Environmental Assessment for the CPS Energy Southton Substation, Bexar County, Texas

Final Report

SWCA Project Number 38368

May 2017

SUBMITTED TO:

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1.0 DESCRIPTION OF PROPOSED PROJECT

1.1 Scope of the Project

CPS Energy is planning to build a new substation and transmission line in southeastern Bexar County, Texas known as the Southton Substation project (project) (Figure 1). The new substation would cover an area of approximately 6 acres and would be connected to the existing Braunig and Brooks substations by a new transmission line. The substation and transmission line are scheduled to be in service by mid-2019.

At the request of CPS Energy, SWCA Environmental Consultants (SWCA) prepared an environmental assessment (EA) for this project 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.

1.2 Purpose and Need

CPS Energy needs to construct the Southton Substation to meet an increasing demand for electricity in the project vicinity and to improve reliability and reduce outage durations. Specifically, the new substation would improve CPS Energy's electric system with shorter circuits that reduce exposure to outages. The new circuits would also create strong backbone and sufficient field ties to adjacent substation circuits to prevent major loss of customer load in faulted conditions. Therefore, the new substation would help relieve load from other, existing surrounding substations and reduce the risk of overloading circuits.

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 as a three unit site with two 40 MVA transformers and two four-feeder switchgear lineups. The substation will be looped into a new transmission line between Braunig and Brooks substations. It should include two 138 kV line terminals, one 138 kV circuit switcher and a 2000 A main bus design. Figure 2 illustrates a typical CPS Energy substation.

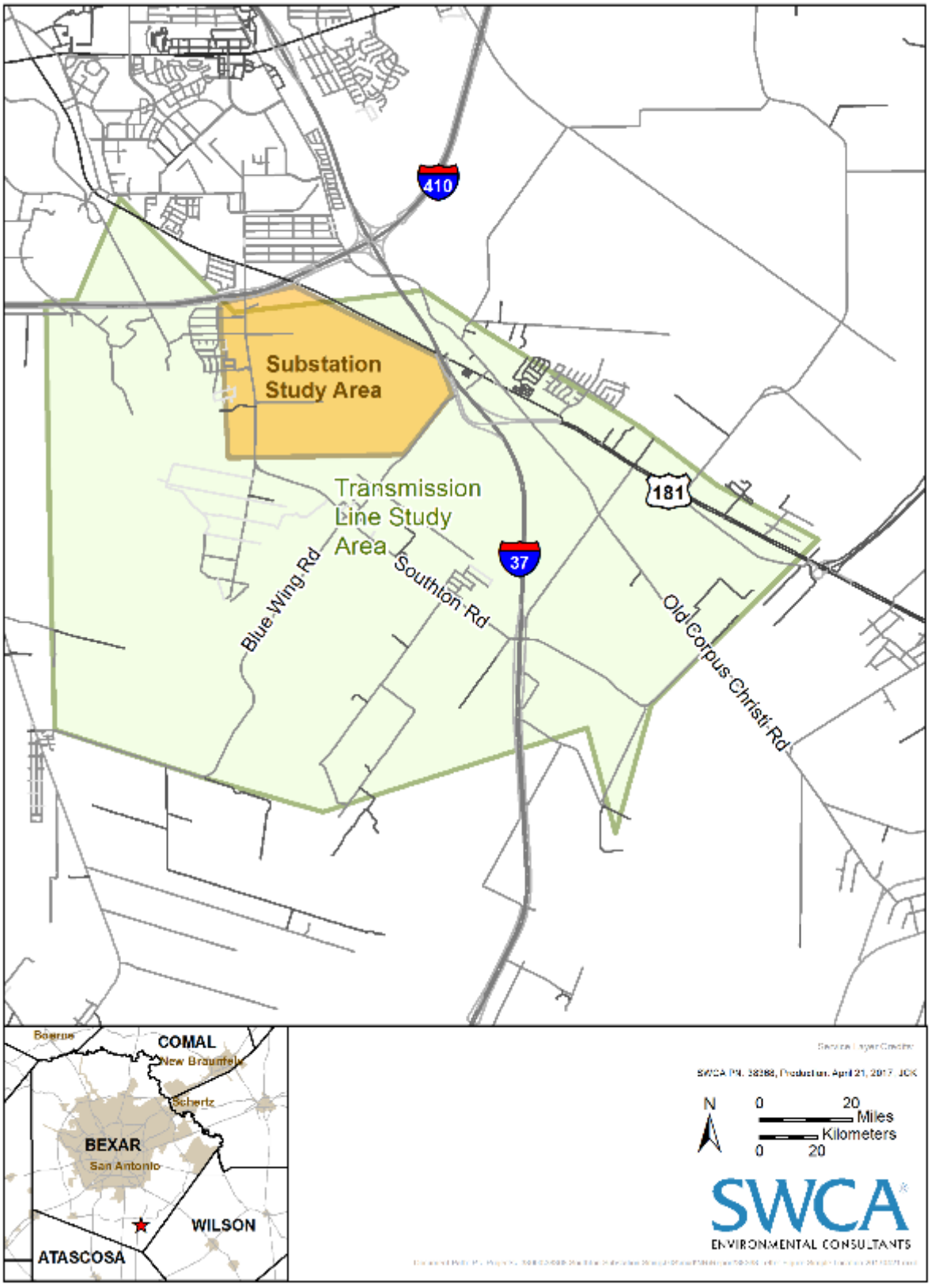

Figure 1. Southton Substation project location.

Figure 2. Typical substation.

1.3.2 Transmission Line Easement

An approximately 46,200-foot new transmission line would be constructed to connect the new substation to CPS Energy's existing Brooks and Braunig substation (Figure 1). The new transmission line would be constructed within a 60- to 100-foot-wide right-of-way (ROW) easement for a total area of an estimated 100 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. 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.

CPS Energy plans to construct the substation and transmission line from late 2017 to mid-2019, 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 past 6:00 P.M. and 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 Southton 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 seven key steps: 1) define the project area; 2) obtain environmental information; 3) map environmental and land use constraints; 4) conduct environmental, engineering and cost analyses; 5) conduct public involvement efforts, if appropriate; 6) acquire CPS Energy Board approval; and 7) design and construct the project.

2.2 Identification of Alternative Sites

2.2.1 Study Area Delineation

The Study Area for the proposed substation is located just south of Loop 410 and west of Interstate 37 (I-37). The 1,310-acre area generally extends from approximately 0.2 mile west of Southton Road to the intersection of Loop 410 and Presa Road, then approximately 1.6 miles south and east to the intersection of Blue Wind Road and I-37 frontage road, and finally roughly 1.8 miles to the south and west back to Southton Road. The Study Area for the proposed transmission line is generally bound at the north by Loop 410, at the south by Blue Wing and Streich Roads, and encompasses lands within an approximately 20-square-mile area to the west and east (see Figure 1). Since the transmission line study area encompasses the substation study area, for the purposes of this EA both study areas are collectively referred to as the project area henceforth. The project area covers approximately 13,000 acres.

2.2.2 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 project area. Sources reviewed included:

- U.S. Geological Survey (USGS) digital 7.5-minute topographic quadrangle maps, Southton and Elmendorf Quadrangle, 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 2017).
- Texas Parks and Wildlife Department (TPWD) Vegetation Types of Texas (McMahan 1984).
- TPWD county threatened and endangered species lists (TPWD 2017).
- Texas Natural Diversity Database. 2017. Element of occurrence records for rare and protected species. April 21, 2017.

- 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. May 6, 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 project area (Figures 4–6).

2.2.3 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. Eight potential substation sites were presented to the public at an open-house meeting on September 29, 2016 (see map pocket for public posters). 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 BT in the map pocket); 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 September 29, 2016.

