ALTERNATIVE SITE ANALYSIS

FOR CONSTRUCTION OF THE SOUTHLINE SUBSTATION AND TRANSMISSION LINE CUT-IN

ENTERGY TEXAS, INC.
SWG-2022-00346

LIBERTY COUNTY, TEXAS

PREPARED BY
C. H. FENSTERMAKER & ASSOCIATES, L.L.C.

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1.0 PURPOSE AND NEED FOR ACTION

1.1. Introduction

Entergy Texas, Inc. (Entergy) currently serves an area of approximately 230 square miles in Cleveland, Texas and surrounding areas in Liberty County. Entergy is forecasting an overload to their existing Cleveland 138kV Substation due to the rapidly growing Cleveland area. By summer of 2023, peak loads are expected to reach or exceed 114 percent and could possibly increase to 128 percent with additional contract loads for industrial services. To mitigate the forecasted overload at the Cleveland substation, Entergy is proposing to construct the Southline 138kV substation. This would allow Entergy to shift area load from the Cleveland substation and reduce dependence on mobile substations during outages and maintenance. It also allows Entergy to strategically position the new substation within the future high growth area. The proposed substation and transmission line cut-in would be constructed adjacent to an existing Entergy transmission line easement located south of the proposed substation boundary. The proposed project is located southwest of the intersection of Texas State Highway (SH) 105 W and State Highway 105, approximately 2.65 miles west of Cleveland, Texas.

1.2. Proposed Action

The proposed action is permit issuance from the U. S. Army Corps of Engineers (USACE) to Entergy for construction of the proposed substation, detention pond, access road, and transmission line cut-in. Entergy proposes to construct a 360-ft. by 310-ft. (2.56 acres) substation, an access road approximately 2,195-ft. in length by 25-ft. in width, a detention pond approximately 215-ft. in length by 52-ft. in width, and transmission line cut-in. In order to tie-in to the existing transmission line, an approximate 190-ft. by 120-ft. temporary workspace will be required (**Appendix A, Section A**). The proposed substation and transmission line cut-in will be constructed by clearing and grubbing an area, approximately 6.72 acres in size, adjacent to an existing Entergy transmission line easement located south of the proposed substation boundaries. The proposed access road construction will require installation of two culverts 50-ft. in length. Earthen fill and limestone will be hauled in to construct the proposed substation and access road. Excavation of earthen material and installation of rip/rap fill will be required to construct a detention pond.

1.3. Need for Action

The purpose of this project is to construct the Southline Substation to eliminate a forecasted overload on the existing Transformer #1 (T1) at the nearby Cleveland 138kV Substation. The need for action will minimize risk of equipment failure and interruption of service due to overload/undervoltage of equipment capacity to critical customers. The proposed project will provide long term service capacity

and enhanced reliability to the rapidly growing Cleveland area. Growth potential includes residential, facilities, and commercial/industrial operations. A detailed description of the above actions is presented in **Section 2.2** of this document.

1.4. Scope of Environmental Analysis

This alternative analysis was prepared based on 33 CFR § 320.4 - General policies for evaluating permit applications. This alternative analysis is designed to ensure careful consideration of environmental aspects of a proposed action and to make information available to decision-makers and the public before final decisions are made and actions are taken.

The alternative analysis for this proposed project presents a site-specific proposed action and alternatives to meet the desired future condition of Waters of the U.S. within and adjacent to the site.

1.5. Decision to be Made

The decision to be made will be whether to implement the preferred action alternative (preferred option), modify that action alternative, or select another alternative action (including the no-action alternative). Additionally, a determination will be made as to whether the proposed action or alternative will significantly affect the environment.

1.6. Timing

Construction activities would begin once the USACE permit authorization is issued. The anticipated construction time for the entire project would be approximately eight months. Construction activities, at a minimum, would occur eight hours per day, five to six days a week.

1.7. Permits and Notifications

Activities resulting in the excavation and/or filling of waters of the United States, including wetlands, are regulated under Section 404 of the Clean Water Act (CWA) and by Executive Order (EO) 11990, *Protection of Wetlands*. The U. S. Army Corps of Engineers (USACE) administers the permit program associated with Section 404. The USACE issues permits for impacts to waters of the United States. Entergy is pursuing an Individual Permit (Standard Permit) with the Corps of Engineers, Galveston District.

The proposed action will require a CWA §401 Water Quality Certification (WQC) under a Tier I (small) project. Anticipated impacts to waters of the United States are less than three acres. Entergy will submit a TCEQ Notice of Intent for stormwater discharges associated with construction activities under the General

Permit to Discharge under the Texas Pollutant Discharge Elimination System (TPDES) No. TXR150000. A stormwater pollution prevention plan (SWPPP) will be developed for the proposed project site.

