a useful indicator of potential occupancy is the presence of Harvester ants. Surveys should be conducted during warmer months of the year when horned lizards are active. Fact sheets, including survey protocols and photos of Texas horned lizards, can be found on-line at: **https://tpwd.texas.gov/huntwild/wild/wildlife_diversity/texas_nature_trackers/horned_lizard/facts/**

TPWD recommends avoiding disturbance of the Texas horned lizard and colonies of the Harvester ant during clearing and construction. If horned lizards are found on site, TPWD recommends contacting this office to discuss relocation options, particularly if there is likelihood that they would be harmed by project activities. To minimize impacts to Texas horned lizards, TPWD recommends the use of the best management practices (BMPs) described in the *Texas Horned Lizard Watch – Management and Monitoring Packet* which can be found online at **https://tpwd.texas.gov/publications/pwdpubs/media/pwd_bk_w7000_0038.pdf**.

Texas indigo snake

The Texas indigo snake is the largest nonvenomous snake in North America and is typically associated with aquatic habitats. Due to its high metabolism, it has a large home range in which it searches for prey and may be encountered away from aquatic habitats.

Recommendation: Because all snakes are generally perceived as a threat and killed when encountered during vegetation clearing, TPWD recommends project plans include comments to inform contractors of the potential for state-listed snake species to occur in the project area. The state-listed species described here is non-venomous and contractors should be advised to avoid impacts to this species and other snakes as long as the safety of the workers is not compromised. For the safety of workers and preservation of a natural

resource, attempting to catch, relocate and/or kill non-venomous or venomous snakes is discouraged by TPWD. If encountered, snakes should be permitted to safely leave project areas on their own. TPWD encourages construction sites to have a "no kill" policy in regard to wildlife encounters.

Texas tortoise

The Texas tortoise has a home range of approximately five to ten acres. Due to their small home range, they may occur in the small patches of suitable habitat, such as lomas, interspersed or adjacent to the project area. The project corridor is in close proximity to sites that have been used for Texas tortoise research for a several decades.

Recommendation: TPWD recommends that contractors working in the substation site and transmission line ROW be made aware of the potential for the state-listed Texas tortoise to occur in the area. If a tortoise is located at the project area, it should be relocated as far from the proposed activity as possible, but within its 5 to 10 acre range. After tortoises are removed from the immediate project area, TPWD recommends constructing an exclusion fence with metal flashing or drift fence material; regular silt fence material may be used. The exclusion fence should be buried at least six-inches deep and be 24-inches high. In addition to tortoises, exclusion fences are effective in preventing other reptile species from entering a construction area. Additional information regarding Texas tortoise best management practices is available on the TPWD website at: **http://www.tpwd.state.tx.us/huntwild/wild/wildlife_diversity/habitat_assessment/tools.phtml**.

Species of Concern

In addition to state- and federally-protected species, TPWD tracks special features, natural communities, species of concern (SOC), and species of greatest conservation need (SGCN) in the TXNDD and actively promotes their conservation. TPWD considers it important to evaluate and, if necessary, minimize impacts to rare species and their habitat to reduce the likelihood of endangerment.

Based on a review of TXNDD information, aerial photographs and site visits to the area, the following SOCs have potential to occur within the study area if suitable habitat is available:

Mountain plover (*Charadrius montanus*)
Sprague's pipit (*Anthus spragueii*)

Plain's spotted skunk (*Spilogale putoris interrupta*)
Spot-tailed earless lizard (*Holbrookia lacerata*)
Texas garter snake (*Thamnophis sirtalis annectens*)

The TXNDD is intended to assist users in avoiding harm to rare species or significant ecological features. Given the small proportion of public versus private land in Texas, the TXNDD does not include a representative inventory of rare resources in the state. Absence of information in an area does not imply that a species is absent from that area. Although it is based on the best data available to TPWD regarding rare species, the data from the TXNDD do not provide a definitive statement as to the presences, absence or condition of special species, natural communities, or other significant features within your project area. These data are not inclusive and **cannot be used as presence/absence data**. They represent species that could potentially be in your project area. This information cannot be substituted for on-the-ground surveys. The TXNDD date is updated continuously based on new, updated and undigitized records; therefore, TPWD recommends requesting the most recent TXNDD data on a regular basis. For questions regarding a record or to request the most recent data, please contact: **TexasNatural.DiveristyDatabase@tpwd.texas.gov**.

Please be aware that determining the actual presence of a species in a given area depends on many variables including daily and seasonal activity cycles, environmental activity cues, preferred habitat, transiency and population density (both wildlife and human). The absence of a species can be demonstrated only with great difficulty and then only with repeated negative observations, taking into account all the variable factors contributing to the lack of detectable presence.

Spot-tailed earless lizard

Suitable habitat for the spot-tailed earless lizard includes moderately open prairie-brushland and fairly flat areas free of vegetation and other obstructions.

In January 2010, the spot-tailed earless lizard was petitioned for listing under the Endangered Species Act (ESA). On May 24, 2011, the USFWS issued a 90-day finding on that petition. Based on their review, the USFWS found the petition presents substantial scientific or commercial information indicating that listing the spot-tailed earless lizard may be warranted. The USFWS has therefore initiated a status review to determine if listing is in fact warranted. Based on this status review, the USFWS will issue a 12-month finding on the petition.

Recommendation: TPWD recommends that CPS and/or SWCA monitor the listing status of the spot-tailed earless lizard throughout the project planning,

construction, and operation that occurs in the lease area and perform consultation, permitting, and mitigation with the USFWS if the species becomes listed under the ESA. Contractors should be instructed to avoid impacting any individuals of this species if found on site within the easement.

Numerous plant species designated "SOC" are included on Annotated County List of Rare Species for Bexar County. Although SOCs do not have regulatory protection, TPWD actively promotes their conservation and considers it important to avoid or minimize impacts to these species in order to reduce the likelihood of further loss and the potential listing of these species.

Recommendation: Please review the TPWD county list for Bexar County as rare species, including plant species, in addition to those discussed above could be present, depending on the availability of suitable habitat. TPWD recommends that surveys for the presence of SOC plant species should be conducted along the alternative routes that are developed or selected for the project. Plant surveys should be conducted by qualified botanists familiar with the rare plant species of Texas.

Vegetation

Based on data from TPWD's high resolution land classification map, the EMST, the project area consists of the following vegetation types:

- Barren
- Blackland Prairie: Disturbance or Tame Grassland
- Edwards Plateau: Ashe Juniper-Live Oak Shrubland
- Edwards Plateau: Deciduous Oak-Evergreen Motte and Woodland
- Edwards Plateau: Floodplain Ashe Juniper Shrubland
- Edwards Plateau: Floodplain Deciduous Shrubland
- Edwards Plateau: Floodplain Hardwood-Ashe Juniper Forest
- Edwards Plateau: Floodplain Hardwood Forest
- Edwards Plateau: Floodplain Herbaceous Vegetation
- Edwards Plateau: Floodplain Herbaceous Wetland
- Edwards Plateau: Floodplain Live Oak Forest
- Edwards Plateau: Live Oak Motte and Woodland
- Edwards Plateau: Oak-Hardwood Motte and Woodland
- Edwards Plateau: Oak-Hardwood Slope Forest
- Edwards Plateau: Riparian Ashe Juniper Shrubland
- Edwards Plateau: Riparian Deciduous Shrubland
- Edwards Plateau: Riparian Hardwood Forest

- Edwards Plateau: Riparian Herbaceous Vegetation
- Edwards Plateau: Riparian Herbaceous Wetland
- Edwards Plateau: Riparian Live Oak Forest
- Edwards Plateau: Savanna Grassland
- Marsh
- Native Invasive: Deciduous Woodland
- Native Invasive: Huisache Woodland or Shrubland
- Native Invasive: Juniper Woodland
- Native Invasive: Mesquite Shrubland
- Open Water
- Post Oak Savanna: Live Oak Motte and Woodland
- Post Oak Savanna: Post Oak-Live Oak Motte and Woodland
- Post Oak Savanna: Post Oak Motte and Woodland
- Post Oak Savanna: Savanna Grassland
- Row Crops
- South Texas: Shallow Shrubland
- Urban High Intensity
- Urban Low Intensity

An EMST land classification map of the study area is attached. Additional information about the EMST, including a link to download shapefiles, can be found at **http://tpwd.texas.gov/gis/data/downloads#EMS-T**

Habitat fragmentation is defined as the separation of a block of habitat for a species into segments, such that the genetic or demographic viability of the populations surviving in the remaining habitat segments is reduced. In many cases, site clearing, access roads, and transmission line ROW remove habitat and displace some species of wildlife, and may fragment continuous habitat into smaller, isolated tracts. Habitat fragmentation is of particular concern for species that require large expanses of habitat for activities such as breeding and foraging.

Consequences of isolating local populations of some species include decreased reproductive success, reduced genetic diversity, and increased susceptibility to chance events (e.g., disease and natural disasters), which may lead to extirpation or local extinctions. In addition to displacement, development of cleared transmission line corridors may result in the additional loss of habitat for some species due to edge effects. Edge effects occur when there is a break-up of continuous stands of similar vegetation. This results in an interface (edge) between two or more types of vegetation. The extent of edge effects will vary by species and may result in adverse impacts from such effects as a greater susceptibility to colonization by

invasive species, increased risk of predation, and competing species that favor landscapes with a mosaic of vegetation.

The proposed project area consists primarily of a mosaic of undeveloped land that represent tracts of quality wildlife habitat.

Recommendation: As indicted above, TPWD recommends locating the proposed transmission line as close to existing disturbed corridors as possible in order to minimize potential impacts to undisturbed areas. Aligning the new transmission line as close to existing transmission line or road corridors as possible and away from streams, creeks and rivers would minimize potential impacts to woody vegetation since many woody tracts and corridors are associated with water courses. If small, narrow tracts of woody vegetation must be crossed. TPWD recommends, if possible, locating support structures on either side of the woody patch and spanning it with the transmission line.

Tracts of grasslands, shrubland, woodland, and riparian corridors occurs throughout much of the project area. Locating the transmission line through grassland areas may minimize the necessity of clearing the entire ROW as they are naturally maintained in an herbaceous state. Ground disturbance in these areas could potentially be reduced to occur only at the locations of the transmission line support structures.

Unavoidable removal of vegetation should be mitigated by revegetating disturbed areas with site specific native plant species where feasible. The replacement of native plants will help control erosion, preserve and provide habitat for wildlife, and provide native species an opportunity to compete with undesirable, non-native, invasive plant species.

Lists of suitable plants and seed sources can be obtained by contacting the U.S. Department of Agriculture-Natural Resource Conservation Service (USDA-NRCS) Plant Materials Center in Kingsville, Texas (**http://plant-materials.nrcs.usda.gov/stpmc**) or 361-595-1313, or the Lady Bird Johnson Wildflower Center (**http://www.wildflower.org**). Information regarding the importance of native vegetation in revegetation or restoration activities, suitable seed mixes for South Texas, and seed availability are available from South Texas Natives (**http://ckwri.tamuk.edu/research-programs/south-texas-natives/**).

As previously stated, the proposed project area consists of a mixture of habitat types and vegetation communities. Current and past vegetation clearing can be a

significant threat to native plant communities in the area as disturbed areas are often revegetated with invasive, introduced species.

Recommendation: When preparing any ROW or easements for construction of the transmission line, TPWD recommends removing vegetation with a flail mower instead of a bulldozer to preserve cover crops of grass and low growing brush. Cleared vegetation should be mulched and spread out over the ROW or given to the landowner. With landowner consent, any native trees or shrubs removed from the ROW should be used to construct brush piles outside of the cleared ROW. Created brush piles can provide cover and nesting habitat for wildlife and replace habitat lost due to clearing trees in the ROW.

As stated above, for herbaceous revegetation efforts in the ROW, TPWD recommends the exclusive use of a mixture of native grasses and forbs. TPWD recommends that native grasses having the same desirable characteristics as introduced grasses commonly use in revegetation plans be incorporated into project planning and implemented following construction.

Lists of suitable plants and seed sources were listed above.

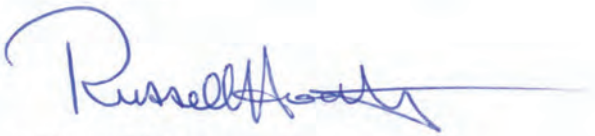
Conservation Easements

A conservation easement is a legal agreement between a landowner and a land trust or governmental agency that permanently limits uses of the land (including future fragmentation) to protect and conserve the land's natural values such as fertile soils, mature trees, and wildlife habitat. Lands with conservation easements protect existing wildlife habitat from future fragmentation and therefore have greater environmental integrity than comparable lands without conservation easements. Potential fragmentation of wildlife habitat from transmission line construction on properties where conservation agreements serve to protect the state's natural resources now and in the future is of concern to TPWD.

Recommendation: TPWD recommends properties protected by conservation easements be identified in the constraints analysis and should be avoided during development of alternative transmission line routes. Data sources for the location of these properties include, but are not limited to, online databases such as the Protected Areas Data Portal (**http://gapanalysis.usgs.gov/padus/**) and the National Conservation Easement Database (**http://conservationeasement.us**), as well as available county records. If properties protected by conservation easements would be affected, TPWD recommends the length of routes through these properties be included in any accounting of alternative route impacts presented in the EA.

TPWD advises review and implementation of these recommendations in the preparation of the environmental document for the project. Please contact me at (361) 825-3240 or **russell.hooten@tpwd.texas.gov** if you have any questions or we may be of further assistance.

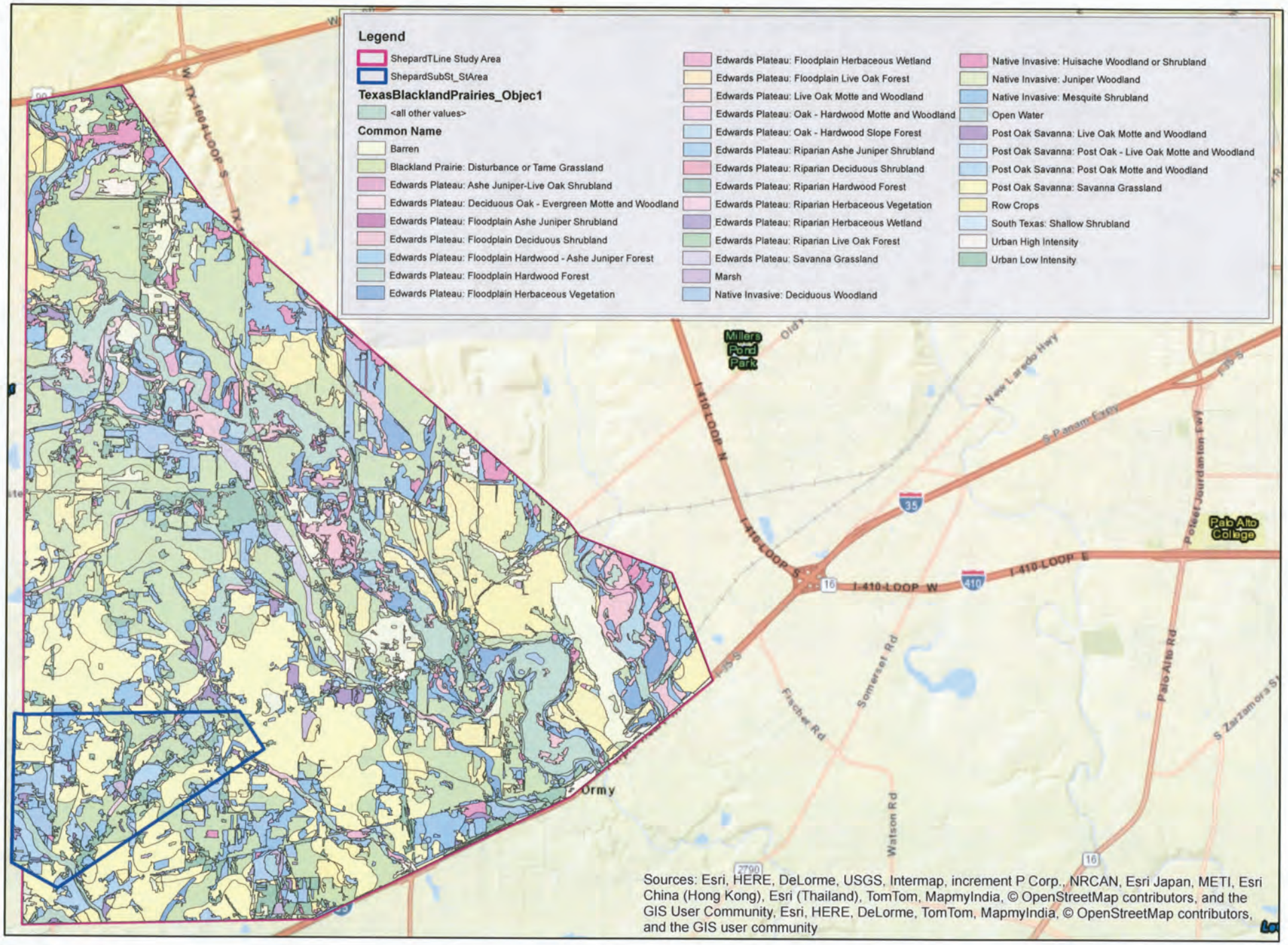
Sincerely,



Russell Hooten
Wildlife Habitat Assessment Program
Wildlife Division

/rh 36837

Attachment



This map was generated by TPWD-WHAP. No claims are made to the accuracy of completeness of the data or to its suitability for a particular use.

TEXAS GENERAL LAND OFFICE
GEORGE P. BUSH, COMMISSIONER

July 15, 2016

Christine Westerman
SWCA Environmental Consultants
6200 UTSA Blvd., Suite 102
San Antonio, TX 78249-1618

Re: Proposed CPS Energy Shepherd Substation Project
Project No. 37946

Dear Ms. Westerman:

On behalf of Commissioner Bush, I would like to thank you for your letter concerning the above-referenced project.

Using your map depicting the project's preliminary study area, it does not appear that the General Land Office will have any environmental issues or land use constraints at this time.

When a final route for this proposed project has been determined, please contact me and we can assess the route to determine if the project will cross any streambeds or Permanent School Fund (PSF) land that would require an easement from our agency.

In the interim, if you would like to speak to me further about this project, I can be reached by email at glenn.rosenbaum@glo.texas.gov or by phone at (512) 463-8180.

Again, thank you for your inquiry.

Sincerely,

Glenn Rosenbaum

Glenn Rosenbaum
Manager, Right-of-Way Department
Leasing Operations

U.S. Department
of Transportation
**Federal Aviation
Administration**

Southwest Region
10101 Hillwood Parkway
Fort Worth, TX 76177

JUL 25 2016

Christine Westerman, Senior Project Manager
SWCA Environmental Consultants
6200 UTSA Boulevard
Suite 102
San Antonio, TX 78249

Dear Ms. Westerman:

This is in response to your July 7, 2016 correspondence concerning a proposed new electric substation in Bexar County, Texas. You requested information that would be useful in project planning.

As stated in Title 14 of the Code of Federal Regulations (14 CFR) Part 77, Objects that Affect the Navigable Airspace, the prime objectives of the FAA are to promote air safety and the efficient use of the navigable airspace.

To accomplish this mission, aeronautical studies are conducted based on information provided by the proponents on FAA Form 7460-1, Notice of Proposed Construction or Alteration. If your organization is planning to sponsor any construction or alterations which may affect navigable airspace, you must file FAA Form 7460-1 electronically via https://oeaaa.faa.gov/oeaaa/external/portal.jsp.

For future reference, you may contact the Obstruction Evaluation Group at 10101 Hillwood Parkway, Fort Worth, Texas 76177 or (817) 222-5934.

Sincerely,

Kelvin L. Solco
Regional Administrator
Southwest Region

CC: Obstruction Evaluation Group, AJV-15

Texas Department of Transportation

AVIATION DIVISION
125 E. 11TH STREET • AUSTIN, TEXAS 78701-2483 • 512/416-4500 • FAX 512/416-4510

Ms.Christine Westerman
SWCA Environmental
6200 UTSA Boulevard
Suite 102, San Antonio, Texas 78249

July 12, 2016

Dear Ms. Westerman:

I received your letter dated July 7, 2016 concerning SWCA project numbered 37946.

Title 14, US Code, Part 77 of the Federal Aviation Administration's (FAA) Federal Aviation Regulations (FAR) requires notice to the FAA if the facility to be constructed fits either of the below listed conditions:

77.9 a. Any construction or alteration that is more than 200 ft. AGL (Above Ground Level) at its site.

77.9 b.(1) 100 to 1 for a horizontal distance of 20,000 ft. from the nearest point of the nearest runway of each airport described in paragraph (d) of this section with its longest runway more than 3,200 ft. in actual length, excluding heliports.