2.2.4 Identification of Primary Substation Sites and Transmission Routes

Following the public open-house meeting, CPS Energy evaluated public input and considered revisions to proposed substation sites and the network of preliminary route segments. As a result of these efforts, CPS Energy chose to eliminate Substation 2 due to landowner plans for development. CPS Energy also eliminated Substation 3, since it was located adjacent to Substation 4 but would require property acquisition.[1]

CPS Energy also chose to eliminate certain transmission segments that would:

- require construction within the floodplain or close proximity to the San Antonio River,
- cross an active spoils site,
- cross potential future park, or
- require longer distances that were not economically feasible, as compared to other, shorter alternatives.

Therefore, a total of six substation sites and 110 transmission routes were carried forward for detailed alternatives analysis (Figure 7).

[1] CPS Energy owns land associated with substation 4. All other substation sites are privately owned.

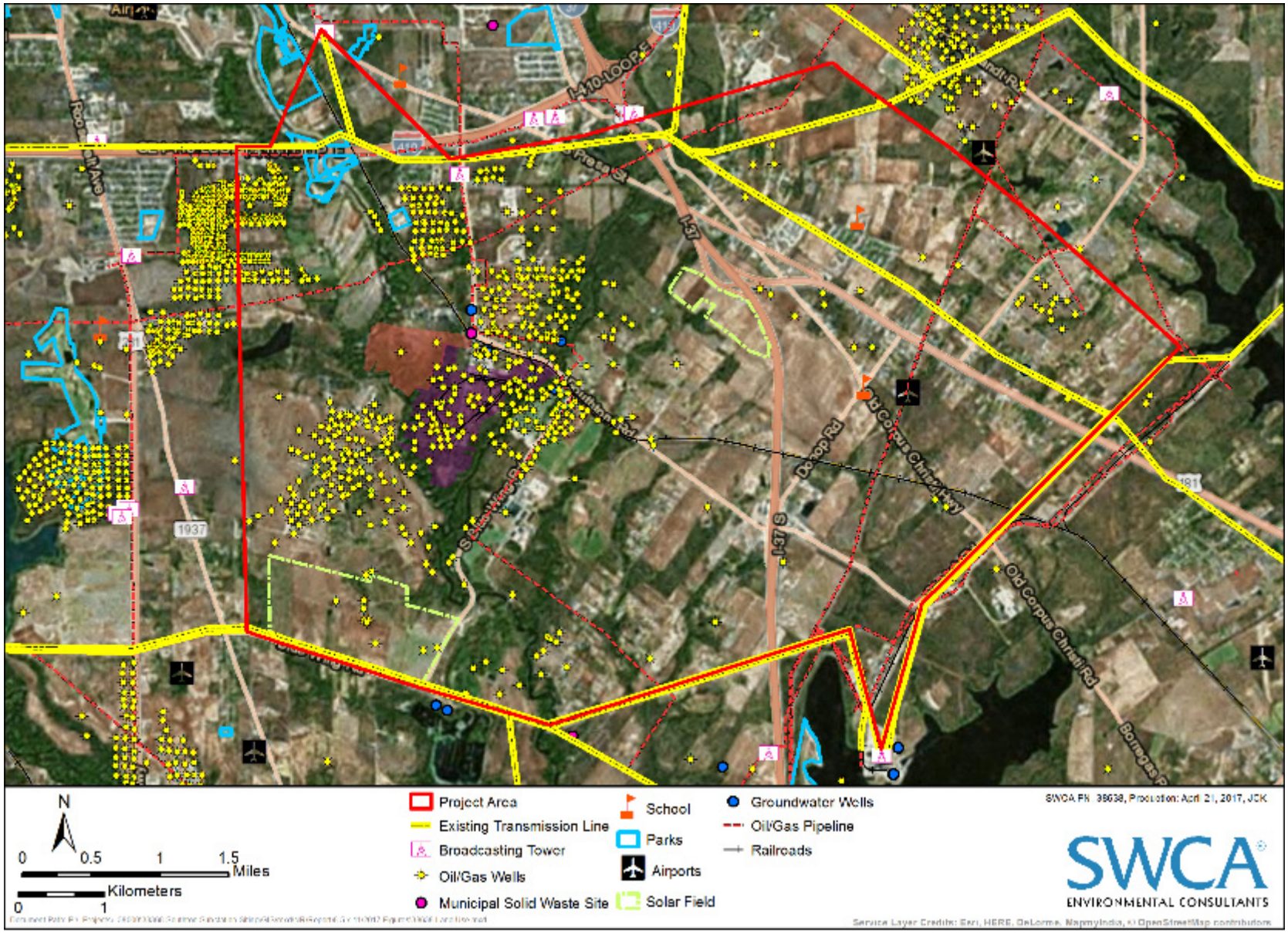

Figure 4. Land uses within the project area.