Activities occurring within the Texas Department of Transportation (TxDOT) right-of-way (ROW) will require a ROW construction permit. Entergy will pursue a permit to construct an access driveway on state highway facilities for the proposed substation access located on TX State Highway 105.

2.0 ALTERNATIVES CONSIDERED

2.1. Alternatives Development

The purpose and need for the proposed action are examined and documented in Section 1.3. Alternatives were developed to respond to issues identified by the USACE as discussed in Section 1.5.

Overall Substation Selection

Numerous criteria must be considered in order to properly and legally place the substation. Criteria such as landowner cooperation and willingness to sell property, environmental concerns, proximity to large and critical customers, existing transmission lines and roadways, Public Utility Commission of Texas (PUCT) selection of transmission route if a Certificate of Convenience and Necessity (CCN) is required, Entergy's service boundary, and existing Mutually Supportive Substation Grouping (MSSG) and feeder exit accessibility and design all have to be considered for placement of the substation.

The development plan for this action is to focus on the need to eliminate the expected overload on the Cleveland T1 transformer and contingency load at risk for the loss of either Cleveland transformers T1 or T5. Entergy strategically selected the location based on the willingness of landowner cooperation and property purchase, environmental concerns, proximity to the existing transmission line and MSSG, and distribution feeder and accessibility for maintenance. Entergy will construct the substation, access road, and transmission line cut-in in the most efficient and environmentally friendly manner possible.

Entergy identified an area within their Cleveland transmission line network for development of the substation which would minimize and provide contingency to address forecasted overload and expected future load growth in Cleveland, TX. The central area (off-site alternatives, preferred option, and on-site alternative) are located south along TX SH-105 adjacent to an existing transmission line right-of-way. The preferred and on-site option are within a tract of land with undeveloped bottomland forest with a transecting existing transmission line ROW. One off-site alternative is located west of the preferred option on an adjacent tract of land

managed as native pastureland. The secondary off-site alternative is located south of TX SH 105 W approximately 0.80 miles west from the intersection of SH 105 and is situated on undeveloped mixed pine/hardwood forest with bisecting transmission and pipeline corridors.

Entergy is subject to the rules and laws by the PUCT under the Texas Administrative Code (TAC) Title 16, Part II. Specifically, substantive rules applicable to electric service providers including distribution and transmission utilities are legally required to make every reasonable effort to prevent interruptions of service, reasonable efforts to manage emergencies resulting from failure of service and maintain critical loads for protection of public safety infrastructure and reliability. Entergy located tracts of land within their existing Entergy transmission network near Cleveland, TX where the identified T1 load level is forecasted to reach peak capacity during summer of 2023. Placement opportunities are limited to the following: landowner cooperation and property purchase, Entergy service boundary, proximity of distribution feeder, and use of service capacity to customers. The existing transmission ROW and proximity to load growth drivers in the Cleveland area resulted in limited opportunities for placement of the substation.

Two off-site alternatives, one on-site alternative, a no-action alternative and the preferred option were considered and evaluated (**Appendix A**).

2.2. Description of Alternatives

2.2.1. No Action Alternative:

The “no-action” alternative is required by the NEPA and it serves as the benchmark for other alternatives in order to show change or effect on the environment. Under this alternative, the USACE would not authorize a Section 404 permit and the substation, transmission line cut-in, detention pond, and access road would not be constructed within wetlands. This alternative would deny Entergy the ability to resolve the forecasted overload to existing electrical infrastructure, creating reliability risk, and future load growth in the area. It would also deny the public a valuable resource and ability for Entergy to bolster transmission to avoid disruptions for critical service for community and industrial development.

2.2.2. Alternative 1 (Off Site):

Alternative 1 would require a 279-ft. by 330-ft. substation which would predominantly be placed within an area used as native pastureland. Habitat impacts for construction of the access road, substation, transmission line cut-in and clearing and grading is approximately 5.48 acres. This alternative would cause the permanent loss of wetland functions to 0.82 acres of palustrine scrub-shrub (PSS) wetlands and 0.26 acres of palustrine emergent (PEM) wetlands based on desktop

review of historical imaginary and visual assessment from the adjacent property to the east. It would also require conversion of 0.11 acres of PSS wetlands to PEM wetlands in order to clear and grub an area surrounding the proposed substation for storm resiliency. Additional temporary impacts to 0.27 acres of PEM wetlands would occur for transmission line cut-in installation. Portions of the site have vegetative communities similar to the adjacent preferred site option. This alternative would be optimal due to road proximity and proximity to an existing transmission line right-of-way.