(2) 50 to 1 for a horizontal distance of 10,000 ft. from the nearest point of the nearest runway of each airport described in paragraph (d) of this section with its longest runway no more than 3,200 ft. in actual length, excluding heliports.

(3) 25 to 1 for a horizontal distance of 5,000 ft. from the nearest point of the nearest landing and takeoff area of each heliport described in paragraph (d) of this section

There are no public use airports or heliports in or near the study area.

If the criterion of FAR 77.9 is met, the FAA must be notified electronically at http://oeaaa.faa.gov.

William B. Gunn
Compliance

CITY OF SAN ANTONIO
TRANSPORTATION & CAPITAL IMPROVEMENTS

July 25, 2016

Christine Westerman
Senior Project Manager
SWCA Environmental Consultants
6200 UTSA Blvd., Suite 102
San Antonio, TX 78249

RE: Proposed CPS Energy Shepard Substation Project – COSA Response

Dear Ms. Westerman:

The City of San Antonio (COSA), Transportation & Capital Improvements (TCI) received your letter dated July 7, 2016 regarding the referenced project. As per your letter, SWCA is preparing an Alternative Analysis and Environmental Assessment for the proposed project on behalf of City Public Service Energy. A copy of the proposed project location was included for our review.

Based on our review of the proposed project area, we have determined that we have no environmental studies within the proposed project area from our past and recent bond programs (2007 & 2012). Our standard studies include risk assessment studies, cultural resources studies, section 404 permitting studies, etc.

Although my department does not have any environmental studies for this proposed project area, it is recommended that you contact the City's Office of Historic Preservation to obtain cultural resources studies for this area, if available. They can be reached at (210) 215-9274. Their physical address is 1901 South Alamo, San Antonio, TX 78204.

I appreciate the opportunity to comment on this project. Please feel free to contact Mr. John Cantu, Environmental Manager, at (210) 207-1450 or John.Cantu@sanantonio.gov if you have questions or require additional information.

Sincerely,

Mike Frisbie, P.E.
Director/City Engineer

P.O. Box 839966 • San Antonio, Texas 78283-3966

SWCA
ENVIRONMENTAL CONSULTANTS

San Antonio Office
6200 UTSA Boulevard, Suite 102
San Antonio, Texas 78249
Tel 210.877.2847 Fax 210.877.2848
www.swca.com

July 7, 2016

Mr. David Fulton
Director
Division of Aviation
Texas Department of Transportation
125 E. 11th Street
Austin, TX 78701

Re: Proposed CPS Energy Shepherd Substation Project (37946)

Dear Mr. Fulton:

CPS Energy is initiating the planning process for construction of a new electric substation to maintain reliability and meet growing needs for electric power in southwestern Bexar County. We are requesting your assistance in providing any information that would be useful in project planning.

The Study Area for the proposed substation is a triangle-shaped area generally extending from approximately 0.25 mile west of Shepherd Road, approximately 2 miles north of the intersection of Shepherd Road and Pearsall Road, and 1.7 miles east of Shepherd Road. The substation will be connected to the existing Valley Road to Cagnon 138-kV transmission line by a new transmission line. The new substation will cover an area of approximately 6 acres, and the new transmission line will be included within a 60- to 100-foot-wide right of way. The Study Area for the proposed transmission line is a triangle-shaped area generally extending from the intersection of Shepherd Road and Pearsall Road north to US 90 and southeast to approximately 0.5 mile west of the intersection of IH 35 and Loop 410. Study Areas are shown on the attached Figure 1.

On behalf of CPS Energy, SWCA Environmental Consultants (SWCA) is preparing an Alternatives Analysis and Environmental Assessment (EA) for the proposed project. SWCA is collecting and evaluating land use and environmental resource data for the study area and requests your input regarding project siting and any potential concerns, constraints or environmental issues.

SWCA
ENVIRONMENTAL CONSULTANTS

CPS Energy would appreciate comments from your office/agency on natural, cultural, and human resources in the study area. Additionally, if any permits, easements, or approvals by your office/agency are required, or if you are aware of major proposed developments or construction in the study area, please provide the relevant information to the address below. It will be very valuable to our planning process.

Please contact Christine Westerman at SWCA with your questions and comments:

Christine Westerman, Senior Project Manager
SWCA Environmental Consultants
6200 UTSA Blvd, Suite 102
San Antonio, Texas 78249
210-877-2847
cwesterman@swca.com

Your prompt reply is greatly appreciated.

Sincerely,

Christine Westerman
Senior Project Manager

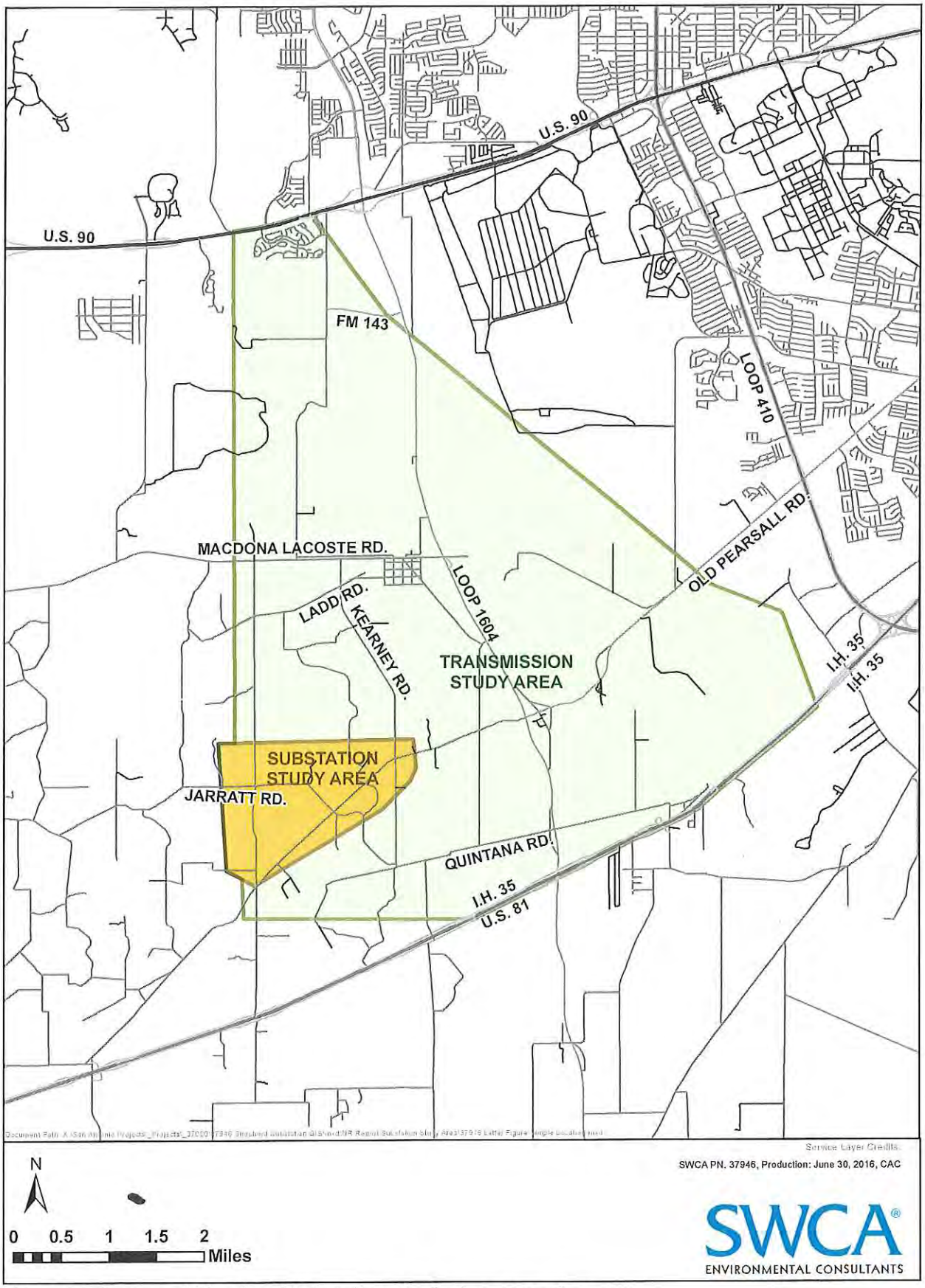


Figure 1. Proposed Shepherd Substation Study Area Locations

APPENDIX C

PUBLIC COMMENT LETTERS, E-MAILS AND QUESTIONNAIRES

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Rcvd @ Open House 8/25/16

SHEPHERD PROJECT QUESTIONNAIRE

Please respond to the following questions so we can evaluate public interest in this project.

1. Has the need for the project been adequately explained to you? _____ Yes ___X___ No

2. What factors do you believe should be considered (avoided if possible) in the siting of this substation and transmission line? (If you have multiple concerns, please rank them 1st, 2nd, 3rd, etc.)

Proximity to:

Residential areas	____	Commercial/industrial areas	____
Floodplains/wetlands	X	Wildlife habitat/woodlands	X
Recreational/park areas	____	Schools	____
Archaeological/historic sites	____	Churches/cemeteries	____

3. What factors do you believe should be considered (avoided if possible) in the siting of this substation and transmission line? (If you have multiple concerns, please rank them 1st, 2nd, 3rd, etc.)

4. What other factors do you believe should be considered?
BE Line
THIS LINE WILL RUN 2300 FT DOWN MY SOUTH PROPERTY LINE AND ABOUT 300 FT ACROSS THE FRONT OF MY PROPERTY. THE LINE RUNNING 2300 FT EAST TO WEST WILL EFFEC MY DOVE HUNTING OPERATION.

5. Please identify the substation site options and route segment options (by number) that you believe will have significant impact on people or the natural environment and describe why/how.
BE WET LANDS, ANY DIRECTION I LOOK SOUTH, EAST, OR WEST MY VIEW WILL BE THIS PROJECT

6. How did you learn about this Public Open House Meeting?
LETTER

7. Do you have any additional comments or questions?
I BELIEVE MY PROPERTY VALUE WILL BE DRASTICLY REDUCED

8. If you like someone to follow-up with you to discuss the project in more detail, please provide contact information below:

Name ROBERT B. MATYEAK
Daytime phone 210-622-0428 E-mail ROBERT B. MATYEAK@YAHOO
Address, City, State/ZIP 12086 SHEPHERD RD ATASCOSA, TX 78002

Please use one of the following options to submit your questionnaire:

a) Online at CPSEnergy.com, keyword Shepherd
b) At the Open House
c) By mail within three days of Open House to:
CPS Energy, Mail Drop 100311, Project Management & Performance Improvement
P.O. Box 1771, San Antonio, Texas 78296-1771

THANK YOU FOR YOUR COMMENTS

ICVd (@ Open House 8/25/16

SHEPHERD PROJECT QUESTIONNAIRE

Please respond to the following questions so we can evaluate public interest in this project.

1. Has the need for the project been adequately explained to you? ___ Yes ___ No
   No idea which lines will be used
2. What factors do you believe should be considered (avoided if possible) in the siting of this substation and transmission line? (If you have multiple concerns, please rank them 1st, 2nd, 3rd, etc.)

Proximity to:

Residential areas	___	Commercial/industrial areas	___
Floodplains/wetlands	X	Wildlife habitat/woodlands	___
Recreational/park areas	___	Schools	___
Archaeological/historic sites	___	Churches/cemeteries	___

3. What factors do you believe should be considered (avoided if possible) in the siting of this substation and transmission line? (If you have multiple concerns, please rank them 1st, 2nd, 3rd, etc.)

4. What other factors do you believe should be considered?
   I spent ½ my life beautifing my property & I am worried all I will see is elec. lines.

5. Please identify the substation site options and route segment options (by number) that you believe will have significant impact on people or the natural environment and describe why/how.
   BF Line - flooding

6. How did you learn about this Public Open House Meeting?
   mail

7. Do you have any additional comments or questions?
   property value
   Would you like to buy 20 Acres?

8. If you like someone to follow-up with you to discuss the project in more detail, please provide contact information below:
   Name Olivia Matyear
   Daytime phone 210 622-0428 E-mail o matyear@yahoo.com
   Address, City, State/ZIP 12086 Shepherd Rd Atascosa, Tx. 78002

Please use one of the following options to submit your questionnaire:

a) Online at CPSEnergy.com, keyword Shepherd
b) At the Open House
c) By mail within three days of Open House to:
   CPS Energy, Mail Drop 100311, Project Management & Performance Improvement
   P.O. Box 1771, San Antonio, Texas 78296-1771

THANK YOU FOR YOUR COMMENTS

Rcvd @ Open House 8/25/16

SHEPHERD PROJECT QUESTIONNAIRE

Please respond to the following questions so we can evaluate public interest in this project.

1. Has the need for the project been adequately explained to you? ✓ Yes _____ No

2. What factors do you believe should be considered (avoided if possible) in the siting of this substation and transmission line? (If you have multiple concerns, please rank them 1st, 2nd, 3rd, etc.)

Proximity to:

Residential areas	3	Commercial/industrial areas	
Floodplains/wetlands		Wildlife habitat/woodlands	2
Recreational/park areas		Schools	1
Archaeological/historic sites	2	Churches/cemeteries	1

3. What factors do you believe should be considered (avoided if possible) in the siting of this substation and transmission line? (If you have multiple concerns, please rank them 1st, 2nd, 3rd, etc.) Schools + homes

4. What other factors do you believe should be considered?

_____

_____

5. Please identify the substation site options and route segment options (by number) that you believe will have significant impact on people or the natural environment and describe why/how.

_____

_____

_____

6. How did you learn about this Public Open House Meeting?
Letter

7. Do you have any additional comments or questions?

_____

_____

_____

8. If you like someone to follow-up with you to discuss the project in more detail, please provide contact information below:

Name _____
Daytime phone_____ E-mail_____
Address, City,State/ZIP_____

Please use one of the following options to submit your questionnaire:

a) Online at CPSEnergy.com, keyword Shepherd
b) At the Open House
c) By mail within three days of Open House to:
CPS Energy, Mail Drop 100311, Project Management & Performance Improvement
P.O. Box 1771, San Antonio, Texas 78296-1771

THANK YOU FOR YOUR COMMENTS

CVd @ Open House 8/25/16

SHEPHERD PROJECT QUESTIONNAIRE

Please respond to the following questions so we can evaluate public interest in this project.

1. Has the need for the project been adequately explained to you? X Yes _____ No

2. What factors do you believe should be considered (avoided if possible) in the siting of this substation and transmission line? (If you have multiple concerns, please rank them 1st, 2nd, 3rd, etc.)

Proximity to:

Residential areas	2	Commercial/industrial areas	
Floodplains/wetlands	1	Wildlife habitat/woodlands	[redacted]
Recreational/park areas		Schools	
Archaeological/historic sites		Churches/cemeteries	3

3. What factors do you believe should be considered (avoided if possible) in the siting of this substation and transmission line? (If you have multiple concerns, please rank them 1st, 2nd, 3rd, etc.)

4. What other factors do you believe should be considered?

5. Please identify the substation site options and route segment options (by number) that you believe will have significant impact on people or the natural environment and describe why/how.
AR + AS Go Right across Dense Neighborhoods in poor area of town

6. How did you learn about this Public Open House Meeting?
MAIL

7. Do you have any additional comments or questions?
I'd like CPS to Consider The effect it has on Owners Land Values.

8. If you like someone to follow-up with you to discuss the project in more detail, please provide contact information below:
Name Ronald Sneberg
Daytime phone _____ E-mail ron@Sneberg.org
Address, City,State/ZIP _____

Please use one of the following options to submit your questionnaire:

a) Online at CPSEnergy.com, keyword Shepherd
b) At the Open House
c) By mail within three days of Open House to:
CPS Energy, Mail Drop 100311, Project Management & Performance Improvement
P.O. Box 1771, San Antonio, Texas 78296-1771

THANK YOU FOR YOUR COMMENTS

rcvd @ open House 8/25/16

SHEPHERD PROJECT QUESTIONNAIRE

Please respond to the following questions so we can evaluate public interest in this project.

1. Has the need for the project been adequately explained to you? ✓ Yes _____ No

2. What factors do you believe should be considered (avoided if possible) in the siting of this substation and transmission line? (If you have multiple concerns, please rank them 1st, 2nd, 3rd, etc.)

Proximity to:

Residential areas	1	Commercial/industrial areas	
Floodplains/wetlands		Wildlife habitat/woodlands	
Recreational/park areas		Schools	
Archaeological/historic sites		Churches/cemeteries	

3. What factors do you believe should be considered (avoided if possible) in the siting of this substation and transmission line? (If you have multiple concerns, please rank them 1st, 2nd, 3rd, etc.) If section 6 is selected - it will be right out my front window! Our property value will plumet!

4. What other factors do you believe should be considered?
look for an area not surrounded by homes.

5. Please identify the substation site options and route segment options (by number) that you believe will have significant impact on people or the natural environment and describe why/how.
section 6 is the only location impacting homes. Please consider another location

6. How did you learn about this Public Open House Meeting?

7. Do you have any additional comments or questions?
Please select a site that will not impact the already existing home values!

8. If you like someone to follow-up with you to discuss the project in more detail, please provide contact information below:

Name _____
Daytime phone_____ E-mail_____
Address, City,State/ZIP_____

Please use one of the following options to submit your questionnaire:

a) Online at CPSEnergy.com, keyword Shepherd
b) At the Open House
c) By mail within three days of Open House to:
CPS Energy, Mail Drop 100311, Project Management & Performance Improvement
P.O. Box 1771, San Antonio, Texas 78296-1771

THANK YOU FOR YOUR COMMENTS

Revd by mail 8/31/16

SHEPHERD PROJECT QUESTIONNAIRE

Please respond to the following questions so we can evaluate public interest in this project.

1. Has the need for the project been adequately explained to you? ✓ Yes _____ No

2. What factors do you believe should be considered (avoided if possible) in the siting of this substation and transmission line? (If you have multiple concerns, please rank them 1st, 2nd, 3rd, etc.)

Proximity to:

Residential areas	1st	Commercial/industrial areas	
Floodplains/wetlands		Wildlife habitat/woodlands	2nd
Recreational/park areas		Schools	
Archaeological/historic sites	3rd	Churches/cemeteries	

3. What factors do you believe should be considered (avoided if possible) in the siting of this substation and transmission line? (If you have multiple concerns, please rank them 1st, 2nd, 3rd, etc.)

4. What other factors do you believe should be considered?
Future use of private property

5. Please identify the substation site options and route segment options (by number) that you believe will have significant impact on people or the natural environment and describe why/how.
Route Segment 5 - will involve removing large trees and affect future use of personal property

6. How did you learn about this Public Open House Meeting?
Mail out

7. Do you have any additional comments or questions?
Charlie Boswell said he would like in future to set up a meeting at location 5.

8. If you like someone to follow-up with you to discuss the project in more detail, please provide contact information below:

Name James A. Gates DVM
Daytime phone (210)416-1535 E-mail jgatesdvm@juno.com
Address, City, State/ZIP Rt. 9 Box 222B San Antonio, TX. 78252

Please use one of the following options to submit your questionnaire:

a) Online at CPSEnergy.com, keyword Shepherd
b) At the Open House
c) By mail within three days of Open House to:
CPS Energy, Mail Drop 100311, Project Management & Performance Improvement
P.O. Box 1771, San Antonio, Texas 78296-1771

THANK YOU FOR YOUR COMMENTS

Rcvd by mail 9/1/16

SHEPHERD PROJECT QUESTIONNAIRE

Please respond to the following questions so we can evaluate public interest in this project.

1. Has the need for the project been adequately explained to you? X Yes _____ No

2. What factors do you believe should be considered (avoided if possible) in the siting of this substation and transmission line? (If you have multiple concerns, please rank them 1st, 2nd, 3rd, etc.)

Proximity to:

Residential areas	3	Commercial/industrial areas	5
Floodplains/wetlands	2	Wildlife habitat/woodlands	7
Recreational/park areas	8	Schools	1
Archaeological/historic sites	6	Churches/cemeteries	4

3. What factors do you believe should be considered (avoided if possible) in the siting of this substation and transmission line? (If you have multiple concerns, please rank them 1st, 2nd, 3rd, etc.) ~~2~~ area that floods

4. What other factors do you believe should be considered?
Schools and heavy residential areas. also unsure if it would affect interface between fiber optics + phone lines.