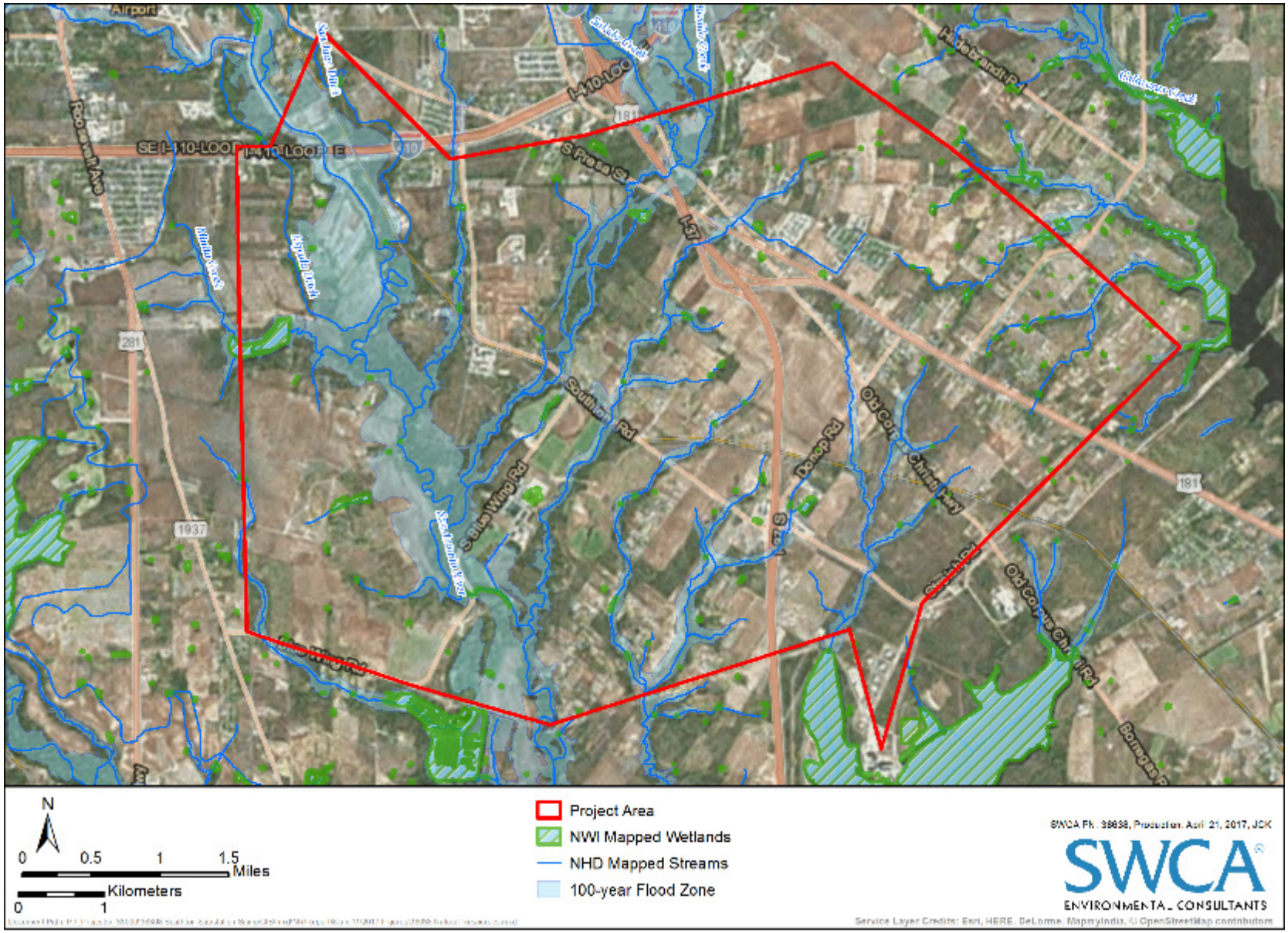

Figure 5. Natural resources within the project area

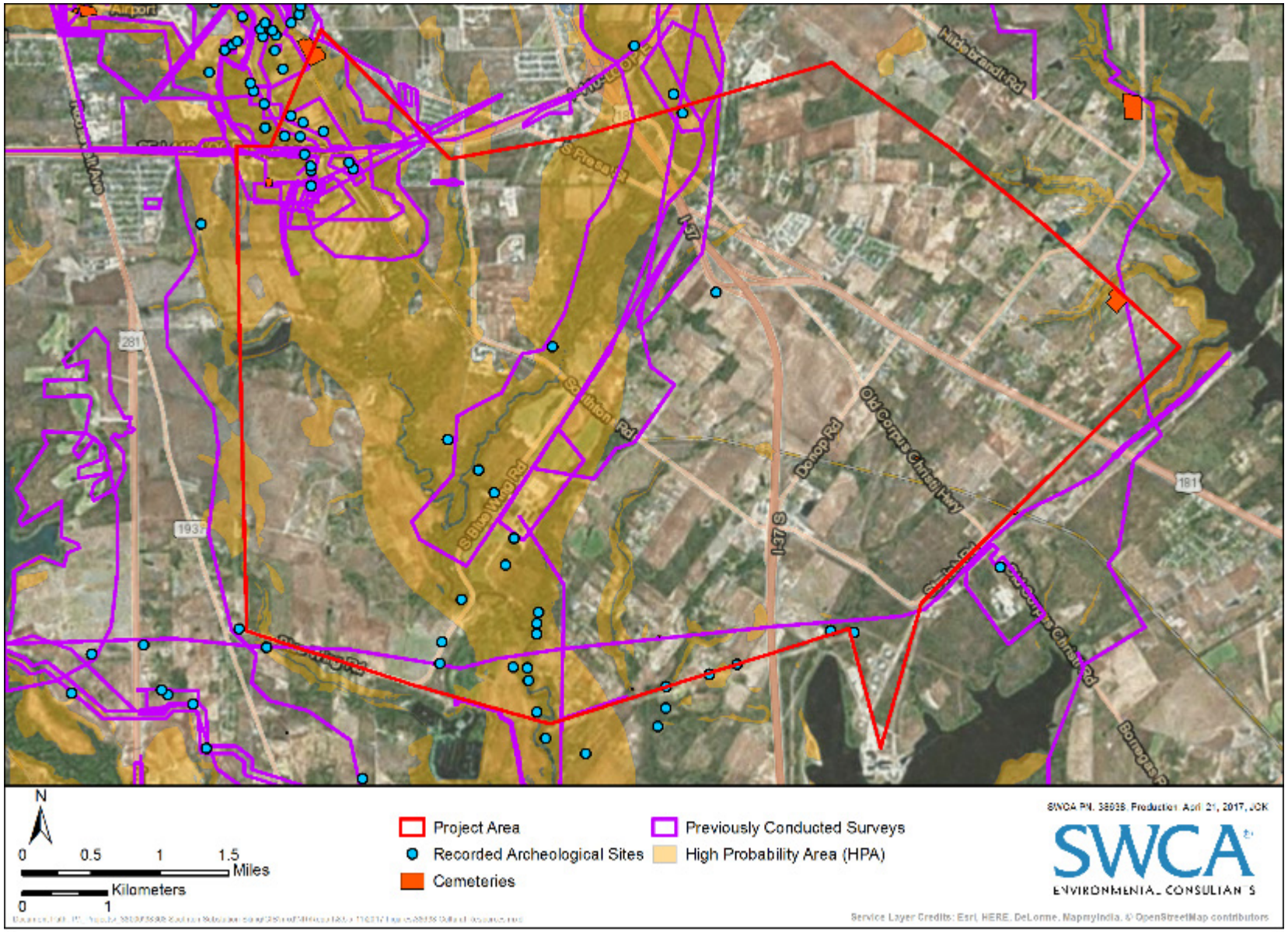

Figure 6. Cultural resources within the project area.

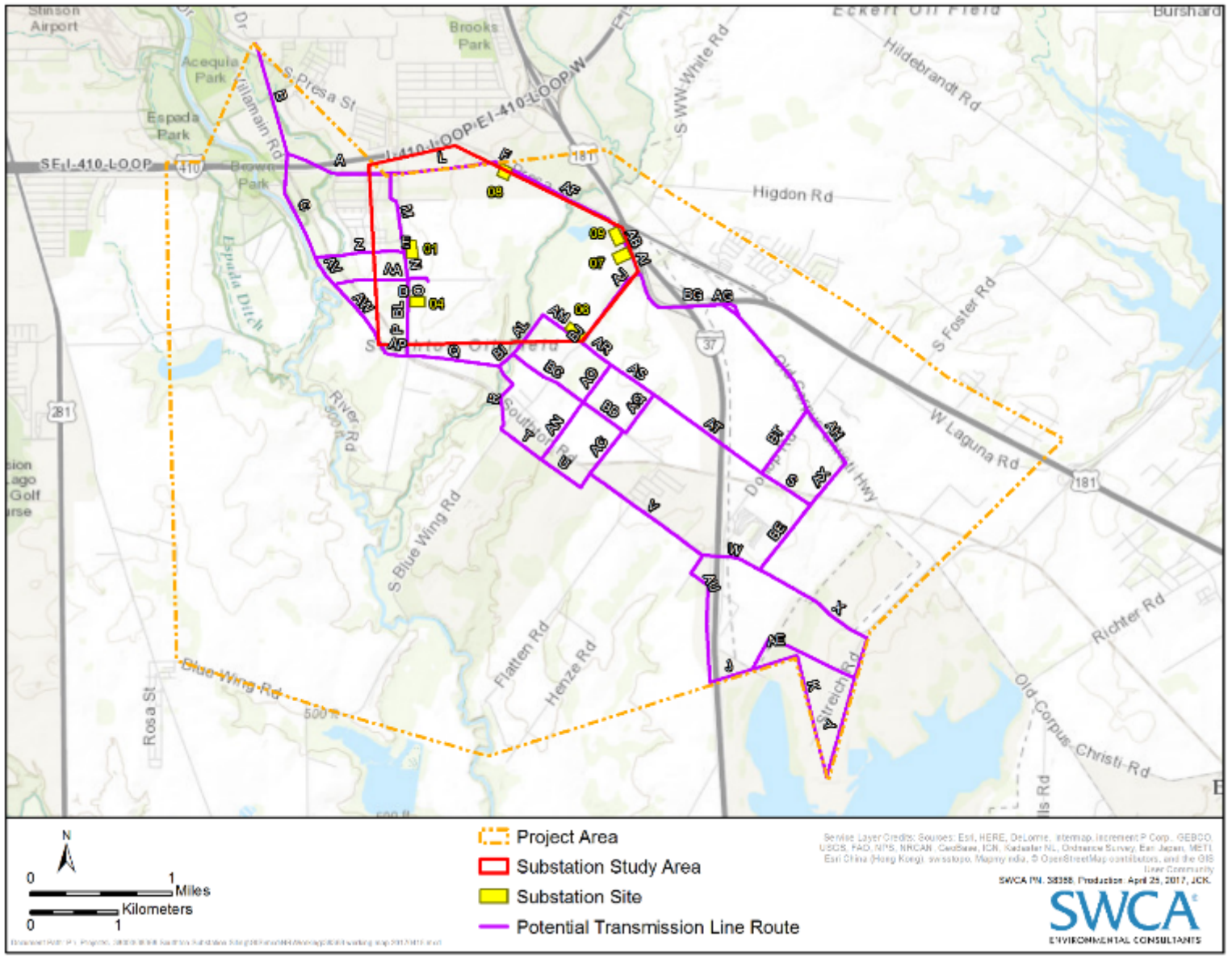

Figure 7. Primary substation locations and associated transmission routes.