This alternative would have lesser adverse impacts to Waters of the U.S. compared to Alternatives 3 and 4 (preferred option). However, Entergy was not successful in negotiating a property purchase with the landowner. This alternative is eliminated due to a lack of landowner cooperation to sell property for the proposed project. The alternative location can be referenced in **Appendix A, Section B**.

2.2.3. Alternative 2 (Off Site):

Alternative 2 would also require a 279-ft. by 330-ft. substation site with a new access road off existing SH 105 W. The proposed transmission line cut-in would traverse north and tie into an existing transmission line ROW. Based on aerial review and data generated from the U. S. Fish & Wildlife Service (USFWS) National Wetlands Inventory (NWI), this surface location does not appear to impact Waters of the U.S. (**Appendix A, Section C**). Additionally, Entergy would be required to build the proposed access road across an existing pipeline ROW which could lead to potential stress to existing pipelines.

This alternate location would be the least damaging practical alternative due to potential avoidance of Waters of the U.S. However, Entergy was not successful in negotiating a property purchase with the landowner. This alternative is eliminated due to a lack of landowner cooperation to sell property for the proposed project.

2.2.4. Alternative 3 (On Site):

Alternative 3 would also require a 279-ft. by 330-ft. substation which would predominantly be placed within an area of undeveloped bottomland hardwood forest. Habitat impacts for construction of the access road, substation, transmission line cut-in and clearing and grading is approximately 5.88 acres. This alternative would cause the permanent loss of wetland functions to 2.23 acres of palustrine forested (PFO) wetlands and 0.12 acres of palustrine emergent (PEM) wetlands based on combination of desktop review from the USFWS NWI and on-site visual assessment. A wetland delineation was conducted within the existing transmission line ROW and PEM wetlands were identified within the transmission line cut-in area. It would also require conversion of 2.09 acres of PFO wetlands to PEM wetlands in order to clear and grub an area surrounding the proposed substation and access road for storm resiliency. Additional temporary impacts to 0.81 acres of

PEM wetlands would occur for transmission line cut-in installation and construction of the proposed access road. Finally, placement of the substation would cause the loss of functions to a potential stream (Other Water) that transects the substation. Total footage of impacts to this potential stream is approximately 525-ft. This alternative site is located within the same property parcel as the preferred option and is bisected by an existing transmission line ROW. The vegetative community appears to be identical to the northern forested portion of the property.

This alternative site would cause the greatest loss of wetland functions; therefore, this alternative was eliminated as a viable option. The alternative location can be referenced in **Appendix A, Section D**.

2.2.5. Alternative 4 (On Site – Preferred Option):

Alternative 4, preferred option, would require a substation 360-ft. by 310-ft. in size, access road approximately 2,195-ft. by 25-ft., a detention pond 215-ft. by 52-ft. in size, and transmission line cut-in within an area of undeveloped bottomland hardwood forest. Based on field data collected during wetland delineations conducted in December 2021 and February 2022, this alternative would cause the loss of wetland functions to 1.63 acres of PFO wetlands from discharge of fill material in order to construct the substation, detention pond, and access road. The proposed placement of transmission line poles would cause the loss of wetland functions to 0.003 acres of PEM wetlands. The conversion of wetland functions from PFO wetlands to PEM wetlands will occur within the clearing and grubbing area necessary for workspace and storm resilience will equate to 0.38 acres. Additionally, temporary impacts to 0.19 acres of PEM wetlands will occur within the transmission line cut-in workspace and 0.03 acres of Other Waters from installation of access road culverts and temporary workspace. Although unavoidable impacts to wetlands will occur from this alternative, it is the preferred option due to the opportunity for property purchase and accessibility to the existing transmission line ROW.

Placement of the substation, access road, detention pond and transmission line cut-in within the preferred footprint would not constitute the least damaging practicable alternative based on established alternatives. However, Entergy was not allowed the opportunity to purchase property associated with the least damaging practicable alternatives (Alternatives 1 & 2). Based on numerous criteria considered in order to properly and legally place the proposed substation, this alternative would allow Entergy to mitigate the forecasted overload at the Cleveland Substation. Additionally, Alternative 4 was chosen because it has the least amount of wetland impacts on available land that serves the needs of the proposed project. This alternative location can be referenced in **Appendix A, Section E**.

2.3. Mitigation Measures

As part of the §404 permit process, the USACE is required to evaluate all mitigation options. The CEQ regulations define mitigation as:

- Avoiding impacts all together by not taking an action or parts of an action;
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation;
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment, reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and
- Compensating for the impact by replacing or providing substitute resources or environments.