5. Please identify the substation site options and route segment options (by number) that you believe will have significant impact on people or the natural environment and describe why/how.
unsure of any at this time

6. How did you learn about this Public Open House Meeting?
Mailed information

7. Do you have any additional comments or questions?
No

8. If you like someone to follow-up with you to discuss the project in more detail, please provide contact information below:

Name _____
Daytime phone _____ E-mail _____
Address, City, State/ZIP _____

Please use one of the following options to submit your questionnaire:

a) Online at CPSEnergy.com, keyword Shepherd
b) At the Open House
c) By mail within three days of Open House to:
CPS Energy, Mail Drop 100311, Project Management & Performance Improvement
P.O. Box 1771, San Antonio, Texas 78296-1771

THANK YOU FOR YOUR COMMENTS

Rcvd by mail 9/8/16

SHEPHERD PROJECT QUESTIONNAIRE

Please respond to the following questions so we can evaluate public interest in this project.

1. Has the need for the project been adequately explained to you? ✓ Yes _____ No

2. What factors do you believe should be considered (avoided if possible) in the siting of this substation and transmission line? (If you have multiple concerns, please rank them 1st, 2nd, 3rd, etc.)

Proximity to:

Residential areas	(1)	Commercial/industrial areas	(2) Continued Agricultural use as in past 69 yrs
Floodplains/wetlands	_____	Wildlife habitat/woodlands	_____
Recreational/park areas	_____	Schools	_____
Archaeological/historic sites	_____	Churches/cemeteries	_____

3. What factors do you believe should be considered (avoided if possible) in the siting of this substation and transmission line? (If you have multiple concerns, please rank them 1st, 2nd, 3rd, etc.)

4. What other factors do you believe should be considered?
Impact on marketability of landowners remaining acreage
No one buys land near or under substation sites.

5. Please identify the substation site options and route segment options (by number) that you believe will have significant impact on people or the natural environment and describe why/how.
#2:

6. How did you learn about this Public Open House Meeting?
By letter

7. Do you have any additional comments or questions?
I have plans to deed this acreage to granddaughter for possible home site. Either usage for continued hay production or homesite would be halted as rest of acreage over 6 ac. substation site would be rendered unusable for my purposes & no one would want to buy any of the acreage

8. If you like someone to follow-up with you to discuss the project in more detail, please provide contact information below:

Name Shirley + Ronnie Bormann
Daytime phone 210-622-0668 E-mail _____
Address, City, State/ZIP P.O. Box 122 Macdona Tx 78054

I'm owner of Site #2 (12¼ac) that if 6 acres were Purchased, I would no longer qualify for ag exemption on the remaining 6¼ ac. No one at mtg on 8-25-16 could answer my question 10ac. is minimum amount to qualify for ag exemption on taxes @ Bexar Appraisal Dist. I'd be forced to pay $1000's for something I now pay $20. This is a hardship. Property is appraised @ about $4500/acre. I couldn't afford it

Please use one of the following options to submit your questionnaire:

a) Online at CPSEnergy.com, keyword Shepherd
b) At the Open House
c) By mail within three days of Open House to:
CPS Energy, Mail Drop 100311, Project Management & Performance Improvement
P.O. Box 1771, San Antonio, Texas 78296-1771

THANK YOU FOR YOUR COMMENTS

SHEPHERD PROJECT QUESTIONNAIRE

Please respond to the following questions so we can evaluate public interest in this project.

1. Has the need for the project been adequately explained to you? ✓ Yes _____ No

2. What factors do you believe should be considered (avoided if possible) in the siting of this substation and transmission line? (If you have multiple concerns, please rank them 1st, 2nd, 3rd, etc.)

Proximity to:

Residential areas	x 2	Commercial/industrial areas (VEGETABLE FARMING)	x 1
Floodplains/wetlands	x 3	Wildlife habitat/woodlands	
Recreational/park areas		Schools	
Archaeological/historic sites		Churches/cemeteries	

3. What factors do you believe should be considered (avoided if possible) in the siting of this substation and transmission line? (If you have multiple concerns, please rank them 1st, 2nd, 3rd, etc.)

4. What other factors do you believe should be considered?
FARM LAND WITH UNDERGROUND IRRIGATION

5. Please identify the substation site options and route segment options (by number) that you believe will have significant impact on people or the natural environment and describe why/how.
#1 THIS LAND WAS RECENTLY PURCHASED TO GROW VEGETABLES. THE LAND WAS COVERED WITH NURSERY TREES. WE HAVE ALREADY CLEARED ABOUT 75% OF THE PROPERTY & PRESENTALY GROWING VEGETABLES

6. How did you learn about this Public Open House Meeting?
YOU MAILED THE INFO TO ME

7. Do you have any additional comments or questions?
WHY NOT PICK LAND THAT IS GROWN UP IN TREES & NOT BEING USED.

8. If you like someone to follow-up with you to discuss the project in more detail, please provide contact information below:

Name CHARLES ADAMEK
Daytime phone 210-391-4684 E-mail CADAMEK99@AOL.COM
Address, City,State/ZIP P.O. BOX 142 ATASCOSA TX 78002-0142

Please use one of the following options to submit your questionnaire:

a) Online at CPSEnergy.com, keyword Shepherd
b) At the Open House
c) By mail within three days of Open House to:
CPS Energy, Mail Drop 100311, Project Management & Performance Improvement
P.O. Box 1771, San Antonio, Texas 78296-1771

THANK YOU FOR YOUR COMMENTS

SHEPHERD PROJECT
QUESTIONNAIRE

Please respond to the following questions so we can evaluate public interest in this project.

1. Has the need for the project been adequately explained to you? ✓ Yes _____ No

2. What factors do you believe should be considered (avoided if possible) in the siting of this substation and transmission line? (If you have multiple concerns, please rank them 1st, 2nd, 3rd, etc.)

Proximity to:

Residential areas	1st	Commercial/industrial areas	_____
Floodplains/wetlands	_____	Wildlife habitat/woodlands	4th
Recreational/park areas	_____	Schools	2nd
Archaeological/historic sites	3rd	Churches/cemeteries	_____

3. What factors do you believe should be considered (avoided if possible) in the siting of this substation and transmission line? (If you have multiple concerns, please rank them 1st, 2nd, 3rd, etc.)

4. What other factors do you believe should be considered?
Agricultural land

5. Please identify the substation site options and route segment options (by number) that you believe will have significant impact on people or the natural environment and describe why/how.
Can't say what significant impact there is on every site but know site 2 is fairly close to about 4 or 5 houses. Site 1 has no impact (no houses, no flooding danger -- water drains in opposite direction + transmission lines can go straight north -- up Shepherd Rd.

6. How did you learn about this Public Open House Meeting?
A mail-out.

7. Do you have any additional comments or questions?
Would like further info on substation site + transmission line route when close to finalization. Open House Meeting was very informative + appreciated. Thank you

8. If you like someone to follow-up with you to discuss the project in more detail, please provide contact information below:

Name _____
Daytime phone _____ E-mail _____
Address, City,State/ZIP _____

Please use one of the following options to submit your questionnaire:

a) Online at CPSEnergy.com, keyword Shepherd
b) At the Open House
c) By mail within three days of Open House to:
CPS Energy, Mail Drop 100311, Project Management & Performance Improvement
P.O. Box 1771, San Antonio, Texas 78296-1771

THANK YOU FOR YOUR COMMENTS

SHEPHERD PROJECT
QUESTIONNAIRE

Please respond to the following questions so we can evaluate public interest in this project.

1. Has the need for the project been adequately explained to you? ✓ Yes _____ No

2. What factors do you believe should be considered (avoided if possible) in the siting of this substation and transmission line? (If you have multiple concerns, please rank them 1st, 2nd, 3rd, etc.)

Proximity to:			
Residential areas	4	Agricultural	2
Floodplains/wetlands	1	Commercial/industrial areas	
Recreational/park areas		Wildlife habitat/woodlands	3
Archaeological/historic sites		Schools	
		Churches/cemeteries	

3. What factors do you believe should be considered (avoided if possible) in the siting of this substation and transmission line? (If you have multiple concerns, please rank them 1st, 2nd, 3rd, etc.)

4. What other factors do you believe should be considered?
willingness of landowners to sell.

5. Please identify the substation site options and route segment options (by number) that you believe will have significant impact on people or the natural environment and describe why/how.
1. Tree farm and it floods
2. Hayfield - BMA Irrigation canal flood irrigation
3. Hayfield - " " " "

6. How did you learn about this Public Open House Meeting?
mail out

7. Do you have any additional comments or questions?
I have 8 acres w/small house & mobile home. My land does not flood. Willing to negotiate. My brother in law has 4 ac on corner by 1/2 of it floods.

8. If you like someone to follow-up with you to discuss the project in more detail, please provide contact information below:

Name Barbra Newtwich
Daytime phone 210 872 4377 E-mail
Address, City,State/ZIP 12970 & 13036 Shepherd
mail → PO Box 587 Atascosa Tx 78002

Please use one of the following options to submit your questionnaire:

a) Online at CPSEnergy.com, keyword Shepherd
b) At the Open House
c) By mail within three days of Open House to:
CPS Energy, Mail Drop 100311, Project Management & Performance Improvement
P.O. Box 1771, San Antonio, Texas 78296-1771

THANK YOU FOR YOUR COMMENTS

WE CARE

Dear Postal Customer:

We sincerely regret the damage to your mail during handling by the Postal Service. We hope this incident did not inconvenience you. We realize that your mail is important to you and that you have every right to expect it to be delivered in good condition.

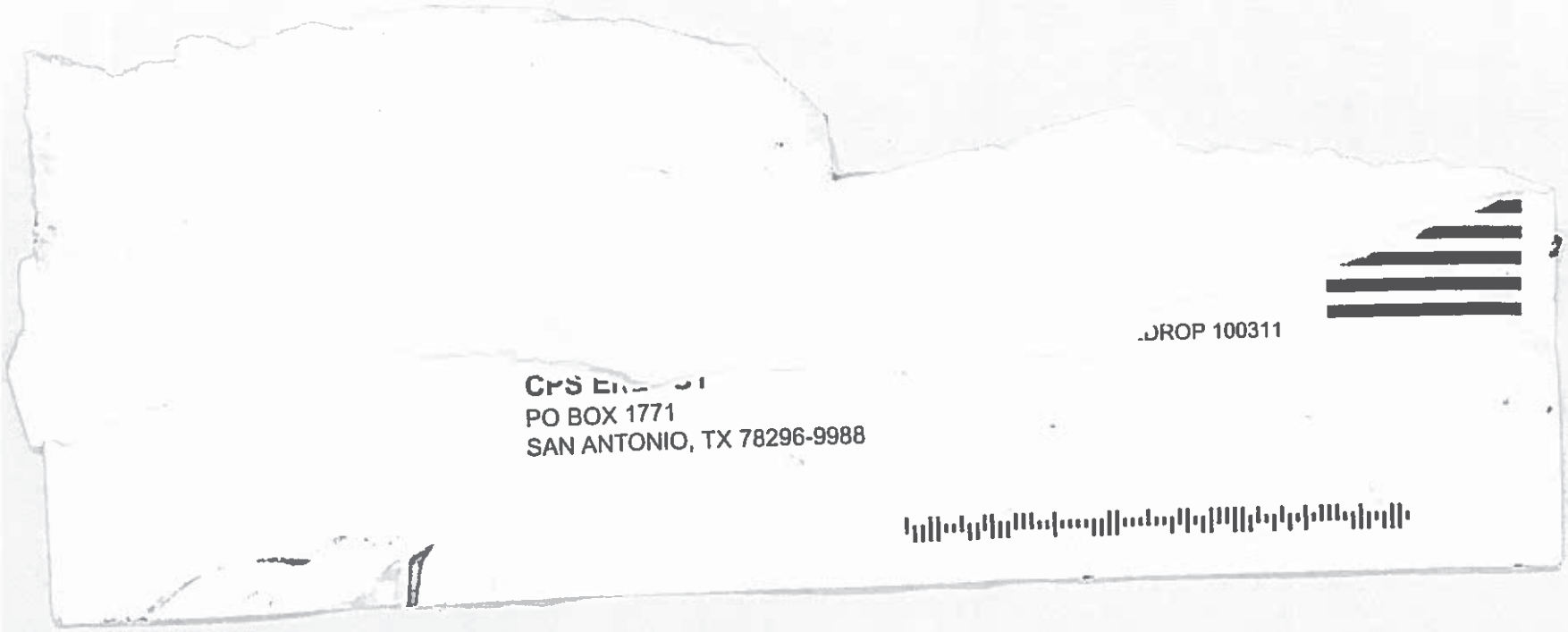
Although every effort is made to prevent damage to the mail, occasionally this will occur because of the great volume handled and the rapid processing methods which must be employed to assure the most expeditious distribution possible.

We hope you understand. We assure you that we are constantly striving to improve our processing methods in order that even a rare occurrence may be eliminated.

Please accept our apologies.

Sincerely,

Your Postmaster



.DROP 100311

CPS EN[illegible]
PO BOX 1771
SAN ANTONIO, TX 78296-9988

SHEPHERD PROJECT
QUESTIONNAIRE

Pl[illegible] so we [illegible] terest in this project.

7 " 8

5. Please identify the substa[illegible]
significant impact on people or
I wasn't provided with a [illegible] site + route opti[illegible]
my area was marked A-12 & B-a, 23 ACRES. My Grandma
was Annie Lessing, my mother was Katherine Lessing (Imhoff), born 1908.

6. How did you learn about this Public Open House Meeting?
By Mail delivery & I might add, by very short notice since
we reside in Corpus Christi.

7. Do you have any additional comments or questions?
I hope you won't take my Shephard Road frontage.
There is already a natural gas pipeline along my Macdona-
Lacoste frontage. Please consider that.

8. If you like someone to follow-up with you to discuss the project in more detail, please provide contact information below:

Name _____
Daytime phone_____ E-mail_____
Address, City,State/ZIP_____

Please use one of the following options to submit your questionnaire:

a) Online at CPSEnergy.com, keyword Shepherd

Thank you.
Sincerely,
Marin [illegible]

Rec'd by mail
5.15.17

SHEPHERD PROJECT
QUESTIONNAIRE

Please respond to the following questions so we can evaluate public interest in this project.

1. Has the need for the project been adequately explained to you? ✓ Yes _____ No

2. What factors do you believe should be considered (avoided if possible) in the siting of this substation and transmission line? (If you have multiple concerns, please rank them 1st, 2nd, 3rd, etc.)

Proximity to:

Residential areas	1	Commercial/industrial areas	
Floodplains/wetlands		Wildlife habitat/woodlands	2
Recreational/park areas		Schools	
Archaeological/historic sites	3	Churches/cemeteries	

3. What factors do you believe should be considered (avoided if possible) in the siting of this substation and transmission line? (If you have multiple concerns, please rank them 1st, 2nd, 3rd, etc.)

4. What other factors do you believe should be considered?

See Attached

5. Please identify the substation site options and route segment options (by number) that you believe will have significant impact on people or the natural environment and describe why/how.

See Attached

6. How did you learn about this Public Open House Meeting?

7. Do you have any additional comments or questions?

See Attached

8. If you like someone to follow-up with you to discuss the project in more detail, please provide contact information below:

Name Joseph Nentwich
Daytime phone 210-622-3231 E-mail None
Address, City, State/ZIP P.O. Box 57 Atascosa, Tx 78002
12592 Shepherd Rd.

Please use one of the following options to submit your questionnaire:

a) Online at CPSEnergy.com, keyword Shepherd
b) At the Open House
c) By mail within three days of Open House to:
CPS Energy, Mail Drop 100311, Project Management & Performance Improvement
P.O. Box 1771, San Antonio, Texas 78296-1771

THANK YOU FOR YOUR COMMENTS

After viewing the addition of site 7 on Shepherd Rd, Site 1 is still the most favorable site. Site 7 is adjacent to properties owned by relatives of Ray Nentwich. These relatives live on the properties & have kept woodlands for grazing cattle & various species of wildlife.

Site 1 would have no close neighbors -- It is on a cleared property with entries either off Shepherd Rd. &/or Jarratt Rd. There are no buildings on that property.

Site 1 - Most favorable
Site 3 -

Shepherd

Substation/ Transmission Project

Internal Project Team Input / Comment Form

Form filled out by: Russell Anderson

Booth Display Station: _____

Comments from (Name optional): _____

Contact information (Optional): _____

_____

Attendee would like a response: ____ Yes ___ No

Comments: _____

_____

_____

Reference map attached: ____ Yes ___ No

If we delay this, we need to remember to communicate it. They expect more info in November.

Shepherd

Substation/ Transmission Project

Internal Project Team Input / Comment Form

Form filled out by: Russell Anderson

Booth Display Station: R & S

Comments from (Name optional): Shirley Bormann

Contact information (Optional): 210-622-0668

Attendee would like a response: ✓ Yes ___ No

Comments: #2 Owner 12¼ Acres - worried about losing Ag exemption. If she loses acreage. Needs to have 10 acres. Had prop. since 1946. Property is in probate. Worried about land value.

Reference map attached: ___ Yes ___ No

Pivot system on property outside of station study area. Much family in the area

Shepherd

Shirley M. Bormann, Exec.
Estate of Theresa M. Shadrock
P.O. Box 122
Macdona, TX 78054

(Formerly
P.O. Box 34
Macdona, TX
78054)

Routing&Siting

From: feedback@cpsenergy.com
Sent: Monday, August 29, 2016 3:20 PM
To: Routing&Siting
Subject: Shepherd Questionnaire - ONLINE FORM

New form submission for (http://cpsenergy.com/content/corporate/en/forms/shepherd-substation-form.html).

Values:

ProjectExplained: Yes
TopConcerns: Floodplains/wetlandsTopConcerns: Commercial/industrial areasTopConcerns: Wildlife habitat/woodlands
FirstConcern: Commercial/industrial areas
SecondConcern: Wildlife habitat/woodlands
ThirdConcern: Floodplains/wetlands
CommentWhatOtherFactors: Williness of homeowner to sell and taxes from commercial properties loss for county.
CommentSiteOptions: Site 1 floods. It is commercial property
AdditionalComments: Yes our family is interested in making a deal for our 8 acres. My AF veteran daughter and grandson live on our property as we do. The school district is horrible. This is one way we can get out of the area and you can have land that doesn't flood and is not taking away commercial land used for farming.
Name: Barbra Nentwich
DayTimePhoneNumber: 2108724377
Email: barbra.nentwich@saintlouiscs.org
Address1: 12970 & 13036 Shepherd Rd
Address2: PO Box 587 (Mailing)
CityState: Atascosa, Texas
ZipCode: 78002
Submit: Submit

Routing&Siting

From: feedback@cpsenergy.com
Sent: Monday, August 29, 2016 3:44 PM
To: Routing&Siting
Subject: Shepherd Questionnaire - ONLINE FORM

New form submission for (http://www.cpsenergy.com/content/corporate/en/forms/shepherd-substation-form.html).

Values:

ProjectExplained: Yes
FirstConcern:
SecondConcern:
ThirdConcern:
CommentWhatOtherFactors: I own 293 acres on shepherd and Jarratt. I bought the property almost 3 years ago. All my money went in to purchase the property. I have been clearing and improving the property ever since to accomplish this goal. Constanzo Farm, which I am an owner of, has been in business for 101 years selling vegetables. Most of those years were spent in that general area. Water concerns forced me to purchase this property in order to keep the farm viable and productive. The new property came with 500 acre feet of Edwards Aquifer rights and is all irrigatable with the existing and new underground irrigation system. I have spent considerable time, money and risk in order to keep my business and my family viable. Any land that I lose to CPS will be a severe setback. I urge you to look for an alternate route that would not be detrimental to my business. Agriculture in this particular area has been hurt by many factor in the last 15 years. Much of our water resources were stripped away by th
CommentSiteOptions: #1---Edwards Aquifer Irrigated Farm
AdditionalComments: Please contact me to discuss this project further
Name: Michael Adamek
DayTimePhoneNumber: 2103656537
Email: mtadamek@aol.com
Address1: PO Box 446
Address2:
CityState: Atascosa
ZipCode: 78002
Submit: Submit

Routing&Siting

From: feedback@cpsenergy.com
Sent: Monday, August 15, 2016 7:25 PM
To: Routing&Siting
Subject: Shepherd Questionnaire - ONLINE FORM

New form submission for (http://cpsenergy.com/content/corporate/en/forms/shepherd-substation-form.html).

Values:

ProjectExplained: No
TopConcerns: Residential areasTopConcerns: Wildlife habitat/woodlands
FirstConcern: Residential areas
SecondConcern: Wildlife habitat/woodlands
ThirdConcern:
CommentWhatOtherFactors:
CommentSiteOptions:
AdditionalComments: Barbra Jean Nentwich
Name: Barbra Jean Nentwich
DayTimePhoneNumber: 2108724377
Email: nanniebjn@gmail.com
Address1: PO Box 587
Address2:
CityState: Atascosa
ZipCode: 78002
Submit: Submit

Routing&Siting

From: feedback@cpsenergy.com
Sent: Wednesday, August 24, 2016 9:42 AM
To: Routing&Siting
Subject: Shepherd Questionnaire - ONLINE FORM

New form submission for (http://www.cpsenergy.com/content/corporate/en/forms/shepherd-substation-form.html).