2.3 Alternatives Analysis

The six potential substation sites and 110 potential transmission line routes were analyzed in detail based on the environmental criteria listed in Table 1. 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.

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

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

* 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 6. 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.

3.0 ENVIRONMENTAL SETTING

3.1 Physiography

The project area is located in southeastern San Antonio south of Loop 410 and appears on the Southton and Elmendorf USGS 7.5-minute topographic maps (USGS 2013). The project area elevation ranges from approximately 480 to 580 feet above mean sea level. Topography generally slopes towards major surface waters, such as the San Antonio River and Salado Creek, which bisect the project area.

3.2 Geology

Based on published geologic maps (Barnes 1983), the approximately 13,000-acre project area is underlain by four geologic units (Table 2). 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 Balcones Fault Zone 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 perpendicular to the western border of the project area (Barnes 1983).

Table 2. Geologic Units Present in Project Area

Geologic Unit	Description	Acreage in Project Area
Wilcox Group	Consists of mostly mudstone with varying amounts of sandstone and lignite with a thickness of approximately 440 to 1,200 feet (Barnes 1983)	6,679
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 to 400 feet (Barnes 1983)	491
Pleistocene aged fluvial terrace deposits	Consists of gravel, limestone, dolomite, and chert deposits from the Medina River (Barnes 1983)	4,692
Leona Formation	Consists of fluvatile terrace deposits of gravel, sand, silt, and clay (Barnes 1983)	1,248

3.3 Soils

3.3.1 Soil Associations

The USDA NRCS (formerly Soil Conservation Service) maps 36 soil types within the project area (Table 3) (NRCS 2016a). Identified soil types do not meet hydric soil criteria, unless specifically noted in below descriptions. 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.

Table 3. Soil Units Present in Project Area

Soil Unit	Description	Farmland Classification	Acreage in Project Area
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.	Prime Farmland, if Irrigated	323
Miguel fine sandy loam, 1 to 3 percent slopes (CfB)	Shares same general soil features as CfA. 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.	Prime Farmland, if Irrigated	1,266
Miguel fine sandy loam, 2 to 5 percent slopes (CkC2)	Shares same general soil features as CfA. In a typical profile, the soil layer is 10 inches of neutral fine sandy loam and 10 to 72 inches of slight to moderate alkaline sandy clay.	Not Applicable	215
Duval loamy fine sand, 0 to 5 percent slopes (DmC)	The Duval series consists of deep, well drained, moderately permeable soils that formed in loamy residuum from interbedded sandstone and siltstone over sandstone bedrock. These soils are on nearly level to gently sloping upland plains. In a typical profile, the soil layer is 16 inches of fine sandy loam, 16 to 52 inches of sandy clay loam, and 52 to 80 inches of sandstone bedrock. The soil is well drained. Depth to a root restrictive layer is 40 to 60 inches.	Prime Farmland, if Irrigated	120
Loire clay loam, 0 to 2 percent slopes (Fr)	Loire clay loam typically occurs on floodplains 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. The minor component of this soil is hydric and comprises 1% of the soil map unit.	Not Applicable	1,544
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.	Not Applicable	284
Rock outcrop-Olmos complex, 5 to 25 percent slopes (HgD)	The rock outcrop component comprises 75% of the complex and consists of 0-80 inches of lithic bedrock. Depth to a root restrictive layer is 0 to 2 inches. The Olmos component comprises 15% of the complex and consists of calcareous loamy alluvium derived from ridges on interfluves. In a typical profile, the soil layer is 14 inches very gravelly loam, 14 to 18 inches cemented material, and 18 to 60 inches gravelly loam. Depth to a root restrictive layer is 4 to 20 inches to a petrocalcic horizon. The soil is well drained with low shrink-swell potential. The minimum depth to a water table is greater than 6 feet.	Not Applicable	122
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.	Prime Farmland, if Irrigated	10
Wilco loamy fine sand, 3 to 5 percent slopes (HkC)	Shares same general soil features as HkB. 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,	Prime Farmland, if Irrigated	299

Soil Unit	Description	Farmland Classification	Acreage in Project Area
	and 40 to 60 inches of slightly alkaline sandy clay loam.		
Heiden-Ferris complex, 5 to 10 percent slopes, severely eroded (HoD3)	The Heiden, severely eroded component makes up 75% of this map unit, while the Ferris, severely eroded component makes up 20% 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.	Not Applicable	168
Houston Black clay, 0 to 1 percent slopes (HsA)	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 80 inches of clay. Depth to a root restrictive layer is greater than 60 inches. The soil is moderately well drained. The minimum depth to a water table is greater than 6 feet.	Prime Farmland	35
Houston Black clay, 1 to 3 percent slopes (HsB)	Shares same general soil features as HsA. 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.	Prime Farmland	13
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.	Prime Farmland	210
Branyon clay, 1 to 3 percent slopes (HtB)	Shares same general soil features as HtA. In a typical profile, the soil layer is 0 to 80 inches of moderately alkaline clay.	Prime Farmland	257
Atco loam, 3 to 5 percent slopes (KaC)	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 60 inches of loam. Depth to a root restrictive layer is greater than 80 inches and is well drained.	Farmland of statewide importance, if irrigated	621
Atco clay loam, 3 to 5 percent slopes, eroded (KcC2)	Shares same general soil features as KaC. 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.	Not Applicable	46
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.	Prime Farmland	123
Lewisville silty clay, 1 to 3 percent slopes (LvB)	Shares same general soil features as LvA. 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.	Prime Farmland	539
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	Not Applicable	331

Soil Unit	Description	Farmland Classification	Acreage in Project Area
	soil is well drained with a moderately high shrink-swell potential. The minimum depth to a water table is greater than 80 inches.		
Laparita clay loam, 1 to 3 percent slopes (OrB)	Shares same general soil features as OrA. 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.	Not Applicable	197
Patrick soils, 1 to 3 percent slopes, rarely flooded (PaB)	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 soil profile, the soil layer consists of 0 to 17 inches of clay loam and 17 to 60 inches of very gravelly sand. Depth to a root restrictive layer is greater than 80 inches and is well drained.	Not Applicable	114
Patrick soils, 3 to 5 percent slopes (PaC)	Shares same general soil features as PaB. 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.	Not Applicable	112
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.	Not Applicable	11
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.	Prime Farmland	1,433
San Antonio clay loam, 3 to 5 percent slopes (SaC)	Shares same general soil features as SaB. 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.	Prime Farmland	142
Stephen silty clay, 3 to 5 percent slopes (ScC)	Stephen silty clay typically occurs on ridges on interfluves. The parent material consists of calcareous clayey residuum weathered from chalk. In a typical profile, the soil layer is 0 to 9 inches of silty clay, 9 to 15 inches extremely paracobbly silty clay, and 15 to 27 inches of bedrock. Depth to a root restrictive layer is 12 to 19 inches to paralithic bedrock. The soil is well drained with a low shrink-swell potential. The minimum depth to a water table is greater than 80 inches.	Not Applicable	18
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. 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.	Not Applicable	160
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	Farmland of statewide importance	852