Mitigation measures associated with the proposed action include minimization of impacts and reducing or eliminating the impact over time by maintenance operations.

Impacts were minimized through preferred substation selection. Implementation of BMPs during construction will reduce noise, dust emissions, and erosion, as well as minimize adverse effects to the human and natural environment. Compensatory mitigation for unavoidable impacts within jurisdictional wetlands will be coordinated with USACE and the Internal Review Team. Per 33 CFR 332.4(c)/40 CFR 230.92.4(c), Entergy is proposing to secure credits from an approved mitigation bank, which requires review of components 4 (baseline information) and 5 (determination of credits).

Additionally, Entergy utilized the mitigation rule hierarchy to research potential compensatory mitigation sites within the East Fork San Jacinto River HUC. Based on RIBITS, mitigation bank credits (third party mitigation) are available for in-kind within the East Fork San Jacinto River HUC watershed. Riverine forested biological, chemical, and physical credits are available within the primary watershed.

Approximately 0.38 acres of palustrine forested (PFO) wetlands will be converted to an emergent wetland type, and approximately 1.63 acres of PFO wetlands and 0.003 acres of palustrine emergent (PEM) wetlands will have a permanent loss of wetland functions due deposition of fill material and excavation during construction of the substation, detention pond, access road, and for pole installation at the preferred option location. Conversion impacts to PFO wetlands will result from clearing and grubbing activities within 100-ft. of the substation for storm resilience. The temporary impacts to Other Waters from access road culvert installation and clearing and grubbing activities will equate to 0.03 acres. Loss of functions to Other Waters are not anticipated from culvert installation. The temporary workspace within the existing transmission line cut-in will impact 0.19 acres of PEM wetlands

and will be returned to pre-construction contours and restored by natural re-vegetation upon completion of construction activities. The restored area will be monitored during construction and restoration will be documented to determine success of natural re-vegetation (i.e., regrowth of previously existing grasses and shrubs based on the existing seed source at the site).

With respect to the term "natural restoration" and criteria to judge that this condition has been reached, Entergy is confident that regrowth of previously existing grasses and shrubs is highly likely based on the existing seed source at the site. If the restored area does not have 70% aerial coverage of vegetation, the applicant will coordinate with the USACE on replanting with native grasses.

Palustrine forested wetland habitats within the preferred option were dominated by Loblolly pine (*Pinus taeda*), Red maple (*Acer rubrum*), Water oak (*Quercus nigra*), Sweet bay magnolia (*Magnolia virginiana*), Sweet gum (*Liquidambar styraciflua*), Dwarf palmetto (*Sabal minor*), Possumhaw (*Ilex decidua*), Chinese tallow (*Triadica sebifera*), Wax myrtle (*Morella cerifera*), Redtop panicgrass (*Coleataenia rigidula*), Swamp sunflower (*Helianthus angustifolius*), Climbing dogbane (*Thyrsanthella difformis*), Evening trumpetflower (*Gelsemium sempervirens*), Heller's rosette grass (*Dichanthelium oligosanthes*), American holly (*Ilex opaca*), Winged elm (*Ulmus alata*), Eastern baccharis (*halimifolia*), and Little bluestem *(Schizahyrium scoparium*).

Palustrine emergent wetland habitats within the preferred option were dominated by Dwarf palmetto (*Sabal minor*), Redtop panicum (*Coleataenia rigidula*), Swamp sawgrass (*Cladium mariscus*), Blunt spikerush (*Eleocharis cobtusa*), Needle leaf witch grass (*Dicanthelium aciculare*), Heller's rosette grass (*Dichanthelium oligosanthes*), Yellow nutsedge (*Cyperus esculentus*), Deeprooted sedge (*Cyperus entrerianus),* Eastern baccharis (*Baccharis halimifolia*), Bermuda grass (*Cynodon dactylon),* and Southern dewberry (*Rubus trivialis).*

The Earth Partners have available in-kind credits at Tarkington Bayou Mitigation Bank (TBMB). TBMB is located inside the primary service area of the East Fork San Jacinto River HUC. Entergy will be requesting approval to purchase wetland credits from TBMB for compensatory in-kind mitigation credits for unavoidable loss and conversion of wetland functions to PFO wetlands for placement of the proposed substation, detention pond, and access road. This credit purchase should satisfy the mitigation needs under the in-kind wetland approach for PFO impacts. Upon USACE approval, Entergy proposes a mitigation bank credit purchase with a 1.0 credit multiplier to offset losses to the following:

- PFO Wetlands: TSSW (phy) – 0.8 FCU's, MPAC (Bio) – 1.4 FCU's, RSEC (Chem) – 0.9 FUC's.
- Entergy proposes to purchase 1.4 TSSW, 1.4 MPAC, and 1.4 RSEC FUC's from the TBMB to satisfy mitigation measures which includes loss and

conversion of wetland functions from placement of the substation, detention pond, and access road.