Values:

TopConcerns: Residential areasTopConcerns: Wildlife habitat/woodlands
FirstConcern: Residential areas
SecondConcern:
ThirdConcern:
CommentWhatOtherFactors: Roads and Right of ways
CommentSiteOptions: Shepherd
AdditionalComments: This study plan seems to cut across alot of private property and roads. How will the residents be compensated for this?
Name: Lisa Wiley
DayTimePhoneNumber:
Email: lw2b@aol.com
Address1: 11785 Jarratt Rd.
Address2:
CityState: Atascosa, TX
ZipCode: 78002
Submit: Submit

Routing&Siting

From: feedback@cpsenergy.com
Sent: Wednesday, August 24, 2016 9:50 AM
To: Routing&Siting
Subject: Shepherd Questionnaire - ONLINE FORM

New form submission for (http://www.cpsenergy.com/content/corporate/en/forms/shepherd-substation-form.html).

Values:

ProjectExplained: No
TopConcerns: Residential areasTopConcerns: Wildlife habitat/woodlandsTopConcerns:
SchoolsTopConcerns: Churches/cemeteries
FirstConcern: Residential areas
SecondConcern: Wildlife habitat/woodlands
ThirdConcern: Residential areas
CommentWhatOtherFactors: Known emf cancer causing effects
CommentSiteOptions: The whole substation area
AdditionalComments:
Name:
DayTimePhoneNumber:
Email:
Address1:
Address2:
CityState:
ZipCode:
Submit: Submit

Routing&Siting

From: feedback@cpsenergy.com
Sent: Wednesday, August 24, 2016 9:25 PM
To: Routing&Siting
Subject: Shepherd Questionnaire - ONLINE FORM

New form submission for (http://www.cpsenergy.com/content/corporate/en/forms/shepherd-substation-form.html).

Values:

ProjectExplained: No
TopConcerns: Residential areasTopConcerns: Archaeological/historic sitesTopConcerns: Wildlife habitat/woodlandsTopConcerns: Schools
FirstConcern: Residential areas
SecondConcern: Schools
ThirdConcern: Wildlife habitat/woodlands
CommentWhatOtherFactors: Substantial decrease in property value for residents. Health effects for residents of the area.
CommentSiteOptions:
AdditionalComments: Will attend the open house.
Name:
DayTimePhoneNumber:
Email:
Address1:
Address2:
CityState:
ZipCode:
Submit: Submit

Routing&Siting

From: feedback@cpsenergy.com
Sent: Sunday, August 28, 2016 12:10 PM
To: Routing&Siting
Subject: Shepherd Questionnaire - ONLINE FORM

New form submission for (http://www.cpsenergy.com/content/corporate/en/forms/shepherd-substation-form.html).

Values:

FirstConcern:
SecondConcern:
ThirdConcern:
CommentWhatOtherFactors:
CommentSiteOptions: Route segment option D will greatly effect my proerty value, planed use and aesthetic value.
AdditionalComments:
Name: William Shuler
DayTimePhoneNumber: 2109139851
Email:
Address1: Po box 87
Address2:
CityState: Atascosa
ZipCode: Texas
Submit: Submit

Routing&Siting

From: feedback@cpsenergy.com
Sent: Wednesday, September 07, 2016 5:28 PM
To: Routing&Siting
Subject: Shepherd Questionnaire - ONLINE FORM

New form submission for (http://cpsenergy.com/content/corporate/en/forms/shepherd-substation-form.html).

Values:

ProjectExplained: Yes
TopConcerns: Residential areasTopConcerns: Recreational/park areasTopConcerns: SchoolsTopConcerns: Churches/cemeteries
FirstConcern: Residential areas
SecondConcern: Schools
ThirdConcern: Churches/cemeteries
CommentWhatOtherFactors: I just wonder if there is another way beside all those low hanging wires I see on 1604 and Potranco?
CommentSiteOptions: Hard to understand route segment options by number
AdditionalComments: I think route has been selected and we have not been told.
Name: SorAida maunez
DayTimePhoneNumber: 2106745844
Email: S_maunez@ATT.net
Address1: 1314 White Rock
Address2:
CityState: San Antonio
ZipCode: 78245-1438
Submit: Submit

Hernandez, Johnny J. (JJ)

From: Ronald Smeberg <ron@smeberg.com>
Sent: Thursday, January 05, 2017 9:12 AM
To: Hernandez, Johnny J. (JJ)
Cc: Lee Battle
Subject: [InternetMail]Shepard CPS Project

Dear Mr. Hernandez,

I live on 30 acres at 8250 Old Pearsall Road. When I went to your meetings on the project in the fall, one of the possible courses for the power lines was on the border of my property with Red McCombs. We are looking to put up a new retreat structure near that border and whether you are putting the lines on that border may affect our decision. Would you kindly drop me an email or give me a call at 832-605-6769 to discuss this issue? I have also copied Red McComb's agent on this email.

Thank you,

Ron Smeberg

PUBLIC INPUT MEETING

PUBLIC COMMENT LETTERS, E-MAILS AND QUESTIONNAIRES

SHEPHERD PROJECT QUESTIONNAIRE

Please respond to the following questions so public interest in this project can be evaluated.

1. Has the need for the project been adequately explained? _____ Yes _____ No

2. What factors should be considered in the siting of this substation and transmission line? (Rank multiple concerns, 1st, 2nd, 3rd, etc.)

Proximity to:

Residential areas	_____	Commercial/industrial areas	_____
Floodplains/wetlands	_____	Wildlife habitat/woodlands	_____
Recreational/park areas	_____	Schools	_____
Archaeological/historic sites	_____	Churches/cemeteries	_____

3. List any additional factors that should be considered.

_____

4. Identify any significant impact the preferred substation site and route segment will have on people or the natural environment and explain why.

_____

_____

_____

5. How did you learn about this Public Meeting?

_____

6. Note additional comments or questions.

(1) Putting ON Jacobi/Montgomery property is very close to Biesenbach oil pump jack & storage tank.
(2) closer to Craig property
(3) more Land than site 7

7. To request follow-up or discuss the project in more detail, provide contact information below:

Name _____
Daytime phone_____ E-mail_____
Address, City,State/ZIP_____

Please use one of the following options to submit your questionnaire:

a) Online at CPSEnergy.com, keyword Shepherd
b) At the Public Meeting
c) By mail within three days of Public Meeting to:
CPS Energy, Mail Drop 100311, Project Management & Performance Improvement
P.O. Box 1771, San Antonio, Texas 78296-1771

THANK YOU FOR YOUR COMMENTS

Would flood hayfield & oil well.

July 21, 2017

CPS
Mr. J. J. Hernandez, Project Manager
Shepherd Substation Project
Mail Code 100311
P. O. Box 1771
San Antonio, Texas 78296-1771

Dear Mr. Hernandez:

My property is located at 11545 Ladd Road. My family and I, are opposed to the CPS Shepherd Road project. My home and farm is located in Segment X of the project. I oppose the utility easement and eminent domain on and through my property for the following reasons.

- I was never notified of the Public Meeting for the Shepherd Road Project until the morning of June 22, 2017, the date of the meeting, when I was called by Mr. Leroy Perez of CPS. According to Mr. Perez, this project has been discussed since August 2016. All of this was never communicated to me. I am 90 years old and could not make arrangements to attend that evening. As a long time resident, I would have liked the opportunity to provide input into the process.

- The proposed CPS transmission lines do NOT service anything in my area. They are solely intended for the massive housing development at the intersection of Hwy. 90 at 1604 and Texas Hwy. 211. This is several miles from my property. The developer of the housing project should bear the brunt of the utility easement burden and the substation should be located on their property.

- The owner of the land being sold to CPS for the proposed substation was extremely defensive during the public meeting on June 22. She strongly opposed any criticism of the project by her neighbors. Several neighbors asserted that her property flooded during heavy rain. She strongly denied that her property floods. I don't know if CPS knows about the flooding. This may not be the only low lying area that floods.

- There are twenty plus homes on my side (west side) of Shepherd Rd. and only five homes on the east side of the road. The San Isidro Cemetery is also located on the east side of the road.

- Because of my water rights, my side of Shepherd Road (west) is irrigated land for growing crops and raising cattle. The farms on the east side of Shepard Road depend on rainfall to irrigate their crops.

- The CPS utility easement would permanently destroy the market value of my property. I don't oppose progress, but the developers of the subdivision, which these transmission lines are going to service, are going to enjoy huge profits upon the sale of all the homes they build. They will not have to bear the permanent devaluation of their land due to the CPS utility easements . Why isn't the substation being built within the subdivision? I understand that the Shepherd Road substation may be the junction for future transmission lines to service future development. Developers get the profit, I get the eyesore and devalued property.

- We prefer that CPS use either the 1-P or 1-G routes to the service area of the new subdivision and bypass Shepherd Road.

In the late-1950s, my husband (now deceased) and I bought the abandoned farm at 11545 Ladd Road. It had an abandoned adobe structure and dozens of trees. Over time, we cleared the land; built a small home, raised cattle and farmed the land for many years. My husband trucked a variety of vegetables to Produce Row downtown to sell. Currently, one of my sons tends to the crops of hay, which is needed to pay the rising real estate taxes.

My children will inherit this property. My family worked the fields on this land. It has been home for celebrating birthdays, Thanksgiving, Easter, Father's Day, Mother's Day, and many other memorable occasions. This land is sacred and has been a sanctuary to four generations of the Perera family. My primary objective is to preserve the land, unencumbered by any easements.

During your decision process, please consider my points of opposition and route your transmission lines somewhere other than Shepherd Road.

Sincerely,

Marta O. Perera

Marta O. Perera
259 Helena Street
San Antonio, TX 78204

SHEPHERD PROJECT QUESTIONNAIRE

Please respond to the following questions so public interest in this project can be evaluated.

1. What factors should be considered in the siting of this substation and transmission line? (Rank multiple concerns, 1st, 2nd, 3rd, etc.)

Proximity to:

Residential areas	1	Commercial/industrial areas	
Floodplains/wetlands		Wildlife habitat/woodlands	
Recreational/park areas		Schools	
Archaeological/historic sites		Churches/cemeteries	

2. List any additional factors that should be considered. health factors?

3. Identify any significant impact potential substation sites or the potential route will have on people or the natural environment and explain why.

4. Note additional comments or questions.

See attached

5. To request follow-up or discuss the project in more detail, provide contact information below:

Name Biesenbach
Daytime phone 210 6223249 E-mail
Address, City,State/ZIP PO Box 96 Atascosa TX 78002

Please use one of the following options to submit your questionnaire on or before **July 31, 2017**:

a) Online at CPSEnergy.com, keyword Shepherd
b) By mail using postage paid envelope to:
CPS Energy, Mail Drop 100311, Project Management & Performance Improvement
P.O. Box 1771, San Antonio, Texas 78296-1771

Detailed project information is also available at www.cpsenergy.com, search: Shepherd.

THANK YOU FOR YOUR COMMENTS

To: CPS Board of Directors
From: Patricia Biesenbach – (210) 622-3249
Date: July 12, 2017
Ref: Shepherd Rd Substation Proposed Site 8

I live at 13035 Shepherd Rd. First I would like to say I am opposed to this project as a whole, but understand progress in the area is needed. I am the adjoining property to proposed Site 8. I have a field that borders this site, which I have in hay productions. As a widow, I depend on this for Ag Exemption on my land. The land on Site 8, already naturally slopes towards my field. I also have an oil-producing pump and storage tanks near the property line.

My concerns:

1. **Flooding:** Mrs. Craig was concerned about the run off flooding her land (which is up hill from Site 7), if the site was place there on Site 7. Site 7 is downhill from her property. Water does not run uphill!
2. Site 8 will definitely **add to the flooding of my field and oil well.**
3. I am concerned about the **safety** of the oil well and electricity.
4. **Site 8 is just as close to Mrs. Craig as Site 7 if not closer,** so the **health concerns will not change.**
5. **Site 8** is 12 acres **(6 more than needed)** and **Site 7 is only 8.** The Board is **only looking for 6 acres**, so 2 acres could be left between the Craig's and Site 7 to satisfy their feeling of intrusion.
6. There is **hay production** on the other side of proposed Site 8, so the same flooding would affect them, as it is flat land on that side.
7. Using Site 8, the **lines would have to run across the road**, so Mr. Reynold's / Joe Nentwich will be effected the same as using Site 7.
8. Running the **lines across the road is a hazard** because of the large trucks that utilize Shepherd Rd from MacDona-LaCoste Rd and Hwy 35. Which in the 20 yr. plan is set to be a major though fare in the future.

In closing, I have lived on my property since 1964 and Roy Nentwich is the **only one** within that time period, until the recent years that anyone has lived on that property.

I feel enough time and money has gone into assessing the prospects of the substation location. Families have been put on hold too long and left in limbo.

Respectfully,

SHEPHERD PROJECT QUESTIONNAIRE

Please respond to the following questions so public interest in this project can be evaluated.

1. What factors should be considered in the siting of this substation and transmission line? (Rank multiple concerns, 1st, 2nd, 3rd, etc.)

Proximity to:

Residential areas	1	Commercial/industrial areas	
Floodplains/wetlands		Wildlife habitat/woodlands	2
Recreational/park areas		Schools	
Archaeological/historic sites		Churches/cemeteries	3

2. List any additional factors that should be considered.

3. Identify any significant impact potential substation sites or the potential route will have on people or the natural environment and explain why.
My main concern is the potential devaluation of property, as I intend to sell my home within the next couple of years. I also am concerned about how it may impact the health of individuals living nearby.

4. Note additional comments or questions.

5. To request follow-up or discuss the project in more detail, provide contact information below:

Name _____
Daytime phone_____ E-mail_____
Address, City,State/ZIP_____

Please use one of the following options to submit your questionnaire on or before **July 31, 2017**:

a) Online at CPSEnergy.com, keyword Shepherd
b) By mail using postage paid envelope to:
CPS Energy, Mail Drop 100311, Project Management & Performance Improvement
P.O. Box 1771, San Antonio, Texas 78296-1771

Detailed project information is also available at www.cpsenergy.com, search: Shepherd.

THANK YOU FOR YOUR COMMENTS

SHEPHERD PROJECT QUESTIONNAIRE

Please respond to the following questions so public interest in this project can be evaluated.

1. What factors should be considered in the siting of this substation and transmission line? (Rank multiple concerns, 1st, 2nd, 3rd, etc.)

Proximity to:

Residential areas	1	Commercial/industrial areas	4
Floodplains/wetlands		Wildlife habitat/woodlands	3
Recreational/park areas		Schools	
Archaeological/historic sites		Churches/cemeteries	2

2. List any additional factors that should be considered.
Devaluation of property. Many people will not purchase property near this type of electrical pole because of
3. Identify any significant impact potential substation sites or the potential route will have on people or the natural environment and explain why. health concerns or the loadse of a large pole.

4. Note additional comments or questions.

5. To request follow-up or discuss the project in more detail, provide contact information below:

Name _____
Daytime phone_____ E-mail_____
Address, City,State/ZIP_____

Please use one of the following options to submit your questionnaire on or before **July 31, 2017**:

a) Online at CPSEnergy.com, keyword Shepherd
b) By mail using postage paid envelope to:
CPS Energy, Mail Drop 100311, Project Management & Performance Improvement
P.O. Box 1771, San Antonio, Texas 78296-1771

Detailed project information is also available at www.cpsenergy.com, search: Shepherd.

THANK YOU FOR YOUR COMMENTS

Comment Card

(Please Print Information)

NAME: Nathan Hessing

ADDRESS: 2640 CR 4713

CITY/STATE/ZIP: La Coste TX 78039

E-MAIL ADDRESS:

CPS ENERGY® CUSTOMER? (YES) NO *(CIRCLE ONE)* CITY COUNCIL DISTRICT *(IF KNOWN)*

COMMENTS: to have someone see about taking a less destructive path across our property. It would destroy less going on the east side

Phone 830 931 5278

(Over)

210-215-4020

Comment Card

(Please Print Information)

NAME: Douglas or Amanda Verstuyft

ADDRESS: 8005 Nelson Road

CITY/STATE/ZIP: San Antonio, TX 78252

E-MAIL ADDRESS: douglasverstuyft@gmail.com

CPS ENERGY® CUSTOMER? (YES) NO *(CIRCLE ONE)* CITY COUNCIL DISTRICT (IF KNOWN) _____

COMMENTS: Landowners on Shepperd Road - had not been notified as of yet. We heard about meeting from in-laws.

(Over)

SHEPHERD PROJECT QUESTIONNAIRE

Please respond to the following questions so public interest in this project can be evaluated.

1. Has the need for the project been adequately explained? _____ Yes _____ No

2. What factors should be considered in the siting of this substation and transmission line? (Rank multiple concerns, 1st, 2nd, 3rd, etc.)

Proximity to:

Residential areas	1	Commercial/industrial areas	
Floodplains/wetlands	2	Wildlife habitat/woodlands	
Recreational/park areas		Schools	
Archaeological/historic sites		Churches/cemeteries	

3. List any additional factors that should be considered.
Traffic in the proximity of site.

4. Identify any significant impact the preferred substation site and route segment will have on people or the natural environment and explain why.
Residents to site and levels of electromagnetic fields. Long term exposure.

5. How did you learn about this Public Meeting?
Mail

6. Note additional comments or questions.
Will give presentation.

7. To request follow-up or discuss the project in more detail, provide contact information below:

Name Mark Jacobi
Daytime phone (210)846-7662 E-mail Stoneshiner7@yahoo
Address, City,State/ZIP 12715 Shepherd Rd. Atascosa, TX 78002

Please use one of the following options to submit your questionnaire:

a) Online at CPSEnergy.com, keyword Shepherd
b) At the Public Meeting
c) By mail within three days of Public Meeting to:
CPS Energy, Mail Drop 100311, Project Management & Performance Improvement
P.O. Box 1771, San Antonio, Texas 78296-1771

THANK YOU FOR YOUR COMMENTS

Christine Westerman

From: Marian Burrell <mnburrell@mindspring.com>
Sent: Monday, June 19, 2017 7:01 AM
To: Routing&Siting; Hernandez, Johnny J. (JJ)
Cc: helen.craig62@gmail.com
Subject: [InternetMail]Shepherd Project
Attachments: CPS Shepherd Project Comments.docx

Importance: High

My comments regarding the proposed Shepherd Substation are attached. I would appreciate your careful consideration of my concerns prior to making a final determination of where to locate the new substation.

Thank you.

MARIAN NENTWICH BURRELL
522 Magna Vista Ct.
San Antonio, TX 78258
(210) 573-7174

June 18, 2017

CPS Energy
RE: Shepherd Substation Study Area

I am the owner of four acres of property on Jarratt Road (BCAD Property ID 1012098). This property is contiguous with property owned by my siblings:

BCAD Property ID 1112730	Helen Craig
BCAD Property ID 1112731	Edward Nentwich
BCAD Property ID 1087497	Rosetta Wiatrek Busby
BCAD Property ID 1040820	Roy Nentwich and spouse, Barbra
BCAD Property ID 1040821	Sibling Roy Nentwich's spouse, Barbra

The site your project team recommended for construction of the Shepherd Substation and Transmission Project consists of the last two properties on the above list.

Collectively and individually, these properties have considerable sentimental value to me. They have been in my family for many generations. My parents painstakingly subdivided the once larger parcel of land to enable me and my siblings to each have sufficient road frontage to facilitate access to and use of the properties. My brother Roy was the first to build a home on the property, and he chose what is perhaps the most desirable building site. Bulldozing the trees and graveling this site to build a substation that could have been built on vacant land away from homes is a slap in the face of my now deceased parents.

There are several other residences on the above listed properties. Additionally, my niece contracted for a house to be built on one of the properties, adjacent to the proposed substation site. When my niece signed the contract for her house, the adjacent site was not among those being considered for the substation. Because of the easement required for this project, my niece is now faced with the possibility of having to relocate the house, resulting in considerable unnecessary expense and an end product that is far from the serene, wooded setting she chose for her home.

There are a number of other possible sites for the CPS substation that would be less disruptive to residents in the area. One property owner's willingness to sell her and her spouse's property does not make that property the best choice. The impact on the remaining home owners is appalling when one considers the alternatives that should have been pursued. A site in a non-residential area should be selected for this project.

Your careful consideration of the impact of your choice of sites is requested. Please feel free to call me if you have any questions regarding my concerns.