Soil Unit	Description	Farmland Classification	Acreage in Project Area
	greater than 6 feet.		
Sunev clay loam, 1 to 3 percent slopes (VcB)	Shares same general soil features as VcA. In a typical profile, the soil layer is 34 inches of clay loam and 34 to 62 inches of loam.	Farmland of statewide importance	974
Sunev clay loam, 3 to 5 percent slopes (VcC)	Shares same general soil features as VcA. In a typical profile, the soil layer is 32 inches of clay loam, and 32 to 62 inches of loam.	Farmland of statewide importance	209
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.	Prime Farmland, if Irrigated	819
Floresville fine sandy loam, 3 to 5 percent slopes (WbC)	Shares same general soil features as WbB. 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.	Prime Farmland, if Irrigated	693
Floresville fine sandy loam, 1 to 5 percent slopes, eroded (WeC2)	Shares same general soil features as WbB. 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.		393
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.	Prime Farmland	56
Willacy loam, 1 to 3 percent slopes (WmB)	Shares same general soil features as WmA. Is typically found on backslopes of interfluves. In a typical profile, the soil layer is 0 to 14 inches of loam and 14 to 62 inches of sandy clay loam.	Prime Farmland	75
Zavala and Gowen soils, 0 to 2 percent slopes, frequently flooded (Zg)	Zavala and Gowen soils typically occur on floodplains 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.		75

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 (2000), 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.

Table 3 identifies project area soils with farmland classifications. Of the 36 soil groups underlying the project area, ten soils (2,883 acres) are rated as areas of prime farmland, seven (3,530 acres) are rated as areas of prime farmland soil, if irrigated, and four (2,656 acres) are rated as farmlands of statewide importance (with or without irrigation). Combined, mapped farmland soils make up approximately 9,069 acres, or 70% of the project area (this includes locations with overlying existing urban development).

3.4 Water Resources

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

3.4.1 Surface Water

The National Hydrography Dataset (NHD) map indicates that six named creeks and waterways traverse throughout the project area with numerous confluences and tributaries. The San Antonio River enters the project area from the northwest where it transects the western border and eventually exits to the southwest. Minita Creek, Espada Ditch, and San Juan Ditch all enter the project area from the northwest, where they quickly confluence with the San Antonio River in the northwestern portion of the project area. Rosillo Creek and Salado Creek enter the project area from the north, near I-37. Rosillo Creek confluences with Salado Creek less than 1 mile after entering the project area and flows southwest until eventual confluence with the San Antonio River in the southwest portion of the project area.

Additionally, the NWI map identified a total of 97 wetland features and water bodies within the project area. The identified features include 11 freshwater emergent wetlands, five freshwater forested/shrub wetlands, 76 freshwater ponds, three lakes, and two riverine water bodies (USFWS 1994).

3.4.2 Floodplains

FEMA mapped floodplains are shown in Figure 8. Roughly 78% (10,093 acres) of the project area is mapped as Zone X. Zone X corresponds to areas outside the 1-percent annual chance floodplain or protected from the 1-percent annual chance flood by levees. The project area also contains a small amount of mapped Zone A (787 acres) and AE (1,999 acres). Zones A and AE represent areas that have a 1% probability of flooding every year (also known as the “100-year floodplain”), and where predicted flood water elevations above mean sea level have been established.

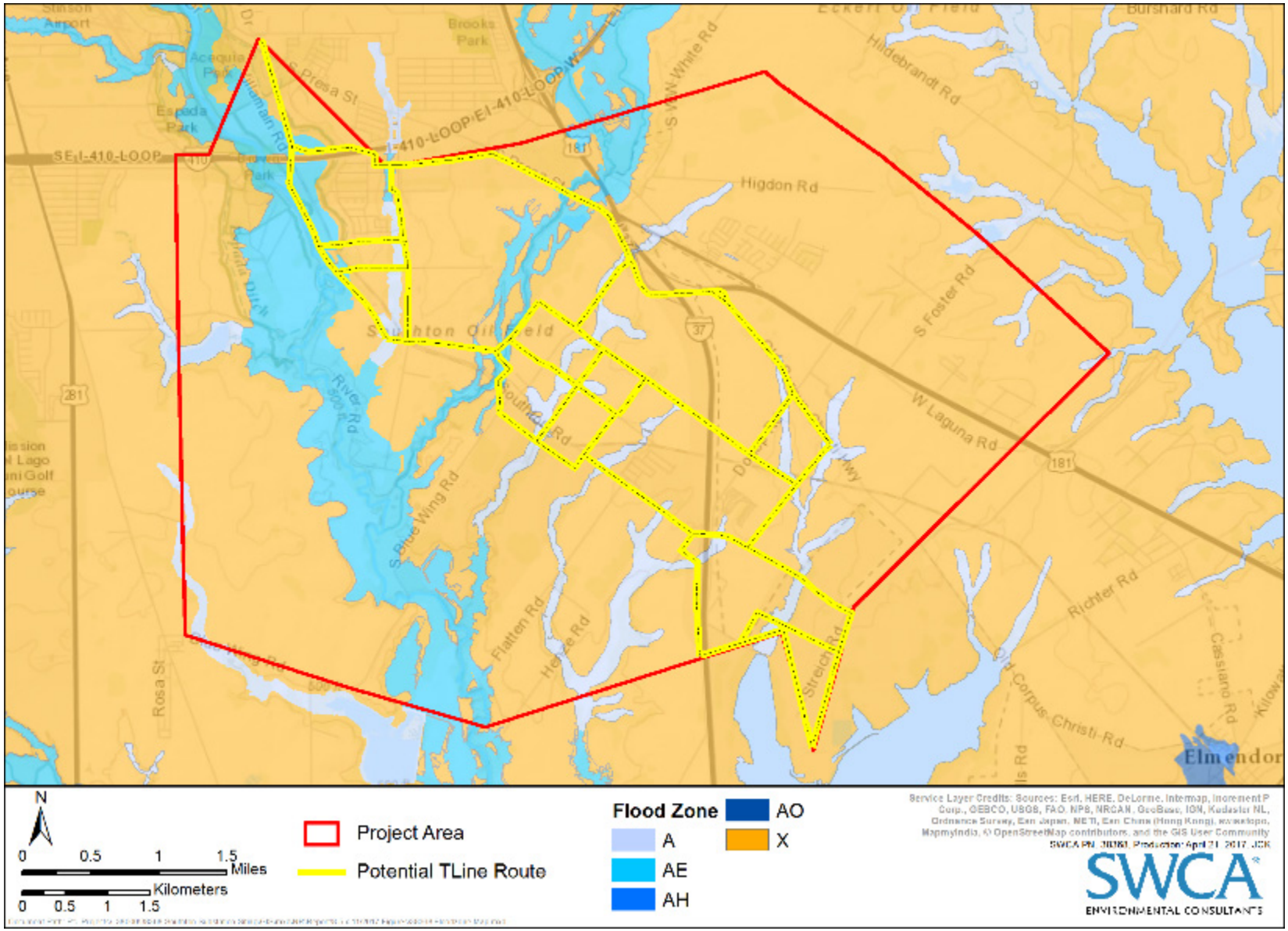

Figure 8. FEMA floodplain zones in the project area.

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 project area lies above the Edwards Aquifer Artesian Zone. The project area is also approximately 16.7 miles south from the Edwards Aquifer Recharge Zone.

There are a total of eight groundwater wells located within the project area. One of these groundwater wells is listed for personal use and is located in the eastern portion of the project area. The remaining seven are located in the east central portion of the project area, of which one is for irrigation, five for industrial use, and one is listed as an unknown well for oil and gas industry (Texas Water Development Board [TWDB] 2015).

3.5 Vegetation

The project area is within the Texas Blackland Prairie and South Texas Brush Country 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 project 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 2017).