- Entergy is not proposing to mitigate for permanent loss of wetland functions within PEM wetlands (pole installation) since the loss will be less than 1/10 of an acre (0.003 acres).
- Entergy is not proposing to mitigate for temporary impacts to PEM wetlands and Other Waters.

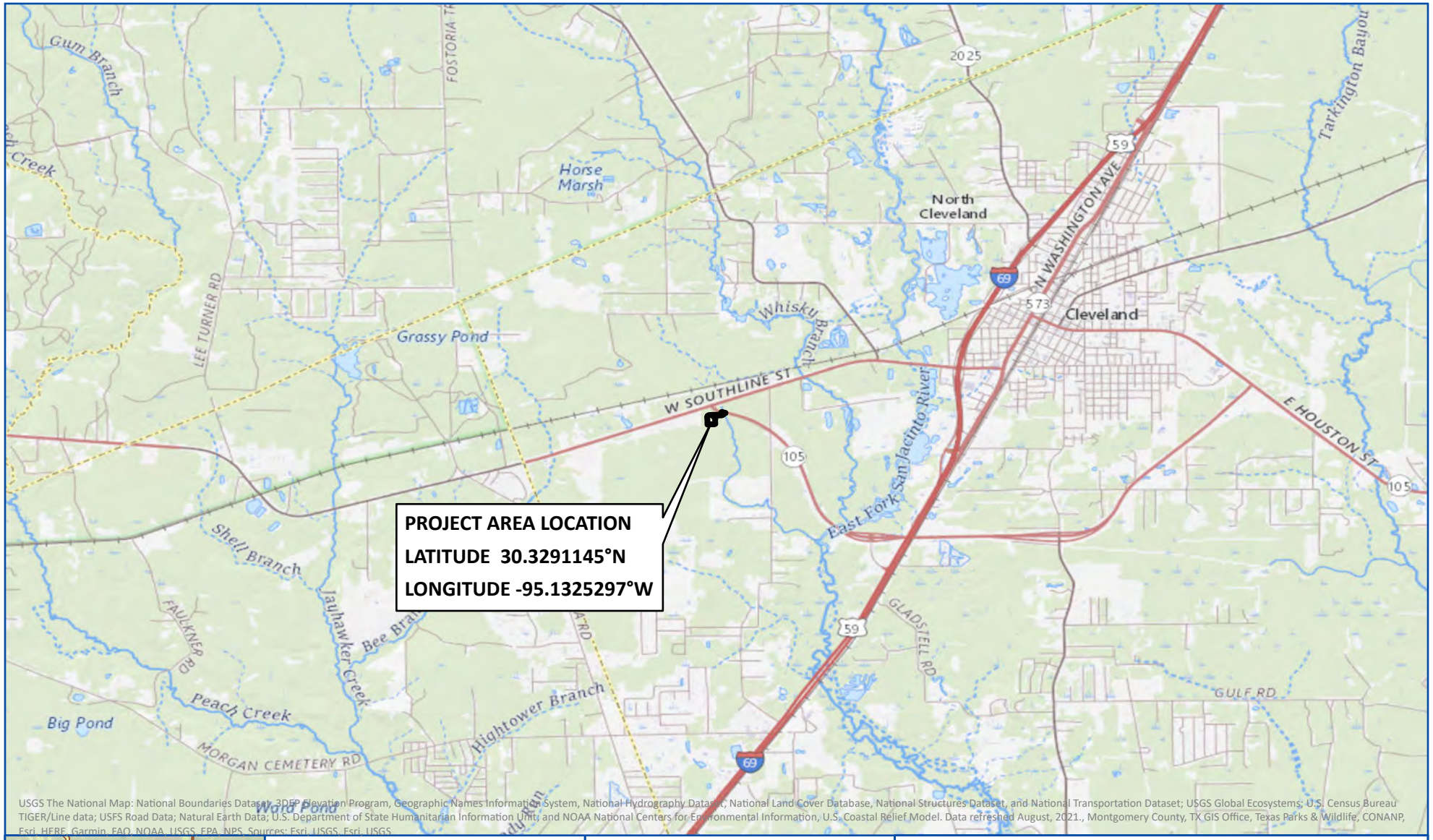
No secondary impacts to downstream flows, hydrology, or water quality are anticipated as a result of the proposed project. Entergy will prepare a Storm Water Pollution Prevention Plan (SWPPP) and obtain a Notice of Intent for stormwater discharges from the Texas Commission on Environmental Quality (TCEQ). The SWPP Plan will identify potential sources of pollution, which may reasonably be expected to affect the quality of storm water runoff from construction of the site. The Plan will describe the implementation of Best Management Practices (BMPs) which will be used to reduce the pollutants in storm water runoff associated with construction activities at the construction site.