Sincerely,

Marian Burrell

SHEPHERD PROJECT QUESTIONNAIRE

Please respond to the following questions so public interest in this project can be evaluated.

1. Has the need for the project been adequately explained? ___✓___ Yes _____ No

2. What factors should be considered in the siting of this substation and transmission line? (Rank multiple concerns, 1st, 2nd, 3rd, etc.)

Proximity to:

Residential areas	1	Commercial/industrial areas	8
Floodplains/wetlands	2	Wildlife habitat/woodlands	3
Recreational/park areas	7	Schools	5
Archaeological/historic sites	4	Churches/cemeteries	6

3. List any additional factors that should be considered.
Site 1 is more favorable -- No one is living around that piece of land.

4. Identify any significant impact the preferred substation site and route segment will have on people or the natural environment and explain why.
The site is among family housing... One family member was planning to build at a site that now seems to be right next to the substation site. This substation site is not favored by many of us living nearby

5. How did you learn about this Public Meeting?
CPS Mail-Out

6. Note additional comments or questions.
Wouldn't it be more expensive for CPS to buy the house, outbuildings, plus land on the preferred site than just to buy lease land on site 1?

7. To request follow-up or discuss the project in more detail, provide contact information below:

Name Joseph NENtwich
Daytime phone 622-3231 E-mail ———
Address, City,State/ZIP P.O.Box 57, 12592 Shepherd, ATASCOSA, TX 78002

Please use one of the following options to submit your questionnaire:

a) Online at CPSEnergy.com, keyword Shepherd
b) At the Public Meeting
c) By mail within three days of Public Meeting to:
CPS Energy, Mail Drop 100311, Project Management & Performance Improvement
P.O. Box 1771, San Antonio, Texas 78296-1771

THANK YOU FOR YOUR COMMENTS

Christine Westerman

From: CPS Customer Feedback <feedback@CPSEnergy.com>
Sent: Thursday, June 08, 2017 11:10 AM
To: Routing&Siting
Subject: Shepherd Questionnaire - ONLINE FORM

New form submission for (http://cpsenergy.com/content/corporate/en/forms/shepherd-substation-form.html).

Values:

ProjectExplained: No
TopConcerns: Residential areasTopConcerns: Floodplains/wetlandsTopConcerns: Wildlife habitat/woodlandsTopConcerns: SchoolsTopConcerns: Churches/cemeteries
FirstConcern: Floodplains/wetlands
SecondConcern: Wildlife habitat/woodlands
ThirdConcern: Residential areas
CommentWhatOtherFactors:
CommentSiteOptions:
AdditionalComments:
Name:
DayTimePhoneNumber:
Email:
Address1:
Address2:
CityState:
ZipCode:
Submit: Submit

Christine Westerman

From: CPS Customer Feedback <feedback@CPSEnergy.com>
Sent: Friday, May 05, 2017 2:07 AM
To: Routing&Siting
Subject: Shepherd Questionnaire - ONLINE FORM

New form submission for (http://cpsenergy.com/content/corporate/en/forms/shepherd-substation-form.html).

Values:

ProjectExplained: Yes
TopConcerns: Residential areasTopConcerns: Floodplains/wetlandsTopConcerns: Commercial/industrial areas
FirstConcern: Residential areas
SecondConcern: Commercial/industrial areas
ThirdConcern: Floodplains/wetlands
CommentWhatOtherFactors: Avoid areas why residences already exist, or where agricultural crops are grown.
CommentSiteOptions: #6 Vegetable crop land, residences, irrigated land. # 2 & 3 are irrigated hay fields. # 7 displaces 3 residences. # 1 newly cleared tree farm.
AdditionalComments:
Name:
DayTimePhoneNumber:
Email:
Address1:
Address2:
CityState:
ZipCode:
Submit: Submit

Christine Westerman

From: CPS Customer Feedback <feedback@CPSEnergy.com>
Sent: Friday, May 05, 2017 2:15 AM
To: Routing&Siting
Subject: Shepherd Questionnaire - ONLINE FORM

New form submission for (http://cpsenergy.com/content/corporate/en/forms/shepherd-substation-form.html).

Values:

ProjectExplained: Yes
TopConcerns: Residential areasTopConcerns: Floodplains/wetlandsTopConcerns: Commercial/industrial areas
FirstConcern: Residential areas
SecondConcern: Commercial/industrial areas
ThirdConcern: Floodplains/wetlands
CommentWhatOtherFactors: Avoid areas why residences already exist, or where agricultural crops are grown.
CommentSiteOptions: #6 Vegetable crop land, residences, irrigated land. # 2 & 3 are irrigated hay fields. # 7 displaces 3 residences. # 1 newly cleared tree farm.
AdditionalComments: Mail out information were mismatched by names on envelopes and enclosed letters.
Name: ROSETTA WIATREK BUSBY
DayTimePhoneNumber: 2104130440
Email: rosetta.busby@yahoo.com
Address1: 11362 Jarratt Road
Address2:
CityState: Texas
ZipCode: 78002
Submit: Submit

Christine Westerman

From: ednentwich60 <ednentwich60@gmail.com>
Sent: Thursday, June 22, 2017 9:06 AM
To: Routing&Siting
Subject: [InternetMail]Shepherd site

I am the owner of approximately 5 acres immediately adjacent to Site 7. This land, has been in the family for many generations and holds great sentimental value to me. I was considering building a home on the site when I retire to be closer to my siblings on adjacent properties. Construction of a substation on what is now my brother's property would affectively elliminate my entire property for building a residence.

Why are you even cosidering building a substation in a residential area and routing high voltage transmission lines along Shepard road, through what is CURRENTLY the most valuable properties around? I notice that north of the Medina river you are routing through pastures and fields. Is destruction of property values on the 'south side' still engrained in your institution?

By the way, my brother informs me that he most definitely DID NOT express a willingness to sell.

Sincerely,

Edward Nentwich

Christine Westerman

From: Helen Craig <helen.craig62@gmail.com>
Sent: Sunday, June 18, 2017 5:23 PM
To: Routing&Siting
Subject: [InternetMail]Shepherd Road Substation Project
Attachments: CPS Letter June 2017.docx

To whom it may concern:
Attached is a letter detailing our concerns about the proposed location for the substation. We will see you at the meeting on Thursday.
Thank you,
Charles & Helen Craig

June 17, 2017

CPS Energy

Shepherd Substation Project

My husband and I, Charles and Helen Craig, live at 12750 Shepherd Rd (meter #2), the property bordering the proposed substation. When we learned of your intention to build the substation on the property next door, several concerns immediately surfaced.

Clearing of our road front exposes our house, and our daughter's house, to Shepherd road. My daughter's is, in fact, very close to the road. A couple of weeks before we were notified of this "option 7" location for the substation, my daughter signed a contract for a new house to be built, located partially within the front 100 feet of the property which you now want to claim for an easement. At the time of the meeting last fall, the 6 options which were proposed for substation sites, as well as the routes for the lines, would not have affected our land. We attended the meeting to be sure and proceeded with our plans. Then, after she signed papers on her new house, we were notified of a seventh option which then became the preferred and proposed substation site – bordering our property AND taking our rights to use the first 100 feet of our property. These front 100 feet are natural brush land which we purposefully left to: buffer road noise, block view of homes from road, retain country atmosphere, provide habitat for wildlife, block evening sun, and provide cooling shade (conserving energy). Now you want us to continue to pay taxes on and maintain this land but loose all of the abovementioned benefits. Plus, we have no right to plant trees on or build any structure on this land, not even a shelter in which the grandkids could wait for the school bus. In locations where lines run through brush lands, a driving path from pole to pole and clearance for the sway of the lines is all the clearing that is necessary. Additional clearing is just to make it easier for the company, but not what is best for the land. In cases where trees must be removed, they should be replaced with small trees, like crepe myrtle and persimmon, near the edges of the easements.

Also, having six acres of graveled lot bordering our property, approximately 108 feet from our home, will doubtless increase the heat and our energy costs while dramatically decreasing the property value and aesthetics. It also will affect the natural flow/drainage of heavy rains which will flood our yards and lateral lines. In heavy rains, several times a year, water flows across our property, often three or four inches deep, into and across the bordering property. If you build it up, the water will be trapped on our land. With barely more than a hundred feet between our house and the property line, we also worry that trees rooted on our side of the line that may branch out over that property, may be damaged or destroyed as well. We have driven around to look at other substations in our area and surrounding counties and have not found any that were built so near to a residence. They all were placed in fields, pastures, and open areas, of which there are plenty in this vicinity. We are very concerned about the noise associated with building, maintaining, and the day to day running of the power station as well as the potential for accidents and hazards. Being this close, we are concerned about the possibility of accidental shorts, sparking, and fire, not to mention the possible health risks that, though they may not have not been proven, have been suspected for decades.

When seeking information about, and assistance with, this matter, we were advised to adjust the placement of the new home, moving it as far as possible from the easement and lines as they do carry very high voltage and do make a humming noise. Unfortunately, putting in septic and electric on this property requires much expense and jumping through hoops of red tape because it is within the extraterritorial jurisdiction of San Antonio. We made these jumps in 2008 and should not have to do so again. Therefore, moving this new house is not an option. (To put in another septic system would involve acquiring a new certificate of determination which would require a platting survey that could cost over $10,000 plus the cost of the system itself. In fact, there doubtless are additional requirements which have been added since 2008. Additionally, we would have the cost of moving the electric pole, underground wires to the home, water lines, and the driveway.) Not only is relocating her house cost prohibitive, it also would require the destruction of even more of the trees and brush lands. Even to move it just enough to be out of the 100 foot easement requires the loss of trees which we all were counting on having in our yards. The above advice was on placement of the new home, but, in reality, our home, further back on the property, though farther from the easement, is within 120 feet of the proposed high voltage lines and equipment as well. This is not acceptable.

We feel that had CPS truly sought out clear, uninhabited acreage for the substation with a willingness and openness to offer adequate monetary compensation for that land, there would have been land owners in this same vicinity willing to sell. You are proposing to buy 8 acres with 2 houses, barns, and other improvements and heavy brush lands. You could, doubtless, buy 6 acres of clear field from a farmer across or down the road for much less(options 1,2, & 3 plus many other properties along Shepherd road). Did your research team make an effort or did they jump at the first offer made to them? Why present the board with only one option, one which was not even one of the original six proposed locations shared with the public last fall? Shouldn't the research team present the board with at least two or three options, and the issues and costs involved with each, from which the board can then choose which is best for the company and all residents in the area. Six acres in a clear field connecting to 100 foot easements cutting through fields and farmlands (instead of trying to follow the road lined with houses and yards) would place the substation and lines further from all of our community's residents.

My husband and I hope that you will consider a different location for the proposed substation. The property at 12950 Shepherd Road is NOT a viable location. My family has owned and cared for this land for four generations and had planned to continue to do so. Please reconsider the location for your substation.

Sincerely,

Charles and Helen Craig

12750 Shepherd Road / PO Box 503

Atascosa, TX 78002

210-416-4294

Christine Westerman

From: Helen Craig <helen.craig62@gmail.com>
Sent: Sunday, June 18, 2017 5:23 PM
To: Routing&Siting
Subject: [InternetMail]Shepherd Road Substation Project
Attachments: CPS Letter June 2017.docx

To whom it may concern:
Attached is a letter detailing our concerns about the proposed location for the substation. We will see you at the meeting on Thursday.
Thank you,
Charles & Helen Craig

To Whom It May Concern:

We are residents who live at 12750 Shepherd Road (meter #1) and writing to enumerate and detail the significant concerns we have regarding the proposed Shepherd Project by CPS Energy. The electrical substation, as currently proposed in the most recent report presented, will border the property where we reside.

1. The first major concern is with regards to the easement detailed in the proposed plan. The proposal for the project is seeking a 100-foot easement into our property along Shepherd Road. The creation of this easement will effectively eliminate all trees and brush along the front of our property, exposing our home to the road, increasing noise pollution (both from road traffic and from the substation itself), and destroying all natural coverage and shade that is currently provided. Doing so will significantly increase the amount of sun exposed to our residence, increasing costs for electricity year-round. Furthermore, we are restricted from re-planting any trees or brush, or building any structures or improvements within the easement, yet are still expected to maintain this land.

2. The second significant issue pertains to the fact that we are currently in the process of building and installing a new residence on our property, that will replace the one in which we are currently living. When CPS first notified us of their plans for building a substation in the area, six different location sites were proposed and detailed in a meeting on August 25, 2016. The six proposed sites did not significantly impact our land and we had no direct concerns at that time.

   We began plans for buying a new house at the beginning of the year. We planned out where the house would be, placed a down-payment, and signed contracts to construct the house on April 8, 2017. Then, on April 21, 2017, another letter was sent from CPS indicating a new proposed site (the current site in question) for the project without seeking any additional input from residents until a meeting scheduled for June 22, 2017.

   With the currently proposed plan, the original placement for our new house falls partially within the 100-foot easement line even before the twenty-foot porch is added to the front. This restriction, combined with where our current septic tank is placed makes altering the location of the new house a significant challenge. In addition, all the issues outlined in the first bullet point will continue to apply but only be exacerbated as the house we are building will be larger than the one that is currently.

   Movement of the new house site to another location on our property would involve either the re-location of our current septic tank or the installation of a new septic tank, both of which would cost us approximately $5000 alone. In addition, we would be required to conduct a platting survey prior to accomplishing either task, which would cost us about an additional $10,000 to complete. This does not yet even take into account the cost of running additional electric/water to the new location, which would conservatively cost us $1700 and $750 respectively.

3. The third concern relates to the safety of living next to an electrical substation. As it is currently proposed, our residence will neighbor the substation in close proximity along the southern property line. Because of the high-voltage of electricity running through the lines

and the electromagnetic fields they create, we are very concerned about the potential long-term health effects for those living very near the structure and connecting lines. These concerns apply not just for us, but for our young nieces that spend a lot of time with us as well as our future children. In addition, we have additional safety concerns relating to potential mechanical failure which could result in electrical or fire hazards. We understand that CPS has strict safety guidelines and procedures but it cannot be denied that there is increased risk to our safety with the addition of the proposed substation.

We are also concerned that, with the construction of the proposed site and the addition of gravel and base to elevate the location, the drainage of water when it rains will be affected. As it stands now, rain water flows and drains from our property down towards the proposed site and the installation may cause additional flooding on our property during heavy rains which will potentially harm our structures or installed lateral lines.

4. The fourth issue we would like to address is the negative impact the installation of the substation and the clearing of a significant amount of land for the proposed easement will have on the value of property in the affected areas. With the aforementioned burdens outlined in bullet one along with the destruction of environment for wildlife and the country aesthetic that is currently part of our community, it is reasonable to presume that implementation of this project, if approved, will drastically lower the value of neighboring property. This is especially concerning for two young homeowners that have just recently began building a new house to go on this property.

5. The last significant concern pertains to the fact that this plan was apparently chosen (the 7th proposed site over six other initially proposed sites) despite the fact that the land for the currently proposed site is not cleared of trees and brush and has dwellings and improvements already on the property. It will also involve the clearing of land on many other properties along Shepherd Road (including our own) that also have houses, improvements, and forestation. All of this is being done when there are several other properties and farm land which would be much more conductive for this project as they will not involve the clearing of land, movement of structures, or placement of lines in close proximity to residents. Was this choice made because it was the most financially lucrative option, despite the significant burdens that would be undertaken by the residents of this area?

In closing, I would like to state that we are not writing to you because we are just grumpy about change or ignorant to the benefits the proposed project would yield for those in the community. We are doing so because we, as those whose family have lived on this land for four generations, have serious concerns about the proposed Shepherd project, the decisions that have been made regarding it, and the impact it will have on our future. I thank you for your time and attention to this matter and look forward to discussing this further.

Best regards,

Shane Shelton and Diana Craig
PO Box 55
Atascosa, TX 78002
210-273-9501

Christine Westerman

From: Diana Craig <dcraig002@gmail.com>
Sent: Sunday, July 30, 2017 11:30 PM
To: Routing&Siting
Subject: [InternetMail]Shepherd substation concerns
Attachments: CPS Letter - Shane and Diana.docx

Attached is a letter outlining our thoughts and concerns with the proposed Shepherd Road substation. We appreciate you taking the time to read our letter and hear our concerns.

Thank you,
Diana Craig

To Whom It May Concern:

We are residents of 12750 Shepherd Road and are writing in regards to the proposed Shepherd Road substation. We appreciate the board taking the time to meet and hear concerns of residents in the area. We are deeply affected by the placement of proposed substation #7 and feel it is a major intrusion on families that have owned the land for centuries. As mentioned in our previous letter as well as at the last board meeting, we have many concerns regarding the placement of this substation.

The proposed substation # 7 is less than 40 feet from our current residence. As we have seen looking at many other substations, this project would involve stripping the land of all tress, building up the area with rock and concrete, placement of a tall chain link fence (for safety), and many transmission lines going in and out of the site.

We are not only affected by the substation being located less than 40 feet from our residence but also with lines being placed across the front of our property. This would clear all current trees and brush on the front of our property making our residence visible to the road. While this may be some peoples' preference, we picked the location of our home and chose to leave the current brush and trees to have a buffer between the road and our home. We appreciate the natural aesthetics of country living and do not want to have open sight lines to the road.

By clearing the land next to our home and in front of our home, it not only ruins the aesthetics we currently have, but also provides many more difficulties for our lifestyle. We would have more cleared areas causing a significant more amount of heat to our residence. This would add to our electricity costs and our own comfort being in and out of our home.

We would have NEVER moved to this land if it was cleared, as CPS is proposing for it to look. We would have never placed a home 40 feet in proximity to an electrical substation. While proposed substation #8 is not perfect, it causes substantially less damage to both ourselves as well as others in the area (especially those who's residential property borders the proposed substation #7). The land for proposed substation #8 is mostly cleared already and is surrounded by open fields on all three sides. Fields that are likely to remain fields and not contain houses for many years to come. Farmers would be able to continue farming the land with minimal impact from the substation.

Furthermore, if the surrounding property around proposed substation #8 was sold in the future, it would be the buyer's CHOICE as to whether they wanted to farm the land or build a home upon it. With Option #7, you are effectively eliminating this choice for a number of residents and forcing them into a living situation that is, frankly, unacceptable. Option #8 allows for the construction of facilities to meet the energy needs of the area while making the adverse impact on surrounding families significantly less.

In closing, as residents who are among to be most significantly impacted by your ultimate decision, we strongly urge you to select Proposed Substation #8 for the Shepherd Road project. If proposed substation #8 does not meet your needs, we urge you to continue looking for acceptable land within fields or open spaces as we do not feel proposed substation #7 is an acceptable choice.

Sincerely,

Diana Craig and Shane Shelton
PO box 55
Atascosa, TX 78002
210-273-9501

July 23, 2017

CPS ENERGY

Shepherd Substation Project

My husband and I, Charles and Helen Craig, of 12750 Shepherd Road, would like to thank the board and others who made it possible for us to share our concerns about the proposed location of the new Shepherd Substation at the public meeting on June 22nd. We are glad you are now considering option 8 on the west side of Shepherd Road. We feel this is a much more acceptable location as the home on the property itself is the only home in the immediate area, unlike option 7.

Because option 7 is still on the map as a possible location, we want to reiterate our concerns.

*Option 7 borders our entire southern property line. If it were paved with concrete or base, it would cause drainage problems for our property as well as that of my brother who owns the property along its southern border and my sister who owns the property along its eastern border. In fact, it would likely cause drainage problems for the Shepherd/Jarratt intersection which already floods easily.

* If chosen, it would place a high voltage, electrical substation approximately 100 feet from our home which we have made on land which was settled by the Nentwich family in the early 1800's and has remained in our family for five generations. The health and safety concerns are numerous and valid. We are only one of over ten families directly descended from the Nentwichs who settled this land(That's without counting the numerous descendants of Theresa Nentwich Shadrock.) and do not feel our homesteads should be compromised in this way.

Choosing option 8 would essentially place the substation in the middle of a field. If, in the future, someone chooses to build a home on the bordering property, it would be their choice. We do not choose to have a substation bordering our homestead and appreciate that you are willing to listen to these concerns. Additionally, with the substation in the middle of a field, transmission lines could be run through farmland (which could still be farmed), instead of along the road front which places it in close proximity to many homes and community residents.

Also, if it is necessary to follow the road and put high voltage transmission lines across the front of our property, please do not clear all brush and trees from the area. We understand it may be necessary to trim some trees and/or make a path through them. However, for the sake of preserving our privacy, wildlife habitats, and the look and feel of the native brush land in which we have chosen to live, please do not clear more than absolutely necessary and replace where possible.