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 2017). 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 2017).

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. Amphibians that may occur in or near the project area include Blanchard's cricket frog (*Acris crepitans blanchardi*), 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 2017). 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 2017). A summary of the 42 federally and state-listed species, and candidate species is provided in Table 4 along with a description of their range or habitat requirements and the potential for their occurrence within the project area.

Of the 42 federally and state-listed species and candidate species, only three listed mollusk species and one reptile species have the potential to occur within the project area: golden orb (*Quadrula aurea*), Texas fatmucket (*Lampsilis bracteata*), Texas pimpleback (*Quadrula petrina*), and the Texas indigo snake (*Drymarchon melanurus erebennus*) (see Table 4). 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 4.

Element of Occurrence Records (EOR)[2] 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 19 April 2017 was conducted for the Southton and Elmendorf, Texas, USGS 7.5-minute topographic maps and surrounding quadrangles (TXNDD 2017). The TXNDD indicates that there is one known record of a federally listed candidate species and state-listed threatened species occurring within 2 miles of the project area (Appendix A). The golden orb has been recorded as occurring within the San Antonio River approximately 1.5 miles northwest of the project area. No other remaining species identified in Table 4 were recorded in the TXNDD EOR dataset for the project area and surrounding vicinity.

Table 4. 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 these watersheds.
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 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.
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.

[2] 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
Black-capped vireo *(Vireo atricapilla)*	FE/SE	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 long-duration 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 within Salado Creek.
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 habitats.
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 coastal prairie 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 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.

Species Common Name (Scientific Name)	Listed Status*	Range or Habitat Requirements	Potential for Occurrence within the Project Area
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	Rocky hillsides and slopes, usually found growing under shrubs and in areas of low herbivore grazing. Critical habitat has not been designated for this species.	Unlikely to be adversely affected by the project. Potential siting areas for the substation would not be located within or near suitable habitats.
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. 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.

Species Common Name (Scientific Name)	Listed Status*	Range or Habitat Requirements	Potential for Occurrence within the Project Area
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 Bat 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.
Government Canyon Bat Cave spider *(Tayshaneta microps)*	FE	Known range is currently limited to the Government Canyon Bat 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.
Ground beetle [No Common Name] (*Rhadine exilis)*	FE	Found in 51 cave systems within four karst fauna 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 fauna 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 fauna 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 fauna 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.
Robber Baron Cave meshweaver (*Cicurina baronia)*	FE	Known range is currently limited to two cave systems in the Alamo Heights Karst Fauna 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.

Species Common Name (Scientific Name)	Listed Status*	Range or Habitat Requirements	Potential for Occurrence within the Project Area
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 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 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 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.
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 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 is a federally listed candidate species and a state-listed threatened species that 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 a federally listed candidate species that 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 Texas pimpleback is a federally listed candidate species that is endemic to Texas and occurs within the Guadalupe-San Antonio and Colorado River drainages. 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 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 state-listed threatened species that can grow up to 8 feet or more in length and 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 1950s, 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 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 5).

Table 5. 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

As of 2015, the Hispanic or Latino population represented the largest minority population in the region, accounting for 59.1% of the total population for Bexar County (U.S. Census Bureau 2017b). The U.S. Environmental Protection Agency's (EPA's) Environmental Justice (EJ) Screen (2017) indicates that 40% of Bexar County's total population could be designated as low income. Based on the EPA's EJ Screen (2017), approximately 87% of the project area's total population could be designated as minority, while 36% could be designated as low income.

3.9 Human Development

3.9.1 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[3] (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, pasture, crops, and woody wetlands. Approximately 7% of the project area is classified as low- to high-intensity developed lands (Table 6).

Table 6. Land cover data for the project area.

Land Cover Category	Acres	Percentage of Total Land Cover
Developed, Open Space	1,983	15%
Developed, Low Intensity	537	4%
Developed, Medium Intensity	303	2%
Developed, High Intensity	94	1%
Barren Land (Rock/Sand/Clay)	27	<1%
Deciduous Forest	537	4%
Evergreen Forest	640	5%
Mixed Forest	32	<1%
Shrub/Scrub	3,558	28%
Grassland/Herbaceous	127	1%

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

Land Cover Category	Acres	Percentage of Total Land Cover
Pasture/Hay	2,448	19%
Cultivated Crops	1,227	10%
Woody Wetlands	1,307	10%
Emergent Herbaceous Wetlands	6	<1%
Grand Total*	**12,826**	**100%**

* Excludes water sources.

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.

Of the six potential substation sites, only Substations 6 and 9 contain residential structures within 300 feet of the proposed location. Substation 6 contains 11 residential structures and Substation 9 contains three residential structures. Habitable structures are also present adjacent to transmission routes that parallel local streets within the project area, including Southton Road, Streich Road, Old Corpus Christi Road, Pressa Street, Blue Wing Road, and Mickey Road.

3.9.2 Parks and Recreation

Portions of the San Antonio River Walk Mission Reach Trail, as well as Mission San Juan Capistrano, Mission Espada, and Mission Parkway are located near the northwestern corner of the project area. No other parks or recreational areas are located within the project area.

3.9.3 Transportation /Aviation / Communications Facilities

The major transportation features within the project area are I-37, which runs along the eastern edge of the project area, and Loop 410, which parallels a portion of the northern project area boundary. According to Google maps, ten private or Federal Aviation Administration (FAA)-registered airports are located within 20,000 feet of the project area.

A review of GIS data provided by the Federal Communications Commission (2013) found that there is one AM radio tower and 14 FM radio transmitters, microwave, or other electronic installations located within 20,000 feet of the project area.

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 medium degree of aesthetic quality for this region due to the presence of human development and shrub/cropland/pastureland as predominant vegetation types. However, as previously noted, the northwestern corner of the project area contains portions of the San Antonio River Walk Mission Reach Trail, as well as Mission San Juan Capistrano, Mission Espada, and Mission Parkway. These resources are considered to have a high aesthetic value.

3.11 Cultural Resources

SWCA conducted a cultural resources constraints analysis on behalf of CPS Energy for the Southton 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.

The background review determined that numerous cultural resources surveys, 43 historic and prehistoric sites, two National Register of Historic Places (NRHP) Districts, one historical marker, and seven cemeteries are recorded on the Texas Archeological Site Atlas on-line databases being within the project area. The majority of known resources do not have an NRHP-eligibility determination or are not eligible for the NRHP. However, the northwest corner of the project area contains portions of Mission Espada and Mission San Juan Capistrano (and their associated features), which are designated NRHP properties and were also recently listed as part of a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site. Discussion of CPS Energy coordination efforts with the National Park Service (NPS), the World Heritage Organization (WHO), and the City of San Antonio Office of Historic Preservation (SA-OHP) to address potential impacts to these cultural resources is provided in Section 5.

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 100-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. 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 control devices 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 0.5% 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, 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 Southton 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 a Bexar County Floodplain Development permit 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 100-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 FISH AND 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 105 acres of wildlife habitat, which represents less than 1% of habitat available in the project area. The new substation would be sited in an area previously disturbed by human activities (e.g., ranching, farming) and the proposed transmission line would be routed along existing ROWs, 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 on 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 production 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 the 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% because of weather (Stout and Cornwell 1976). Raptors are normally not victims of wire strikes due to 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 FEDERALLY AND STATE THREATENED AND ENDANGERED SPECIES

Of the 42 federally and state-listed species and candidate species identified in Table 4, only three listed mollusk species and one reptile species have the potential to occur within the project area; these included 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 4 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 Southton 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 and transmission line is consistent with other, existing distribution lines and light industrial activity in the project area. 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 also 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 5.6 acres from non-developed (shrubland and forest) lands to industrial use for the duration of the project. This represents less than 0.5% of these land types within the project area. Construction of the transmission line would also impact an estimated 68.5 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 permanent land use conversion would occur.