2.4. Best Management Practices

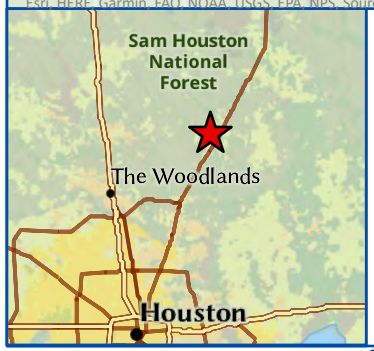
Best Management Practices (BMPs) include both planning and operational measures. Planning measures include pre-project coordination with contractors to identify site specific BMPs, along with regular site inspection to minimize potential problems. Implementation of BMPs will minimize impacts associated with public safety, water quality, hazardous materials storage and handling, air quality, and noise.

3.0 APPENDICES

Section A – Preferred Option Permit Drawings



USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed August, 2021., Montgomery County, TX GIS Office, Texas Parks & Wildlife, CONANP, Esri, HERE, Garmin, FAO, NOAA, USGS, EPA, NPS, Sources: Esri, USGS, Esri, USGS



0 0.5 1 2 Miles

LEGEND

Southline Substation

N

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PERMIT PLATS: VICINITY

SHEET 1 OF 6

ENTERGY TEXAS, INC.

SOUTHLINE SUBSTATION &
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LIBERTY COUNTY, TX

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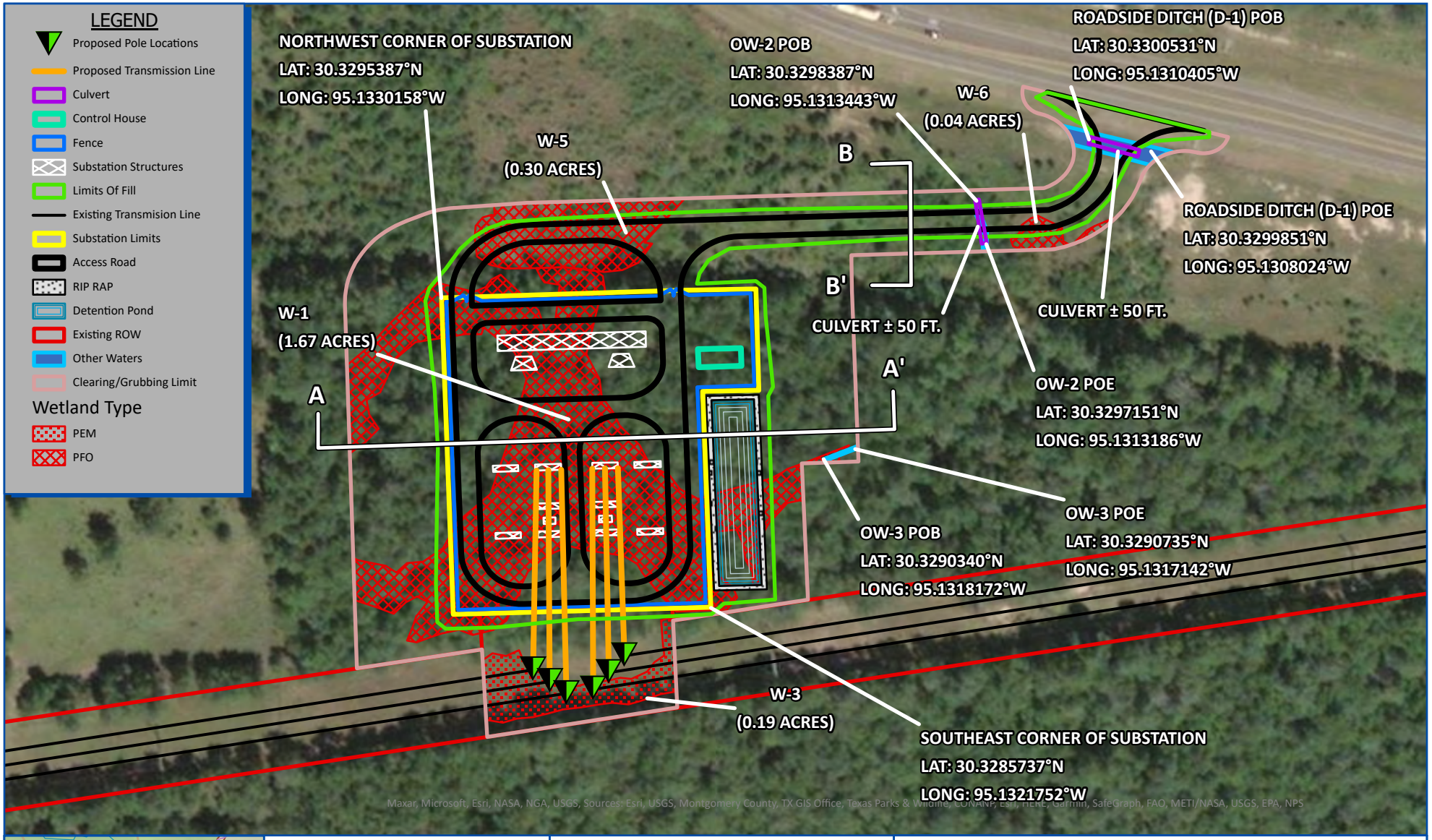
C.H. Fenstermaker & Associates, L.L.C. 135 Regency Sq. Lafayette, LA 70508, Ph. 337-237-2200 Fax. 337-232-3299 www.fenstermaker.com