If, for some reason, option 8 does not meet all of your needs, we hope that you will consider other similar properties in your desired area which will meet your requirements without crowding close to homes and imposing on the health, safety, and happiness of our community residents. There is much open land along this area that should meet your needs, some of which is posted for sale, others which would likely sell if offered a fair price.

We appreciate your attention to our concerns.

Sincerely,

Chuck and Helen Craig

At the landowner's request, a comment letter submitted to the CPS Energy Board of Trustees has been withheld from publication in this EA.

APPENDIX D

SHEPHERD SITE/ROUTE RANKINGS

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Shepherd Substation Transmission Route Alternatives Environmental Analysis

Transmission Route	1-A	1-B	1-C	1-D	1-E	1-F	1-G	1-H	1-I	1-J	1-K	1-L	1-M	1-N	1-O	1-P	1-Q	1-R
LAND USE/INFRASTRUCTURE																		
1. Number of habitable structures within 300ft of site	15	15	15	15	15	15	21	19	15	15	15	15	15	15	16	25	16	23
1a. Residential structures	15	15	15	15	15	15	19	16	15	15	15	15	15	15	16	20	16	17
1b. Commercial structures	0	0	0	0	0	0	2	3	0	0	0	0	0	0	0	5	0	6
2. Number of schools within 1,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3. Number of parks/recreational areas within 1,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4. Number of FAA-registered airports within 20,000 ft of site	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5. Number of private airstrips within 10,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6. Number of heliports within 5,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7. Number of commercial AM radio transmitters within 10,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8. Number of FM radio transmitters, microwave, and other electronic installations within 2,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of future subdivisions within site	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	1	0	1
Are there any state or federal lands within the site?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9. Number of transmission line crossings within site[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10. Number of water wells within site	1	1	1	0	0	0	0	0	1	1	1	0	0	0	1	0	1	0
11. Number of oil/gas well and dry holes within site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of oil/gas pipelines within site	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Number of waterlines within site	1	1	1	0	0	0	0	0	1	1	1	0	0	0	1	0	1	0
Number of railroad lines/structures within site	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Number of other utility areas (solar panel fields)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12. Number of hazardous material/waste/release sites within 20,000 ft of site	20	23	20	23	26	23	17	20	21	24	21	24	27	24	25	17	28	20
Municipal Solid Waste Sites ACTIVE	14	16	14	16	18	16	13	15	15	17	15	17	19	17	19	13	21	15
Municipal Solid Waste Sites N0T ACTIVE	6	7	6	7	8	7	4	5	6	7	6	7	8	7	6	4	7	5
Superfund Sites	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	41	44	41	42	45	42	44	45	42	45	42	43	46	43	47	47	50	48
AESTHETICS																		
13. Is site within foreground visual zone[3] of U.S. and/or state highways?	1	0	0	1	0	0	2	2	1	0	0	1	0	0	1	2	0	2
14. Is site within foreground visual zone[3] of parks/recreational areas?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15. Is site within foreground visual zone[3] of churches, schools, and cemeteries?	6	6	6	7	7	7	8	8	7	7	7	8	8	8	12	8	12	8
Total	7	6	6	8	7	7	10	10	8	7	7	9	8	8	13	10	12	10

Shepherd Substation Transmission Route Alternatives Environmental Analysis

Transmission Route	1-A	1-B	1-C	1-D	1-E	1-F	1-G	1-H	1-I	1-J	1-K	1-L	1-M	1-N	1-O	1-P	1-Q	1-R
ECOLOGY																		
16. Linear feet of site in upland woodland/brushland	531	531	531	2,448	2,448	2,448	608	369	613	613	613	2,529	2,529	2,529	770	817	770	578
16. Percent of site in upland woodland/brushland	1.7%	1.6%	1.6%	7.5%	7.4%	7.4%	1.8%	1.1%	1.8%	1.8%	1.8%	7.4%	7.3%	7.3%	2.2%	2.3%	2.2%	1.6%
17. Linear feet of site in bottomland/riparian woodland	4,864	4,708	4,708	3,225	3,069	3,069	1,318	1,366	4,864	4,708	4,708	3,225	3,069	3,069	4,816	1,875	4,659	1,923
17. Percent of site in bottomland/riparian woodland	15.1%	14.5%	14.5%	9.9%	9.3%	9.3%	4.0%	4.1%	14.4%	13.9%	13.8%	9.4%	8.9%	8.9%	13.8%	5.4%	13.2%	5.4%
18. Linear feet of site in potential wetlands (NWI-mapped wetlands)	9	9	9	426	426	426	9	9	9	9	9	426	426	426	9	9	9	9
18. Percent of site in potential wetlands (NWI-mapped wetlands)	0.0%	0.0%	0.0%	1.3%	1.3%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	1.2%	1.2%	0.0%	0.0%	0.0%	0.0%
19. Linear feet of site in prime farmland soils	16,997	15,821	15,798	14,939	13,763	13,740	16,396	15,736	18,525	17,349	17,326	16,467	15,291	15,268	21,922	16,118	20,746	15,459
19. Percent of site in prime farmland soils	52.8%	48.8%	48.5%	45.8%	41.8%	41.6%	49.2%	46.8%	55.0%	51.1%	50.9%	48.2%	44.4%	44.2%	62.7%	46.0%	58.9%	43.8%
20. Is site in an area known to contain endangered karst invertebrate species (Zone 1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21. Is site in an area having a high probability of containing endangered karst invertebrate species (Zone 2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22. Is site in a critical habitat unit for endangered karst invertebrates?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23. Is site in or within 300 ft of known habitat of karst endangered or threatened species?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24. Linear feet of site within 100-year floodplain?	5,614	5,118	5,118	6,201	5,705	5,705	3,504	3,216	5,614	5,118	5,118	6,201	5,705	5,705	6,215	3,066	5,720	2,778
24. Percent of site within 100-year floodplain?	17.4%	15.8%	15.7%	19.0%	17.3%	17.3%	10.5%	9.6%	16.7%	15.1%	15.0%	18.2%	16.6%	16.5%	17.8%	8.8%	16.2%	7.9%
25. Is site in Edwards Aquifer Recharge Zone?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26. Is site in Edwards Aquifer Contributing Zone?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27. Number of NHD-mapped streams within site?	10	8	8	10	8	8	9	7	10	8	8	10	8	8	13	9	11	7
Total	38	34	34	41	37	37	31	28	40	36	36	43	39	39	47	31	43	28
CULTURAL RESOURCES																		
28. Number of recorded cultural resources sites within site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0
29. Number of recorded cultural resources sites within 1,000 ft of site	1	3	3	1	3	3	2	1	1	3	3	1	3	3	4	3	6	2
30. Number of National Register-listed or determined-eligible sites within site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31. Number of National Register-listed or determined-eligible sites within 1,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32. Linear feet of site in areas of high archeological/historical site potential	11,018	11,119	11,119	11,888	11,990	11,990	9,951	8,229	11,018	11,119	11,119	11,888	11,990	11,990	14,087	11,623	14,188	9,902
32. Percent of site in areas of high archeological/historical site potential	34.2%	34.3%	34.2%	36.4%	36.4%	36.3%	29.8%	24.5%	32.7%	32.7%	32.6%	34.8%	34.8%	34.7%	40.3%	33.2%	40.3%	28.0%
33. Number of cemeteries within site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	12	14	14	13	15	15	12	9	12	14	14	13	15	15	20	15	22	12
Combined Total	98	98	95	104	104	101	97	92	102	102	99	108	108	105	127	103	127	98

Shepherd Substation Transmission Route Alternatives Environmental Analysis

Transmission Route	1-S	1-T	1-U	1-V	2-A	2-B	2-C	2-D	2-E	2-F	2-G	2-H	2-I	2-J	2-K	2-L	3-A	3-B
LAND USE/INFRASTRUCTURE																		
1. Number of habitable structures within 300ft of site	16	16	16	16	15	15	15	15	15	15	21	16	25	16	16	16	15	15
1a. Residential structures	16	16	16	16	15	15	15	15	15	15	19	16	20	16	16	16	15	15
1b. Commercial structures	0	0	0	0	0	0	0	0	0	0	2	0	5	0	0	0	0	0
2. Number of schools within 1,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3. Number of parks/recreational areas within 1,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4. Number of FAA-registered airports within 20,000 ft of site	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5. Number of private airstrips within 10,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6. Number of heliports within 5,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7. Number of commercial AM radio transmitters within 10,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8. Number of FM radio transmitters, microwave, and other electronic installations within 2,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of future subdivisions within site	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0
Are there any state or federal lands within the site?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9. Number of transmission line crossings within site[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10. Number of water wells within site	1	0	0	0	1	1	1	0	0	0	0	1	0	1	1	0	0	0
11. Number of oil/gas well and dry holes within site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of oil/gas pipelines within site	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Number of waterlines within site	1	0	0	0	1	1	1	0	0	0	0	1	0	1	1	0	0	0
Number of railroad lines/structures within site	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Number of other utility areas (solar panel fields)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12. Number of hazardous material/waste/release sites within 20,000 ft of site	25	28	31	28	20	23	20	23	26	23	17	25	17	28	25	28	23	26
Municipal Solid Waste Sites ACTIVE	19	21	23	21	14	16	14	16	18	16	13	19	13	21	19	21	16	18
Municipal Solid Waste Sites N0T ACTIVE	6	7	8	7	6	7	6	7	8	7	4	6	4	7	6	7	7	8
Superfund Sites	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	47	48	51	48	41	44	41	42	45	42	44	47	47	50	47	48	42	45
AESTHETICS																		
13. Is site within foreground visual zone[3] of U.S. and/or state highways?	0	1	0	0	1	0	0	1	0	0	2	1	2	0	0	1	1	0
14. Is site within foreground visual zone[3] of parks/recreational areas?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15. Is site within foreground visual zone[3] of churches, schools, and cemeteries?	12	13	13	13	6	6	6	7	7	7	8	12	8	12	12	13	7	7
Total	12	14	13	13	7	6	6	8	7	7	10	13	10	12	12	14	8	7

Shepherd Substation Transmission Route Alternatives Environmental Analysis

Transmission Route	1-S	1-T	1-U	1-V	2-A	2-B	2-C	2-D	2-E	2-F	2-G	2-H	2-I	2-J	2-K	2-L	3-A	3-B
ECOLOGY																		
16. Linear feet of site in upland woodland/brushland	770	2,687	2,687	2,687	433	433	433	2,350	2,350	2,350	510	672	719	672	672	2,589	2,439	2,439
16. Percent of site in upland woodland/brushland	2.2%	7.6%	7.5%	7.5%	1.5%	1.5%	1.5%	8.1%	8.0%	8.0%	1.7%	2.1%	2.3%	2.1%	2.1%	8.1%	7.8%	7.7%
17. Linear feet of site in bottomland/riparian woodland	4,659	3,177	3,020	3,020	4,864	4,708	4,708	3,225	3,069	3,069	1,318	4,816	1,875	4,659	4,659	3,177	3,225	3,069
17. Percent of site in bottomland/riparian woodland	13.2%	9.0%	8.5%	8.4%	17.0%	16.3%	16.2%	11.1%	10.4%	10.4%	4.4%	15.3%	6.0%	14.7%	14.6%	10.0%	10.2%	9.7%
18. Linear feet of site in potential wetlands (NWI-mapped wetlands)	9	426	426	426	0	0	0	417	417	417	0	0	0	0	0	417	417	417
18. Percent of site in potential wetlands (NWI-mapped wetlands)	0.0%	1.2%	1.2%	1.2%	0.0%	0.0%	0.0%	1.4%	1.4%	1.4%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	1.3%	1.3%
19. Linear feet of site in prime farmland soils	20,723	19,864	18,688	18,665	16,997	15,821	15,798	14,939	13,763	13,740	16,396	21,922	16,118	20,746	20,723	19,864	14,939	13,763
19. Percent of site in prime farmland soils	58.7%	56.1%	52.4%	52.2%	59.3%	54.7%	54.4%	51.3%	46.8%	46.6%	55.0%	69.7%	51.2%	65.4%	65.1%	62.3%	47.5%	43.4%
20. Is site in an area known to contain endangered karst invertebrate species (Zone 1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21. Is site in an area having a high probability of containing endangered karst invertebrate species (Zone 2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22. Is site in a critical habitat unit for endangered karst invertebrates?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23. Is site in or within 300 ft of known habitat of karst endangered or threatened species?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24. Linear feet of site within 100-year floodplain?	5,720	6,802	6,306	6,306	5,614	5,118	5,118	6,201	5,705	5,705	3,504	6,215	3,066	5,720	5,720	6,802	6,201	5,705
24. Percent of site within 100-year floodplain?	16.2%	19.2%	17.7%	17.6%	19.6%	17.7%	17.6%	21.3%	19.4%	19.3%	11.7%	19.8%	9.7%	18.0%	18.0%	21.3%	19.7%	18.0%
25. Is site in Edwards Aquifer Recharge Zone?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26. Is site in Edwards Aquifer Contributing Zone?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27. Number of NHD-mapped streams within site?	11	13	11	11	10	8	8	10	8	8	9	13	9	11	11	13	10	8
Total	43	50	46	46	38	34	34	41	37	37	31	47	31	43	43	50	41	37
CULTURAL RESOURCES																		
28. Number of recorded cultural resources sites within site	2	2	2	2	0	0	0	0	0	0	0	2	0	2	2	2	0	0
29. Number of recorded cultural resources sites within 1,000 ft of site	6	4	6	6	0	2	2	0	2	2	1	3	2	5	5	3	1	3
30. Number of National Register-listed or determined-eligible sites within site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31. Number of National Register-listed or determined-eligible sites within 1,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32. Linear feet of site in areas of high archeological/historical site potential	14,188	14,957	15,058	15,058	11,018	11,119	11,119	11,888	11,990	11,990	9,951	14,087	11,623	14,188	14,188	14,957	11,888	11,990
32. Percent of site in areas of high archeological/historical site potential	40.2%	42.2%	42.2%	42.1%	38.4%	38.4%	38.3%	40.8%	40.8%	40.7%	33.4%	44.8%	36.9%	44.7%	44.6%	46.9%	37.8%	37.8%
33. Number of cemeteries within site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	22	21	23	23	11	13	13	12	14	14	11	19	14	21	21	20	13	15
Combined Total	124	133	133	130	97	97	94	103	103	100	96	126	101	126	123	132	104	104

Shepherd Substation Transmission Route Alternatives Environmental Analysis

Transmission Route	3-C	3-D	3-E	3-F	3-G	3-H	3-I	3-J	3-K	3-L	3-M	3-N	3-O	3-P	3-Q	3-R	3-S	3-T
LAND USE/INFRASTRUCTURE																		
1. Number of habitable structures within 300ft of site	15	21	15	15	15	15	15	15	15	16	15	15	16	16	16	16	25	16
1a. Residential structures	15	19	15	15	15	15	15	15	15	16	15	15	16	16	16	16	20	16
1b. Commercial structures	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0
2. Number of schools within 1,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3. Number of parks/recreational areas within 1,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4. Number of FAA-registered airports within 20,000 ft of site	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5. Number of private airstrips within 10,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6. Number of heliports within 5,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7. Number of commercial AM radio transmitters within 10,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8. Number of FM radio transmitters, microwave, and other electronic installations within 2,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of future subdivisions within site	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Are there any state or federal lands within the site?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9. Number of transmission line crossings within site[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10. Number of water wells within site	0	0	1	1	1	1	1	1	0	1	0	0	1	1	0	0	0	0
11. Number of oil/gas well and dry holes within site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of oil/gas pipelines within site	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Number of waterlines within site	0	0	1	1	1	1	1	1	0	1	0	0	1	1	0	0	0	0
Number of railroad lines/structures within site	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Number of other utility areas (solar panel fields)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12. Number of hazardous material/waste/release sites within 20,000 ft of site	23	17	21	20	24	23	21	20	24	25	27	24	28	25	28	31	17	28
Municipal Solid Waste Sites ACTIVE	16	13	15	14	17	16	15	14	17	19	19	17	21	19	21	23	13	21
Municipal Solid Waste Sites N0T ACTIVE	7	4	6	6	7	7	6	6	7	6	8	7	7	6	7	8	4	7
Superfund Sites	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	42	44	42	41	45	44	42	41	43	47	46	43	50	47	48	51	47	48
AESTHETICS																		
13. Is site within foreground visual zone[3] of U.S. and/or state highways?	0	2	1	1	0	0	0	0	1	1	0	0	0	0	1	0	2	0
14. Is site within foreground visual zone[3] of parks/recreational areas?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15. Is site within foreground visual zone[3] of churches, schools, and cemeteries?	7	8	7	6	7	6	7	6	8	12	8	8	12	12	13	13	8	13
Total	7	10	8	7	7	6	7	6	9	13	8	8	12	12	14	13	10	13

Shepherd Substation Transmission Route Alternatives Environmental Analysis

Transmission Route	3-C	3-D	3-E	3-F	3-G	3-H	3-I	3-J	3-K	3-L	3-M	3-N	3-O	3-P	3-Q	3-R	3-S	3-T
ECOLOGY																		
16. Linear feet of site in upland woodland/brushland	2,439	599	604	522	604	522	604	522	2,520	761	2,520	2,520	761	761	2,678	2,678	808	2,678
16. Percent of site in upland woodland/brushland	7.7%	1.9%	1.9%	1.7%	1.8%	1.7%	1.8%	1.7%	7.6%	2.3%	7.6%	7.6%	2.2%	2.2%	7.8%	7.8%	2.4%	7.7%
17. Linear feet of site in bottomland/riparian woodland	3,069	1,318	4,864	4,864	4,708	4,708	4,708	4,708	3,225	4,816	3,069	3,069	4,659	4,659	3,177	3,020	1,875	3,020
17. Percent of site in bottomland/riparian woodland	9.6%	4.1%	14.9%	15.7%	14.3%	15.1%	14.3%	15.0%	9.8%	14.2%	9.2%	9.2%	13.7%	13.6%	9.3%	8.7%	5.5%	8.7%
18. Linear feet of site in potential wetlands (NWI-mapped wetlands)	417	0	0	0	0	0	0	0	417	0	417	417	0	0	417	417	0	417
18. Percent of site in potential wetlands (NWI-mapped wetlands)	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%	1.3%	1.2%	0.0%	0.0%	1.2%	1.2%	0.0%	1.2%
19. Linear feet of site in prime farmland soils	13,740	16,396	18,525	16,997	17,349	15,821	17,326	15,798	16,467	21,922	15,291	15,268	20,746	20,723	19,864	18,688	16,118	18,665
19. Percent of site in prime farmland soils	43.2%	50.9%	56.9%	54.8%	52.9%	50.6%	52.7%	50.3%	49.9%	64.9%	46.0%	45.8%	60.9%	60.6%	58.0%	54.1%	47.6%	53.9%
20. Is site in an area known to contain endangered karst invertebrate species (Zone 1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21. Is site in an area having a high probability of containing endangered karst invertebrate species (Zone 2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22. Is site in a critical habitat unit for endangered karst invertebrates?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23. Is site in or within 300 ft of known habitat of karst endangered or threatened species?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24. Linear feet of site within 100-year floodplain?	5,705	3,504	5,614	5,614	5,118	5,118	5,118	5,118	6,201	6,215	5,705	5,705	5,720	5,720	6,802	6,306	3,066	6,306
24. Percent of site within 100-year floodplain?	17.9%	10.9%	17.3%	18.1%	15.6%	16.4%	15.6%	16.3%	18.8%	18.4%	17.2%	17.1%	16.8%	16.7%	19.9%	18.3%	9.1%	18.2%
25. Is site in Edwards Aquifer Recharge Zone?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26. Is site in Edwards Aquifer Contributing Zone?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27. Number of NHD-mapped streams within site?	8	9	10	10	8	8	8	8	10	13	8	8	11	11	13	11	9	11
Total	37	31	40	38	36	34	36	34	43	47	39	39	43	43	50	46	31	46
CULTURAL RESOURCES																		
28. Number of recorded cultural resources sites within site	0	0	0	0	0	0	0	0	0	2	0	0	2	2	2	2	0	2
29. Number of recorded cultural resources sites within 1,000 ft of site	3	2	1	1	3	3	3	3	1	4	3	3	6	6	4	6	3	6
30. Number of National Register-listed or determined-eligible sites within site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31. Number of National Register-listed or determined-eligible sites within 1,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32. Linear feet of site in areas of high archeological/historical site potential	11,990	9,951	11,018	11,018	11,119	11,119	11,119	11,119	11,888	14,087	11,990	11,990	14,188	14,188	14,957	15,058	11,623	15,058
32. Percent of site in areas of high archeological/historical site potential	37.7%	30.9%	33.9%	35.5%	33.9%	35.5%	33.8%	35.4%	36.0%	41.7%	36.0%	35.9%	41.6%	41.5%	43.7%	43.6%	34.3%	43.5%
33. Number of cemeteries within site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	15	12	12	12	14	14	14	14	13	20	15	15	22	22	21	23	15	23
Combined Total	101	97	102	98	102	98	99	95	107	127	108	105	127	124	133	133	102	130