Proposed project components would be consistent with existing distribution lines and other commercial and light industrial activities (including two solar fields) 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 Parks and 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. CPS Energy's existing transmission ROW crosses approximately 535 feet of land that was recently obtained by the NPS to support the UNESCO Mission San Juan Capistrano site's landscape and viewshed integrity. Under the proposed project alternative, CPS Energy would construct the new transmission line within the existing ROW within these NPS lands. No additional ROW would be requested. The existing transmission line is also located outside the 1,500-foot Mission San Juan protection zone. Therefore, there would be no direct impacts to recreation opportunities within the Mission. Recreation users at the Mission could be indirectly affected by temporary impacts (noise, dust, construction traffic) during construction. However, these impacts would cease when construction is complete. Potential indirect visual impacts to recreation users are described in Section 4.2.5, below).

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.

Multiple communication towers are located within 20,000 feet of the project area. Since transmission lines already exist in the project area, however, additional impacts to any communication operations in the area from construction of the proposed substation and transmission route are not expected to occur..

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. In general, as previously noted, the observed presence of a new transmission line and substation is expected to be compatible with other land uses in the project area. CPS Energy is proposing to use steel monopole structures for the transmission line, which is 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.

In December 2016, CPS Energy conducted a stand-alone visual analysis of preferred transmission line alternative routes to assess potential project impacts to the UNESCO Mission San Juan Capistrano viewshed as well as NPS-owned lands. The analysis included mapping and photographs to examine existing lattice transmission tower visibility within these ROWs to compare with planned monopole replacements of similar height. Representative views 1) towards the transmission route from the Mission and neighboring roads, and 2) toward the Mission from the transmission route were identified and photographed (Appendix B). Based on this assessment, it was determined that the existing transmission line is visible from some locations and that construction of a new line within the ROW would therefore also be visible. Since Mission visitors already experience the existing line as a visual impact, however, the addition of a new line within the existing ROW would be unlikely to further alter or impair the view-scape, assuming the existing tree buffer was not altered.

4.3 Impact on Cultural Resources

Although this project is currently being conducted without the need for federal funding, permitting or assistance, 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.

As noted in Section 4.2.3, CPS Energy's existing transmission ROW crosses approximately 535 feet of land that was recently obtained by the NPS to support the UNESCO Mission San Juan Capistrano site's landscape and viewshed integrity. Under the proposed project alternative, CPS Energy would construct the new transmission line within the existing ROW within these NPS lands. No additional ROW would be requested; therefore, Section 106 of the NHPA does not apply to this undertaking.

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

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 Southton 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 C.

Federal Agencies

- FAA
- NRCS Texas State Office
- EPA
- FEMA
- USFWS
- USACE - Fort Worth District
- Public Affairs Office, Randolph Air Force Base

Federal Delegation

- The Honorable Henry Cuellar

State Agencies

- TPWD
- 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 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

Others

- School Board President, East Central Board of Trustees
- School Board Vice-President, East Central Board of Trustees
- School Board Secretary, East Central Board of Trustees
- Mr. Dell Braziel, School Board Member, East Central Board of Trustees
- Mr. Victor Garza, School Board Member, East Central Board of Trustees
- Mr. John Massengale, School Board Member, East Central Board of Trustees
- Mr. James Mulkey, School Board Member, East Central Board of Trustees
- Superintendent, East Central School District

Agency responses are summarized in Table 7. Agencies not listed in Table 7 did not submit a response to the agency letter as of the date of this EA.

Table 7. Agency Responses.

Agency and Point of Contact	Date	Comment Summary
Carlos J. Villarreal, Natural Resources Conservation Service (NRCS), State Office	8/17/16	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.
Tony Robinson, Federal Emergency Management Agency	8/15/16	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.

Agency and Point of Contact	Date	Comment Summary
Claude Harding, San Antonio River Authority (SARA)	9/2/16	Email confirming receipt of agency letter.
Andy Winter, Bexar County environmental engineer	9/6/16	Septic systems and individual code compliance issues but no significant issues in study area.
Army Corps of Engineers	9/14/16	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.
Colleen Swain, World Heritage Organization (WHO)	9/15/16	Request for meeting with CPS Energy to discuss project. Email contains information on world heritage buffer zones, United Nations Educational, Scientific and Cultural Organization (UNESCO) Mission sites, and other project area land uses.
Jonathan Bean, Director of Transportation Planning and Development Texas Department of Transportation	9/15/16	No specific comments other than the fact that obviously if any work is needed within Texas Department of Transportation (TxDOT) right of way (ROW), the appropriate permits and environmental clearance will be required.
Russell Hooten Wildlife Habitat Assessment Program Texas Parks and Wildlife	9/19/2016	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.
Mark Wolfe, Texas Historical Commission	9/19/2016	Requests a 100% pedestrian survey of the project area prior to construction.
Claude Harding, San Antonio River Authority (SARA)	9/27/16	Requests the project avoid historic and recreational assets, including San Antonio Missions World Heritage Sites and designated buffer zone, historic acequias, the San Antonio River, the Medina River Greenway, the Mission Reach Protection Overlay District, and SARA parks. Letter also notes that transmission segment AK crosses SARA's Southton Road spoils site, and that transmission segments AD, H, and BK cross SARA's Trueheart Ranch (proposed future park) and San Antonio River trailhead.
Stephen Souter, Los Compadres	10/6/2016	Requests the project avoid the San Antonio Missions World Heritage Sites and designated buffer zone, historic acequias, and the San Antonio River. Also notes that expansion of the existing transmission ROW and new towers near Mission San Juan could affect the Spanish Colonial Demonstration Farm and nearby volunteer RV park, as well as impact scenic vistas. Letter further states that some transmission segments could cross Trueheart Ranch.
Janet Dietel, San Antonio Conservation Society	10/7/2016	States that the San Antonio Conservation Society holds a preservation and conservation easement on Trueheart Ranch and that the project should not impact the property.
Matthew T. Elverson, San Antonio Office of Historic Preservation (SA-OHP)	10/12/16	Does not identify any previously recorded archaeological sites within the proposed study area, but notes that this area may be within, or is adjacent to, the general battlefield area of the Battle of Rosillo Creek.
Texas General Land Office Glenn Rosenbaum	8/18/16	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.
Michael O'Hara, Federal Aviation Administration (FAA)	8/18/16	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, Notes presence of one public use airport near study area: Stinson Municipal.

Agency and Point of Contact	Date	Comment Summary
National Park Service (NPS)	12/6/16	Notes that expansion of permanent easement not accepted within NPS boundary. Recommends applying for 10-year renewable ROW permit.
City of San Antonio SA-OHP and WHO	11/14/16	Express concern regarding proposed transmission routes that may intersect boundaries of City WHO buffer zone, mission historic district, and river improvement overlay No 6.

CPS Energy hosted an open-house format public meeting on September 29, 2016. Six landowner questionnaires were completed and returned during or after the open house. The primary concern identified by respondents was proximity of facilities to residential structures, schools, churches/cemeteries, and commercial ventures. Comments included the following:

- Substation 4 seems the best location since CPS Energy already owns property
- Substation 2 location would interfere with development of Phase 2 of the San Antonio Wholesale Produce Market
- Concern was expressed that the project would cause upheaval and hardship to local property owners, most of who are lower income individuals

Copies of completed questionnaires are included in Appendix C.

WHO requested a meeting with CPS Energy in their letter dated September 15, 2016. This meeting was held meeting on October 14, 2016, with the NPS also attending. WHO stated its concerns with potential alternatives' incompatibility with the UNESCO Missions World Heritage site development plan and particularly within its locally codified viewshed buffer zone NPS stated that construction within its ROW section south of a preferred Southton substation site would trigger federal involvement and review if any construction occurred outside of the existing CPS Energy easement allowances.