0 50 100 200 Feet

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PERMIT PLATS: DETAIL

SHEET 2 OF 6

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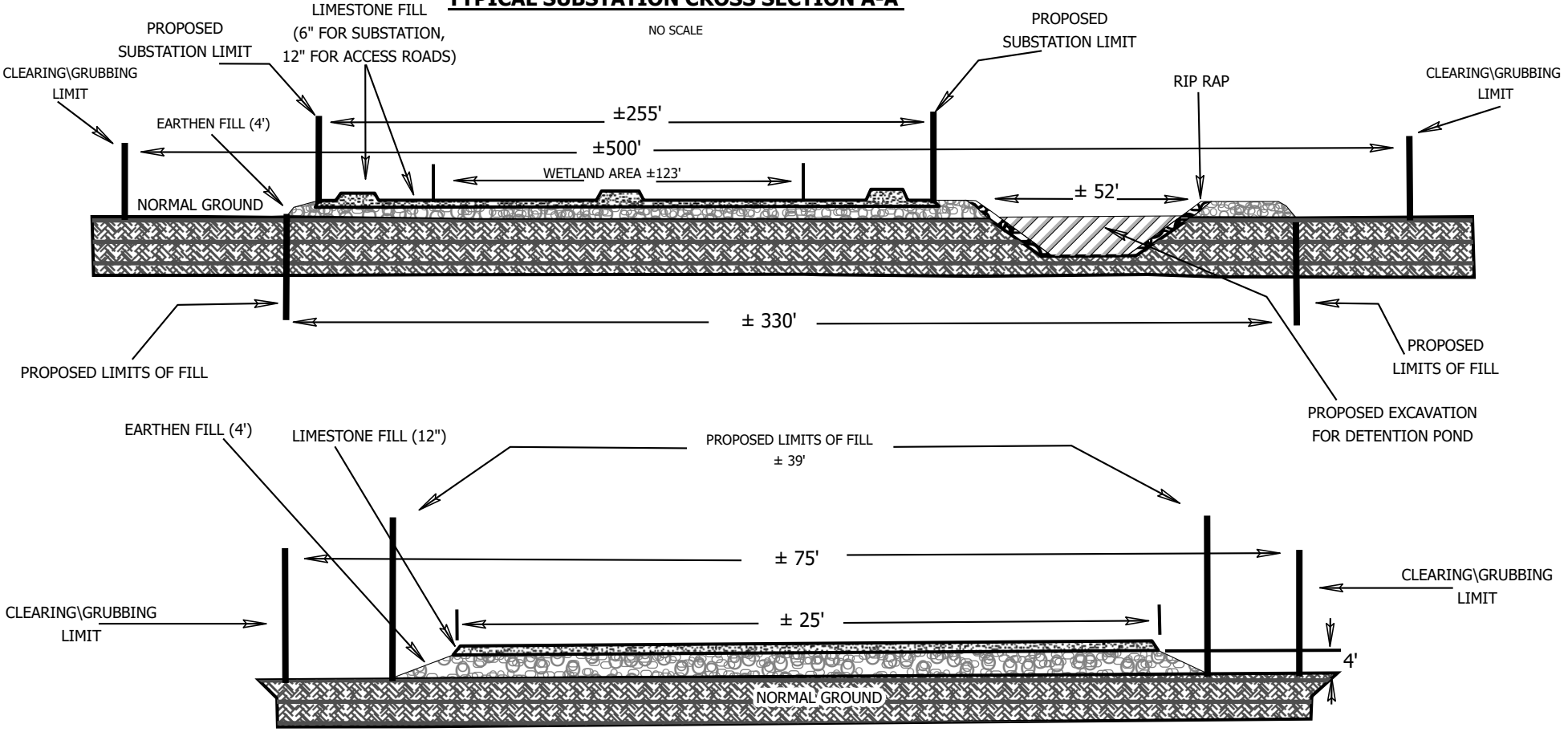
TYPICAL SUBSTATION CROSS SECTION A-A'