Shepherd Substation Transmission Route Alternatives Environmental Analysis

Transmission Route	4-A	4-B	4-C	4-D	4-E	4-F	5-A	5-B	5-C	5-D	5-E	5-F	6-A	6-B	6-C	6-D	6-E	6-F
LAND USE/INFRASTRUCTURE																		
1. Number of habitable structures within 300ft of site	82	53	65	36	25	93	22	18	78	49	61	32	83	89	54	60	66	72
1a. Residential structures	78	49	65	36	21	89	20	16	74	45	61	32	79	85	50	56	66	72
1b. Commercial structures	4	4	0	0	4	4	2	2	4	4	0	0	4	4	4	4	0	0
2. Number of schools within 1,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3. Number of parks/recreational areas within 1,000 ft of site	2	2	2	2	0	2	0	0	2	2	2	2	2	2	2	2	2	2
4. Number of FAA-registered airports within 20,000 ft of site	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5. Number of private airstrips within 10,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6. Number of heliports within 5,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7. Number of commercial AM radio transmitters within 10,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8. Number of FM radio transmitters, microwave, and other electronic installations within 2,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of future subdivisions within site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Are there any state or federal lands within the site?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9. Number of transmission line crossings within site[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10. Number of water wells within site	3	3	2	2	2	3	0	0	1	1	0	0	3	3	3	3	2	2
11. Number of oil/gas well and dry holes within site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of oil/gas pipelines within site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of waterlines within site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of railroad lines/structures within site	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Number of other utility areas (solar panel fields)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12. Number of hazardous material/waste/release sites within 20,000 ft of site	12	62	12	62	104	13	101	99	11	61	11	61	11	11	61	61	11	11
Municipal Solid Waste Sites ACTIVE	12	62	12	62	104	13	101	99	11	61	11	61	11	11	61	61	11	11
Municipal Solid Waste Sites N0T ACTIVE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Superfund Sites	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	101	122	83	104	133	113	125	119	94	115	76	97	101	107	122	128	83	89
AESTHETICS																		
13. Is site within foreground visual zone[3] of U.S. and/or state highways?	3	3	3	3	4	3	3	2	3	3	3	3	3	3	3	3	3	3
14. Is site within foreground visual zone[3] of parks/recreational areas?	3	3	3	3	2	3	0	0	3	3	3	3	3	3	3	3	3	3
15. Is site within foreground visual zone[3] of churches, schools, and cemeteries?	1	1	1	1	3	1	3	2	1	1	1	1	1	1	1	1	1	1
Total	7	7	7	7	9	7	6	4	7	7	7	7	7	7	7	7	7	7

Shepherd Substation Transmission Route Alternatives Environmental Analysis

Transmission Route	4-A	4-B	4-C	4-D	4-E	4-F	5-A	5-B	5-C	5-D	5-E	5-F	6-A	6-B	6-C	6-D	6-E	6-F
ECOLOGY																		
16. Linear feet of site in upland woodland/brushland	355	355	285	285	332	411	571	323	70	70	0	0	70	70	70	70	0	0
16. Percent of site in upland woodland/brushland	1.2%	1.2%	0.9%	0.9%	1.3%	1.3%	4.0%	2.2%	0.3%	0.3%	0.0%	0.0%	0.2%	0.2%	0.2%	0.2%	0.0%	0.0%
17. Linear feet of site in bottomland/riparian woodland	2,201	2,201	1,989	1,989	1,274	2,201	653	653	4,061	4,061	3,849	3,849	2,201	2,201	2,201	2,201	1,989	1,989
17. Percent of site in bottomland/riparian woodland	7.3%	7.2%	6.3%	6.2%	4.9%	6.9%	4.6%	4.5%	15.8%	15.5%	14.3%	14.0%	7.1%	7.1%	7.0%	7.0%	6.1%	6.1%
18. Linear feet of site in potential wetlands (NWI-mapped wetlands)	659	161	659	161	161	659	377	377	544	47	544	47	659	659	161	161	659	659
18. Percent of site in potential wetlands (NWI-mapped wetlands)	2.2%	0.5%	2.1%	0.5%	0.6%	2.1%	2.7%	2.6%	2.1%	0.2%	2.0%	0.2%	2.1%	2.1%	0.5%	0.5%	2.0%	2.0%
19. Linear feet of site in prime farmland soils	20,984	21,456	21,150	21,622	15,830	21,714	5,344	4,793	13,972	14,443	14,138	14,610	21,836	21,975	22,308	22,447	22,003	22,141
19. Percent of site in prime farmland soils	69.7%	70.2%	67.3%	67.8%	60.6%	68.2%	37.6%	33.2%	54.5%	55.3%	52.4%	53.2%	70.1%	70.5%	70.5%	70.9%	67.7%	68.1%
20. Is site in an area known to contain endangered karst invertebrate species (Zone 1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21. Is site in an area having a high probability of containing endangered karst invertebrate species (Zone 2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22. Is site in a critical habitat unit for endangered karst invertebrates?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23. Is site in or within 300 ft of known habitat of karst endangered or threatened species?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24. Linear feet of site within 100-year floodplain?	3,062	3,062	4,064	4,064	5,342	3,062	2,408	1,936	3,873	3,873	4,874	4,874	3,062	3,062	3,062	3,062	4,064	4,064
24. Percent of site within 100-year floodplain?	10.2%	10.0%	12.9%	12.7%	20.4%	9.6%	17.0%	13.4%	15.1%	14.8%	18.1%	17.8%	9.8%	9.8%	9.7%	9.7%	12.5%	12.5%
25. Is site in Edwards Aquifer Recharge Zone?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26. Is site in Edwards Aquifer Contributing Zone?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27. Number of NHD-mapped streams within site?	5	5	5	5	11	7	6	6	5	5	5	5	5	5	5	5	5	5
Total	38	34	39	35	35	41	19	17	32	28	33	29	39	39	34	34	40	40
CULTURAL RESOURCES																		
28. Number of recorded cultural resources sites within site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29. Number of recorded cultural resources sites within 1,000 ft of site	0	2	0	2	0	0	1	1	0	2	0	2	0	0	2	2	0	0
30. Number of National Register-listed or determined-eligible sites within site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31. Number of National Register-listed or determined-eligible sites within 1,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32. Linear feet of site in areas of high archeological/historical site potential	7,522	7,522	8,214	8,214	8,368	8,519	5,496	5,072	7,238	7,238	7,930	7,930	7,442	7,508	7,442	7,508	8,134	8,199
32. Percent of site in areas of high archeological/historical site potential	25.0%	24.6%	26.1%	25.8%	32.0%	26.8%	38.7%	35.1%	28.2%	27.7%	29.4%	28.9%	23.9%	24.1%	23.5%	23.7%	25.0%	25.2%
33. Number of cemeteries within site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	8	10	8	10	8	9	6	6	7	9	8	10	7	8	9	10	8	8
Combined Total	154	172	137	156	186	169	156	147	141	159	124	143	154	160	173	179	138	144

Shepherd Substation Transmission Route Alternatives Environmental Analysis

Transmission Route	6-G	6-H	6-I	7-A	7-B	7-C	7-D	7-E	7-F	7-G	7-H	7-I	7-J	7-K	7-L	7-M	7-N	8-A
LAND USE/INFRASTRUCTURE																		
1. Number of habitable structures within 300ft of site	37	43	35	20	20	21	20	20	20	26	24	20	20	20	20	20	20	16
1a. Residential structures	37	43	35	20	20	21	20	20	20	24	21	20	20	20	20	20	20	16
1b. Commercial structures	0	0	0	0	0	0	0	0	0	2	3	0	0	0	0	0	0	0
2. Number of schools within 1,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3. Number of parks/recreational areas within 1,000 ft of site	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4. Number of FAA-registered airports within 20,000 ft of site	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5. Number of private airstrips within 10,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6. Number of heliports within 5,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7. Number of commercial AM radio transmitters within 10,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8. Number of FM radio transmitters, microwave, and other electronic installations within 2,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of future subdivisions within site	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0
Are there any state or federal lands within the site?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9. Number of transmission line crossings within site[2]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10. Number of water wells within site	2	2	1	1	1	0	0	0	0	0	0	1	1	1	0	0	0	0
11. Number of oil/gas well and dry holes within site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of oil/gas pipelines within site	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Number of waterlines within site	0	0	1	1	1	0	0	0	0	0	0	1	1	1	0	0	0	0
Number of railroad lines/structures within site	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Number of other utility areas (solar panel fields)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12. Number of hazardous material/waste/release sites within 20,000 ft of site	61	61	20	20	23	20	23	26	23	17	20	21	24	21	24	27	24	20
Municipal Solid Waste Sites ACTIVE	61	61	14	14	16	14	16	18	16	13	15	15	17	15	17	19	17	14
Municipal Solid Waste Sites N0T ACTIVE	0	0	6	6	7	6	7	8	7	4	5	6	7	6	7	8	7	6
Superfund Sites	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	104	110	60	45	48	44	46	49	46	48	49	46	49	46	47	50	47	39
AESTHETICS																		
13. Is site within foreground visual zone[3] of U.S. and/or state highways?	3	3	1	1	0	0	1	0	0	2	2	1	0	0	1	0	0	0
14. Is site within foreground visual zone[3] of parks/recreational areas?	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15. Is site within foreground visual zone[3] of churches, schools, and cemeteries?	1	1	6	6	6	5	7	7	7	8	8	7	7	7	8	8	8	5
Total	7	7	7	7	6	5	8	7	7	10	10	8	7	7	9	8	8	5

Shepherd Substation Transmission Route Alternatives Environmental Analysis

Transmission Route	6-G	6-H	6-I	7-A	7-B	7-C	7-D	7-E	7-F	7-G	7-H	7-I	7-J	7-K	7-L	7-M	7-N	8-A
ECOLOGY																		
16. Linear feet of site in upland woodland/brushland	0	0	1,458	646	646	598	2,563	2,563	2,563	724	485	728	728	728	2,645	2,645	2,645	448
16. Percent of site in upland woodland/brushland	0.0%	0.0%	4.1%	2.2%	2.2%	2.0%	8.6%	8.5%	8.5%	2.4%	1.6%	2.4%	2.3%	2.3%	8.5%	8.4%	8.4%	1.5%
17. Linear feet of site in bottomland/riparian woodland	1,989	1,989	4,970	4,864	4,708	2,033	3,225	3,069	3,069	1,318	1,366	4,864	4,708	4,708	3,225	3,069	3,069	2,033
17. Percent of site in bottomland/riparian woodland	6.0%	6.0%	13.9%	16.6%	15.9%	6.9%	10.9%	10.2%	10.2%	4.3%	4.4%	15.8%	15.2%	15.1%	10.3%	9.7%	9.7%	7.0%
18. Linear feet of site in potential wetlands (NWI-mapped wetlands)	161	161	353	0	0	0	417	417	417	0	0	0	0	0	417	417	417	0
18. Percent of site in potential wetlands (NWI-mapped wetlands)	0.5%	0.5%	1.0%	0.0%	0.0%	0.0%	1.4%	1.4%	1.4%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	1.3%	1.3%	0.0%
19. Linear feet of site in prime farmland soils	22,474	22,613	17,772	16,997	15,821	15,744	14,939	13,763	13,740	16,396	15,736	18,525	17,349	17,326	16,467	15,291	15,268	15,744
19. Percent of site in prime farmland soils	68.2%	68.6%	49.7%	58.1%	53.6%	53.1%	50.3%	45.9%	45.7%	53.9%	51.2%	60.2%	55.9%	55.6%	52.7%	48.5%	48.3%	54.0%
20. Is site in an area known to contain endangered karst invertebrate species (Zone 1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21. Is site in an area having a high probability of containing endangered karst invertebrate species (Zone 2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22. Is site in a critical habitat unit for endangered karst invertebrates?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23. Is site in or within 300 ft of known habitat of karst endangered or threatened species?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24. Linear feet of site within 100-year floodplain?	4,064	4,064	5,614	5,614	5,118	4,910	6,201	5,705	5,705	3,504	3,216	5,614	5,118	5,118	6,201	5,705	5,705	4,910
24. Percent of site within 100-year floodplain?	12.3%	12.3%	15.7%	19.2%	17.3%	16.6%	20.9%	19.0%	19.0%	11.5%	10.5%	18.2%	16.5%	16.4%	19.8%	18.1%	18.0%	16.8%
25. Is site in Edwards Aquifer Recharge Zone?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26. Is site in Edwards Aquifer Contributing Zone?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27. Number of NHD-mapped streams within site?	5	5	14	10	8	8	10	8	8	9	7	10	8	8	10	8	8	8
Total	35	35	47	38	34	31	41	37	37	31	28	40	36	36	43	39	39	31
CULTURAL RESOURCES																		
28. Number of recorded cultural resources sites within site	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29. Number of recorded cultural resources sites within 1,000 ft of site	2	2	2	0	2	4	0	2	2	1	0	0	2	2	0	2	2	4
30. Number of National Register-listed or determined-eligible sites within site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31. Number of National Register-listed or determined-eligible sites within 1,000 ft of site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32. Linear feet of site in areas of high archeological/historical site potential	8,134	8,199	11,018	11,018	11,119	11,244	11,888	11,990	11,990	9,951	8,229	11,018	11,119	11,119	11,888	11,990	11,990	11,244
32. Percent of site in areas of high archeological/historical site potential	24.7%	24.9%	30.8%	37.7%	37.7%	38.0%	40.0%	40.0%	39.9%	32.7%	26.8%	35.8%	35.8%	35.7%	38.0%	38.0%	37.9%	38.6%
33. Number of cemeteries within site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	10	10	15	11	13	15	12	14	14	11	8	11	13	13	12	14	14	15
Combined Total	156	162	129	101	101	96	107	107	104	100	95	105	105	102	111	111	108	90

Shepherd Transmission Route Rankings

Route	Score	Rank	Route	Score	Rank	Route	Score	Rank
8-A	90	1	1-P	103	12	1-V	130	23
1-H	92	2	2-D	103	12	3-T	130	23
2-C	94	3	2-E	103	12	2-L	132	24
1-C	95	4	1-D	104	13	1-T	133	25
3-J	95	4	1-E	104	13	1-U	133	25
7-H	95	4	3-A	104	13	3-Q	133	25
2-G	96	5	3-B	104	13	3-R	133	25
7-C	96	5	7-F	104	13	4-C	137	26
1-G	97	6	1-N	105	14	6-E	138	27
2-A	97	6	3-N	105	14	5-C	141	28
2-B	97	6	7-I	105	14	5-F	143	29
3-D	97	6	7-J	105	14	6-F	144	30
1-A	98	7	3-K	107	15	5-B	147	31
1-B	98	7	7-D	107	15	4-A	154	32
1-R	98	7	7-E	107	15	6-A	154	32
3-F	98	7	1-L	108	16	4-D	156	33
3-H	98	7	1-M	108	16	5-A	156	33
1-K	99	8	3-M	108	16	6-G	156	33
3-I	99	8	7-N	108	16	5-D	159	34
2-F	100	9	7-L	111	17	6-B	160	35
7-G	100	9	7-M	111	17	6-H	162	36
1-F	101	10	2-K	123	18	4-F	169	37
2-I	101	10	1-S	124	19	4-B	172	38
3-C	101	10	3-P	124	19	6-C	173	39
7-A	101	10	5-E	124	19	6-D	179	40
7-B	101	10	2-H	126	20	4-E	186	41
1-I	102	11	2-J	126	20			
1-J	102	11	1-O	127	21			
3-E	102	11	1-Q	127	21			
3-G	102	11	3-L	127	21			
3-S	102	11	3-O	127	21			
7-K	102	11	6-I	129	22			