CPS Energy had a follow up meeting with WHO, City of San Antonio and NPS on January 4, 2017, to provide further project details, alternative and preferred transmission routes, and the results of a visual analysis at the Mission San Juan Capistrano. The environmental data provided photographs and maps to show the agencies that the route alternatives had been adapted to avoid the Mission San Juan Capistrano UNESCO viewshed buffer zone, to minimize land and public impacts by prioritizing existing ROW and shorter line distances, and verified to NPS that all construction would be limited to their existing ROW easement. Discussions were also held on the economic viability of burying lines along certain sections of ROW.

CPS Energy identified a preferred route and held a second open house on February 8, 2017. No agency or public speakers presented concerns at the meeting. The CPS Energy board members passed a motion to present the preferred alternative to the city council for consideration.

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 8 provides a summary of potential regulatory and environmental permitting requirements for the proposed project.

Table 8. 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	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 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

6.0 PREFERRED SITE SELECTION

CPS Energy evaluated six potential substation sites and 110 potential combinations of substation sites and transmission alignments for the proposed Southton Substation project, based on environmental/land use criteria (as described in Section 2.3). CPS Energy also took into consideration engineering factors, cost, distribution requirements, operation and maintenance factors, as well as future needs. Detailed tables summarizing this assessment are provided in Appendix D.

Through this evaluation procedure CPS Energy determined that Substation 9 was the preferred substation site. In evaluating transmission routes to serve this site, CPS Energy identified Route 9-1-1 as the preferred route from substation 9 to Brooks substation from a cost and engineering perspective. Route 9-2-1 was identified as the preferred route from Substation 9 to Braunig switchyard from a cost and engineering perspective (Figure 9). This route was rated fifth in the environmental ranking. The best ranking route to Braunig from the environmental evaluation was Route 9-2-47. A summary comparison of the key differences between these two routes is provided in Table 9. CPS Energy's preferred route has a higher number of residential structures being potentially impacted, as well as a slightly higher percentage of lands with ecological interest or in higher probability areas for unrecorded cultural resources. However, this route also has the benefit of avoiding a known cultural resource (the UNESCO World Heritage site viewshed buffer), being situated predominantly within existing ROW, minimizing new environmental and cultural resources impacts, and being in close proximity to a local school. Therefore, CPS Energy determined that Route 9-2-1 is reasonably equivalent in environmental impacts to 9-2-47, despite scoring lower in the environmental ratings.

Table 9. Environmental Constraint Comparison for Substation 9 Preferred Routes

	9-2-47	9-2-1
LAND USE/INFRASTRUCTURE		
1. Number of habitable structures within 300 feet of site		
1a. Residential structures	3	34
1b. Commercial structures	25	6
2. School within 1,000 feet of site	Yes	No
9. Number of transmission line crossings within site	8	6
Number of other utility areas (solar panel fields)	1	0
AESTHETICS		
15. Is site within foreground visual zone of churches, schools, and cemeteries?	Yes	No
ECOLOGY		
16. Percent of site in upland woodland/brushland*	13	17
17. Percent of site in bottomland/riparian woodland*	5	6
18. Percent of site in potential wetlands (NWI-mapped wetlands)*	1	2
19. Percent of site in prime farmland soils*	27	37
24. Percent of site within 100-year floodplain?*	7	9
27. Number of National Hydrography Dataset (NHD)-mapped streams within site?	7	9
CULTURAL RESOURCES		
28. Number of recorded cultural resources sites within site	1	0
29. Number of recorded cultural resources sites within 1,000 feet of site	1	0
32. Percent of site in areas of high archaeological/historical site potential*	1	2

* Each segment scored as follows: 0 = 0%, 1 = 1-25%, 2 = 26-50%, 3 = 51-75%, 4 = 76-100%

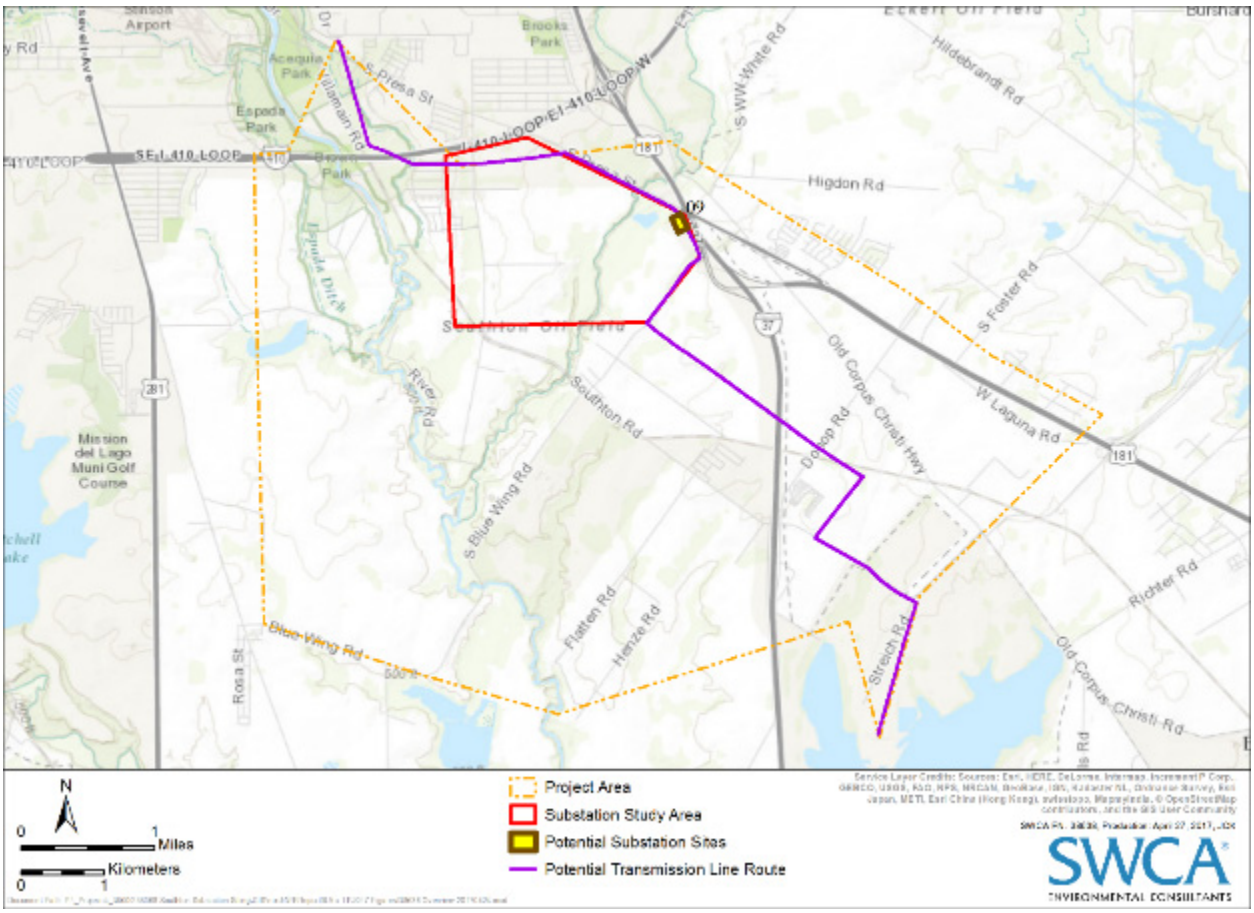

Figure 9. Preferred Southton Substation and transmission route.

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APPENDIX A

SPECIES INFORMATION

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APPENDIX B

PHOTOGRAPHS OF PROJECT AREA

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APPENDIX C

CONSULTATION LETTERS AND QUESTIONNAIRES

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APPENDIX D

CPS ENERGY RANKINGS FOR ALTERNATIVE SUBSTATION AND TRANSMISSION ROUTES