Shepherd Substation Transmission Route Alternatives Cost Summary

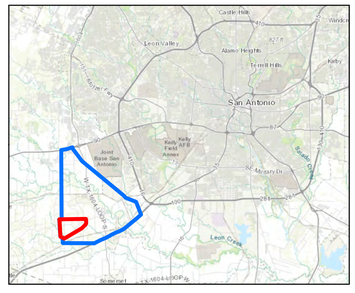
	Route Segment	Routes	Subst civil $	Subst elect $	Total Transmission Cost	Trans. Easement Cost	Substation Cost	Total ROW Cost	Distr $ (includes ROW)	Total Cost	% Diff from Lowest Option	Rank by cost
Substation 1	1-A	(BJ, BK, BM, U, BR, V , W , X, AZ, S, Y, E, BT, BU, AF)	$4,486,228	$5,415,564	$13,300,000.00	$764,108.75	$148,975.20	1,712,083.95	23,372,000	$48,285,875.45	2.12%	11
	1-B	(BJ, BK, BM, U, BR, V , W , X, AZ, S, Y, E, BT, BU, AD, AE)	$4,486,228	$5,415,564	$13,700,000.00	$770,497.50	$148,975.20	1,741,972.70	23,372,000	$48,715,764.20	3.03%	18
	1-C	(BJ, BK, BM, U, BR, V , W , X, AZ , S, Y , E , BT , AC , AE)	$4,486,228	$5,415,564	$13,700,000.00	$772,872.50	$148,975.20	1,814,847.70	23,372,000	$48,788,639.20	3.18%	21
	1-D	(BJ, BK, BM, U, BR, V, W, X, AZ, S, Y, Z, AB, BT, BU, AF)	$4,486,228	$5,415,564	$14,000,000.00	$774,962.50	$148,975.20	1,887,437.70	23,372,000	$49,161,229.20	3.97%	33
	1-E	(BJ, BK, BM, U, BR, V, W, X, AZ, S, Y, Z, AB, BT, BU, AD, AE)	$4,486,228	$5,415,564	$14,200,000.00	$781,327.50	$148,975.20	1,917,302.70	23,372,000	$49,391,094.20	4.45%	42
	1-F	(BJ , BK, BM, U, BR, V, W, X, AZ, S, Y, Z, AB, BT, AC, AE)	$4,486,228	$5,415,564	$14,200,000.00	$783,702.50	$148,975.20	1,896,177.70	23,372,000	$49,369,969.20	4.41%	41
	1-G	(BJ, BK, BM, U, BR, V , W, BG, G, H, O, P, Q, AW, AX)	$4,486,228	$5,415,564	$14,100,000.00	$792,038.75	$148,975.20	1,834,013.95	23,372,000	$49,207,805.45	4.07%	34
	1-H	(BJ, BK, BM, U, BR, V , W , X, AZ , AI, BB, BS, Q, AW, AX)	$4,486,228	$5,415,564	$14,000,000.00	$798,712.50	$148,975.20	1,699,687.70	23,372,000	$48,973,479.20	3.57%	29
	1-I	(BJ, BK, BM, U, BR, V , W , X, AZ, AI, R, Y, E, BT, BU, AF)	$4,486,228	$5,415,564	$14,200,000.00	$800,398.75	$148,975.20	1,748,373.95	23,372,000	$49,222,165.45	4.10%	36
	1-J	(BJ, BK, BM, U, BR, V , W , X, AZ, AI, R, Y, E, BT, BU, AD, AE)	$4,486,228	$5,415,564	$14,300,000.00	$806,787.50	$148,975.20	1,731,262.70	23,372,000	$49,305,054.20	4.27%	38
	1-K	(BJ, BK, BM, U, BR, V , W , X, AZ , AI, R, Y , E , BT , AC , AE)	$4,486,228	$5,415,564	$13,900,000.00	$809,162.50	$148,975.20	1,710,137.70	23,372,000	$48,883,929.20	3.38%	23
	1-L	(BJ, BK, BM, U, BR, V, W, X, AZ, AI, R, Y, Z, AB, BT, BU, AF)	$4,486,228	$5,415,564	$14,800,000.00	$811,252.50	$148,975.20	1,876,727.70	23,372,000	$49,950,519.20	5.64%	57
	1-M	(BJ, BK, BM, U, BR, V, W, X, AZ, AI, R, Y, Z, AB, BT, BU, AD, AE)	$4,486,228	$5,415,564	$14,800,000.00	$817,641.25	$148,975.20	1,906,616.45	23,372,000	$49,980,407.95	5.70%	59
	1-N	(BJ , BK, BM, U, BR, V, W, X, AZ, AI, R, Y, Z, AB, BT, AC, AE)	$4,486,228	$5,415,564	$15,000,000.00	$819,992.50	$148,975.20	1,885,467.70	23,372,000	$50,159,259.20	6.08%	61
	1-O	(BJ, BK, BM, U, BR, V , W, BG, G, H, I, K, BH, BA, AZ, S, Y, E, BT, BU, AF)	$4,486,228	$5,415,564	$14,600,000.00	$830,418.75	$148,975.20	1,848,893.95	23,372,000	$49,722,685.45	5.15%	52
	1-P	(BJ, BK, BM, U, BR, V , W, BG, G, H, O, P, Q, T, AX)	$4,486,228	$5,415,564	$14,700,000.00	$831,772.50	$148,975.20	1,944,247.70	23,372,000	$49,918,039.20	5.57%	56
	1-Q	(BJ, BK, BM, U, BR, V , W, BG, G, H, I, K, BH, BA, AZ, S, Y, E, BT, BU, AD, AE)	$4,486,228	$5,415,564	$14,600,000.00	$836,807.50	$148,975.20	1,878,782.70	23,372,000	$49,752,574.20	5.22%	53
	1-R	(BJ, BK, BM, U, BR, V , W , X, AZ , AI, BB, BS, Q, T, AX)	$4,486,228	$5,415,564	$14,500,000.00	$838,446.25	$148,975.20	1,927,421.45	23,372,000	$49,701,212.95	5.11%	51
	1-S	(BJ, BK, BM, U, BR, V , W, BG, G, H, I, K, BH, BA, AZ, S, Y , E , BT , AC , AE)	$4,486,228	$5,415,564	$14,400,000.00	$839,182.50	$148,975.20	1,857,657.70	23,372,000	$49,531,449.20	4.75%	46
	1-T	(BJ, BK, BM, U, BR, V , W, BG, G, H, I, K, BH, BA, AZ, S, Y, Z, AB, BT, BU, AF)	$4,486,228	$5,415,564	$14,500,000.00	$841,248.75	$148,975.20	2,047,723.95	23,372,000	$49,821,515.45	5.36%	54
	1-U	(BJ, BK, BM, U, BR, V , W, BG, G, H, I, K, BH, BA, AZ, S, Y, Z, AB, BT, BU, AD, AE)	$4,486,228	$5,415,564	$14,700,000.00	$847,637.50	$148,975.20	2,077,612.70	23,372,000	$50,051,404.20	5.85%	60
	1-V	(BJ, BK, BM, U, BR, V , W, BG, G, H, I, K, BH, BA, AZ, S, Y, Z, AB, BT, AC, AE)	$4,486,228	$5,415,564	$14,700,000.00	$850,012.50	$148,975.20	1,985,987.70	23,372,000	$49,959,779.20	5.66%	58
Substation 2	2-A	(BV,BR, V , W , X, AZ, S, Y, E, BT, BU, AF)	$5,730,828	$5,415,564	$12,100,000.00	$680,675.00	$148,975.20	1,558,150.20	23,473,100	$48,277,641.70	2.10%	9
	2-B	(BV, BR, V , W , X, AZ, S, Y, E, BT, BU, AD, AE)	$5,730,828	$5,415,564	$12,300,000.00	$687,063.75	$148,975.20	1,588,038.95	23,473,100	$48,507,530.45	2.58%	16
	2-C	(BV, BR, V , W , X, AZ , S, Y , E , BT , AC , AE)	$5,730,828	$5,415,564	$12,300,000.00	$689,438.75	$148,975.20	1,566,913.95	23,473,100	$48,486,405.45	2.54%	14
	2-D	(BV, BR, V, W, X, AZ, S, Y, Z, AB, BT, BU, AF)	$5,730,828	$5,415,564	$12,600,000.00	$691,528.75	$148,975.20	1,733,503.95	23,473,100	$48,952,995.45	3.53%	26
	2-E	(BV, BR, V, W, X, AZ, S, Y, Z, AB, BT, BU, AD, AE)	$5,730,828	$5,415,564	$12,600,000.00	$697,917.50	$148,975.20	1,763,392.70	23,473,100	$48,982,884.20	3.59%	32
	2-F	(BV, BR, V, W, X, AZ, S, Y, Z, AB, BT, AC, AE)	$5,730,828	$5,415,564	$12,600,000.00	$700,268.75	$148,975.20	1,742,243.95	23,473,100	$48,961,735.45	3.55%	28
	2-G	(BV, BR, V , W, BG, G, H, O, P, Q, AW, AX)	$5,730,828	$5,415,564	$12,200,000.00	$708,628.75	$148,975.20	1,680,103.95	23,473,100	$48,499,595.45	2.57%	15
	2-H	(BV, BR, V , W, BG, G, H, I, K, BH, BA, AZ, S, Y, E, BT, BU, AF)	$5,730,828	$5,415,564	$12,900,000.00	$746,985.00	$148,975.20	1,694,960.20	23,473,100	$49,214,451.70	4.08%	35
	2-I	(BV, BR, V , W, BG, G, H, O, P, Q, T, AX)	$5,730,828	$5,415,564	$12,900,000.00	$748,338.75	$148,975.20	1,790,313.95	23,473,100	$49,309,805.45	4.28%	39
	2-J	(BV, BR, V , W, BG, G, H, I, K, BH, BA, AZ, S, Y, E, BT, BU, AD, AE)	$5,730,828	$5,415,564	$13,000,000.00	$753,373.75	$148,975.20	1,724,848.95	23,473,100	$49,344,340.45	4.35%	40
	2-K	(BV, BR, V , W, BG, G, H, I, K, BH, BA, AZ, S, Y , E , BT , AC , AE)	$5,730,828	$5,415,564	$13,100,000.00	$755,748.75	$148,975.20	1,703,723.95	23,473,100	$49,423,215.45	4.52%	44
	2-L	(BV, BR, V , W, BG, G, H, I, K, BH, BA, AZ, S, Y, Z, AB, BT, BU, AF)	$5,730,828	$5,415,564	$13,300,000.00	$757,838.75	$148,975.20	1,917,313.95	23,473,100	$49,836,805.45	5.40%	55
Substation 3	3-A	(BN, U, BR, V, W, X, AZ, S, Y, Z, AB, BT, BU, AF)	$5,552,393	$5,415,564	$13,200,000.00	$747,321.54	$148,975.20	1,718,796.74	26,865,600	$52,752,353.24	11.56%	66
	3-B	(BN, U, BR, V, W, X, AZ, S, Y, Z, AB, BT, BU, AD, AE)	$5,552,393	$5,415,564	$13,600,000.00	$753,708.63	$148,975.20	1,748,683.83	26,865,600	$53,182,240.33	12.47%	78
	3-C	(BN, U, BR, V, W, X, AZ, S, Y, Z, AB, BT, AC, AE)	$5,552,393	$5,415,564	$13,400,000.00	$756,069.85	$148,975.20	1,727,545.05	26,865,600	$52,961,101.55	12.00%	71
	3-D	(BN,U, BR, V , W, BG, G, H, O, P, Q, AW, AX)	$5,552,393	$5,415,564	$13,300,000.00	$764,420.83	$148,975.20	1,665,396.03	26,865,600	$52,798,952.53	11.66%	68
	3-E	(BN, U, BR, V , W , X, AZ, AI, R, Y, E, BT, BU, AF)	$5,552,393	$5,415,564	$13,600,000.00	$772,776.08	$148,975.20	1,532,751.28	26,865,600	$52,966,307.78	12.01%	72
	3-F	(BN, U, BR, V , W , X, AZ, S, Y, E, BT, BU, AF)	$5,552,393	$5,415,564	$13,200,000.00	$736,484.41	$148,975.20	1,543,459.61	26,865,600	$52,577,016.11	11.19%	65
	3-G	(BN, U, BR, V , W , X, AZ, AI, R, Y, E, BT, BU, AD, AE)	$5,552,393	$5,415,564	$13,800,000.00	$779,163.16	$148,975.20	1,797,638.36	26,865,600	$53,431,194.86	13.00%	83
	3-H	(BN, U, BR, V , W , X, AZ, S, Y, E, BT, BU, AD, AE)	$5,552,393	$5,415,564	$13,100,000.00	$742,871.50	$148,975.20	1,573,346.70	26,865,600	$52,506,903.20	11.04%	63
	3-I	(BN,U, BR, V , W , X, AZ , AI, R, Y , E , BT , AC , AE)	$5,552,393	$5,415,564	$13,400,000.00	$781,524.63	$148,975.20	1,541,499.83	26,865,600	$52,775,056.33	11.61%	67
	3-J	(BN, U, BR, V , W , X, AZ , S, Y , E , BT , AC , AE)	$5,552,393	$5,415,564	$13,100,000.00	$745,232.96	$148,975.20	1,552,208.16	26,865,600	$52,485,764.66	11.00%	62
	3-K	(BN, U, BR, V, W, X, AZ, AI, R, Y, Z, AB, BT, BU, AF)	$5,552,393	$5,415,564	$14,000,000.00	$783,613.20	$148,975.20	1,708,088.40	26,865,600	$53,541,644.90	13.23%	84
	3-L	(BN, U, BR, V , W, BG, G, H, I, K, BH, BA, AZ, S, Y, E, BT, BU, AF)	$5,552,393	$5,415,564	$13,800,000.00	$802,793.46	$148,975.20	1,680,268.66	26,865,600	$53,313,825.16	12.75%	80
	3-M	(BN,U, BR, V, W, X, AZ, AI, R, Y, Z, AB, BT, BU, AD, AE)	$5,552,393	$5,415,564	$14,200,000.00	$790,000.29	$148,975.20	1,761,475.49	26,865,600	$53,795,031.99	13.77%	87
	3-N	(BN,U, BR, V, W, X, AZ, AI, R, Y, Z, AB, BT, AC, AE)	$5,552,393	$5,415,564	$14,200,000.00	$792,361.51	$148,975.20	1,716,836.71	26,865,600	$53,750,393.21	13.67%	85
	3-O	(BN, U, BR, V , W, BG, G, H, I, K, BH, BA, AZ, S, Y, E, BT, BU, AD, AE)	$5,552,393	$5,415,564	$13,800,000.00	$809,180.55	$148,975.20	1,710,155.75	26,865,600	$53,343,712.25	12.81%	82
	3-P	(BN, BR, V , W, BG, G, H, I, K, BH, BA, AZ, S, Y , E , BT , AC , AE)	$5,552,393	$5,415,564	$13,800,000.00	$811,542.01	$148,975.20	1,689,017.21	26,865,600	$53,322,573.71	12.77%	81
	3-Q	(BN, U, BR, V , W, BG, G, H, I, K, BH, BA, AZ, S, Y, Z, AB, BT, BU, AF)	$5,552,393	$5,415,564	$14,100,000.00	$813,630.59	$148,975.20	1,855,605.79	26,865,600	$53,789,162.29	13.75%	86
	3-R	(BN, U, BR, V , W, BG, G, H, I, K, BH, BA, AZ, S, Y, Z, AB, BT, BU, AD, AE)	$5,552,393	$5,415,564	$14,300,000.00	$820,017.68	$148,975.20	1,885,492.88	26,865,600	$54,019,049.38	14.24%	89
	3-S	(BN, U, BR, V , W, BG, G, H, O, P, Q, T, AX)	$5,552,393	$5,415,564	$13,300,000.00	$804,143.89	$148,975.20	1,775,619.09	26,865,600	$52,909,175.59	11.89%	70
	3-T	(BN, U, BR, V , W, BG, G, H, I, K, BH, BA, AZ, S, Y, Z, AB, BT, AC, AE)	$5,552,393	$5,415,564	$14,300,000.00	$822,378.90	$148,975.20	1,864,354.10	26,865,600	$53,997,910.60	14.20%	88
Substation 4	4-A	(AJ, AN, AP, AQ, AS, BC, BE)	$4,747,393	$5,415,564	$12,600,000.00	$717,406.75	$148,975.20	1,430,381.95	23,661,350	$47,854,688.45	1.20%	4
	4-B	(AJ, AN, AP, AQ, AS, BC, BD)	$4,747,393	$5,415,564	$12,600,000.00	$728,603.93	$148,975.20	1,441,579.13	23,661,350	$47,865,885.63	1.23%	5
	4-C	(AJ, AN, AP, AQ, AR, BC, BE)	$4,747,393	$5,415,564	$12,400,000.00	$729,956.49	$148,975.20	1,419,431.69	23,661,350	$47,643,738.19	0.76%	2
	4-D	(AJ, AN, AP, AQ, AR, BC, BD)	$4,747,393	$5,415,564	$12,500,000.00	$741,153.43	$148,975.20	1,430,628.63	23,661,350	$47,754,935.13	0.99%	3
	4-E	(AJ, AN, AP, AT, BQ, AU)	$4,747,393	$5,415,564	$14,000,000.00	$831,520.75	$148,975.20	1,591,495.95	23,661,350	$49,415,802.45	4.51%	43
	4-F	(AL, AK, AN, AP, AQ, AS, BC, BE)	$4,747,393	$5,415,564	$12,900,000.00	$758,415.40	$148,975.20	1,471,390.60	23,661,350	$48,195,697.10	1.93%	7
Substation 5	5-A	(B, BP, BQ, AU)	$4,523,245	$5,415,564	$9,600,000.00	$547,841.25	$148,975.20	1,260,816.45	27,426,350	$48,225,975.45	1.99%	8
	5-B	(B, A, AU)	$4,523,245	$5,415,564	$9,700,000.00	$553,683.75	$148,975.20	1,219,658.95	27,426,350	$48,284,817.95	2.11%	10
	5-C	(AO, AP, AQ, AS, BC, BE)	$4,523,245	$5,415,564	$10,900,000.00	$611,562.50	$148,975.20	1,277,537.70	27,426,350	$49,542,696.70	4.77%	47
	5-D	(AO, AP, AQ, AS, BC, BD)	$4,523,245	$5,415,564	$10,900,000.00	$622,748.75	$148,975.20	1,288,723.95	27,426,350	$49,553,882.95	4.80%	48
	5-E	(AO, AP, AQ, AR, BC, BE)	$4,523,245	$5,415,564	$10,600,000.00	$624,102.50	$148,975.20	1,290,077.70	27,426,350	$49,255,236.70	4.17%	37
	5-F	(AO, AP, AQ, AR, BC, BD)	$4,523,245	$5,415,564	$10,900,000.00	$635,312.50	$148,975.20	1,301,287.70	27,426,350	$49,566,446.70	4.82%	49
Substation 6	6-A	(BO, AV, AN, AP, AQ, AS, BC, BE)	$4,695,605	$5,415,564	$12,900,000.00	$742,543.75	$148,975.20	1,479,018.95	28,394,600	$52,884,787.95	11.84%	69
	6-B	(AH, AV, AN, AP, AQ, AS, BC, BE)	$4,695,605	$5,415,564	$13,000,000.00	$742,686.25	$148,975.20	1,479,161.45	28,394,600	$52,984,930.45	12.05%	74
	6-C	(BO, AV, AN, AP, AQ, AS, BC, BD)	$4,695,605	$5,415,564	$13,000,000.00	$753,730.00	$148,975.20	1,490,205.20	28,394,600	$52,995,974.20	12.08%	75
	6-D	(AH, AV, AN, AP, AQ, AS, BC, BD)	$4,695,605	$5,415,564	$13,300,000.00	$753,872.50	$148,975.20	1,490,347.70	28,394,600	$53,296,116.70	12.71%	79
	6-E	(BO, AV, AN, AP, AQ, AR, BC, BE)	$4,695,605	$5,415,564	$13,000,000.00	$755,083.75	$148,975.20	1,468,058.95	28,394,600	$52,973,827.95	12.03%	73
	6-F	(AH, AV, AN, AP, AQ, AR, BC, BE)	$4,695,605	$5,415,564	$13,200,000.00	$755,226.25	$148,975.20	1,468,201.45	28,394,600	$53,173,970.45	12.45%	77
	6-G	(BO, AV, AN, AP, AQ, AR, BC, BD)	$4,695,605	$5,415,564	$12,500,000.00	$806,625.00	$148,975.20	1,519,600.20	28,394,600	$52,525,369.20	11.08%	64
	6-H	(AH, AV, AN, AP, AQ, AR, BC, BD)	$4,695,605	$5,415,564	$13,000,000.00	$806,775.00	$148,975.20	1,519,750.20	28,394,600	$53,025,519.20	12.14%	76
	6-I	(AG, D, BF, V, W, X, AZ, S, Y, E, BT, BU, AF)	$4,695,605	$5,415,564	$14,300,000.00	$894,400.00	$148,975.20	1,865,875.20	28,394,600	$54,671,644.20	15.62%	90
Substation 7	7-A	(AY, CA, BR, V , W , X, AZ, S, Y, CB, CC, BT, BU, AF)	$4,534,785	$5,415,564	$12,500,000.00	$697,249.18	$396,770.62	1,822,519.79	23,904,350	$48,177,218.79	1.89%	6
Substation 7	7-B	(AY, CA, BR, V , W , X, AZ, S, Y, CB, CC, BT, BU, AD, AE)	$4,534,785	$5,415,564	$12,600,000.00	$703,636.26	$396,770.62	1,852,406.88	23,904,350	$48,307,105.88	2.16%	13
Substation 7	7-C	(AY, CA, BR, V , W , X, AZ , S, Y , CB, CC , BT , AC , AE)	$4,534,785	$5,415,564	$12,600,000	$705,997	$396,771	$1,831,268	$23,904,350	$48,285,967	2.12%	12
	7-D	(AY , CA, BR, V, W, X, AZ, S, Y, Z, AB, BT, BU, AF)	$4,534,785	$5,415,564	$12,900,000	$708,086	$396,771	$1,997,857	$23,904,350	$48,752,556	3.10%	19
	7-E	(AY, CA, BR, V, W, X, AZ, S, Y, Z, AB, BT, BU, AD, AE)	$4,534,785	$5,415,564	$13,100,000	$714,473	$396,771	$2,027,744	$23,904,350	$48,982,443	3.59%	31
	7-F	(AY, CA, BR, V, W, X, AZ, S, Y, Z, AB, BT, AC, AE)	$4,534,785	$5,415,564	$13,100,000	$716,835	$396,771	$2,006,605	$23,904,350	$48,961,304	3.54%	27
	7-G	(AY, CA, BR, V , W, BG, G, H, O, P, Q, AW, AX)	$4,534,785	$5,415,564	$12,900,000	$725,186	$396,771	$2,061,956	$23,904,350	$48,816,655	3.24%	22
	7-H	(AY, CA, BR, V , W , X, AZ , AI, BB, BS, Q, AW, AX)	$4,534,785	$5,415,564	$13,000,000	$731,853	$396,771	$1,810,124	$23,904,350	$48,664,823	2.92%	17
	7-I	(AY, CA, BR, V , W , X, AZ, AI, R, Y, CB, CC, BT, BU, AF)	$4,534,785	$5,415,564	$13,100,000	$733,541	$396,771	$1,811,811	$23,904,350	$48,766,510	3.13%	20
	7-J	(AY, CA, BR, V , W , X, AZ, AI, R, Y, CB, CC, BT, BU, AD, AE)	$4,534,785	$5,415,564	$13,300,000	$739,928	$396,771	$1,771,199	$23,904,350	$48,925,898	3.47%	25
	7-K	(AY, CA, BR, V , W , X, AZ , AI, R, Y , CB, CC, BT , AC , AE)	$4,534,785	$5,415,564	$13,300,000	$742,289	$396,771	$1,820,560	$23,904,350	$48,975,259	3.57%	30
	7-L	(AY, CA, BR, V, W, X, AZ, AI, R, Y, Z, AB, BT, BU, AF)	$4,534,785	$5,415,564	$13,100,000	$744,378	$396,771	$1,963,648	$23,904,350	$48,918,347	3.45%	24
	7-M	(AY, CA, BR, V, W, X, AZ, AI, R, Y, Z, AB, BT, BU, AD, AE)	$4,534,785	$5,415,564	$13,600,000	$750,765	$396,771	$2,017,036	$23,904,350	$49,471,735	4.62%	45
	7-N	(AY, CA, BR, V, W, X, AZ, AI, R, Y, Z, AB, BT, AC, AE)	$4,534,785	$5,415,564	$13,800,000	$753,126	$396,771	$1,995,897	$23,904,350	$49,650,596	5.00%	50
Substation 8	8(a)	(AY, BZ, BR, V , W , X, AZ , S, Y , CB, CC, BT , AC , AE)	$4,523,385	$5,415,564	$12,300,000	$686,921	$266,880	$1,646,318	$23,400,000	$47,285,267	0.00%	1

Shepherd Substation and Transmission Line Study Areas

(Sheet 1 of 1)

Legend

- Transmission Line Study Area
- Substation Study Area
- Substation Site
- Potential Transmission Line
- Existing Transmission Corridor
- Railroad



Vicinity Map

0 2,000 4,000 6,000 Feet

0 0.5 1 Miles

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