NO SCALE



TYPICAL ACCESS ROAD CROSS SECTION B-B'

NO SCALE

NOT TO SCALE

TYPICAL CROSS-SECTION

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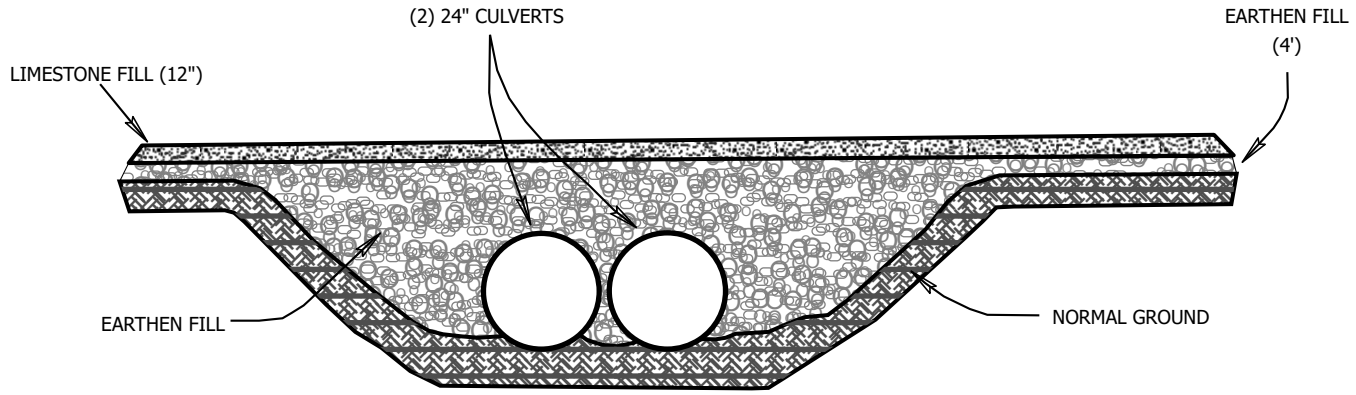
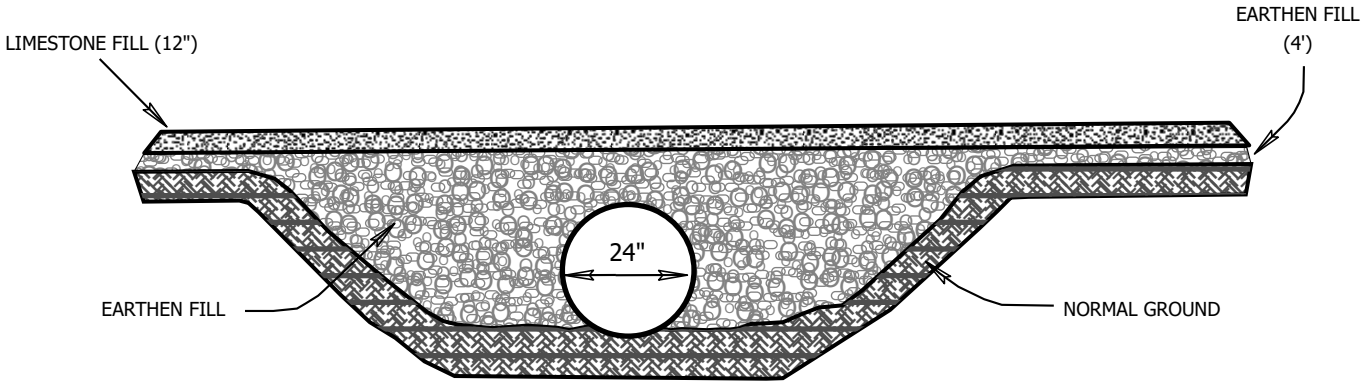


TYPICAL DOUBLE CULVERT INSTALLATION

NO SCALE



TYPICAL SINGLE CULVERT INSTALLATION

NO SCALE

NOT TO SCALE

TYPICAL CULVERT

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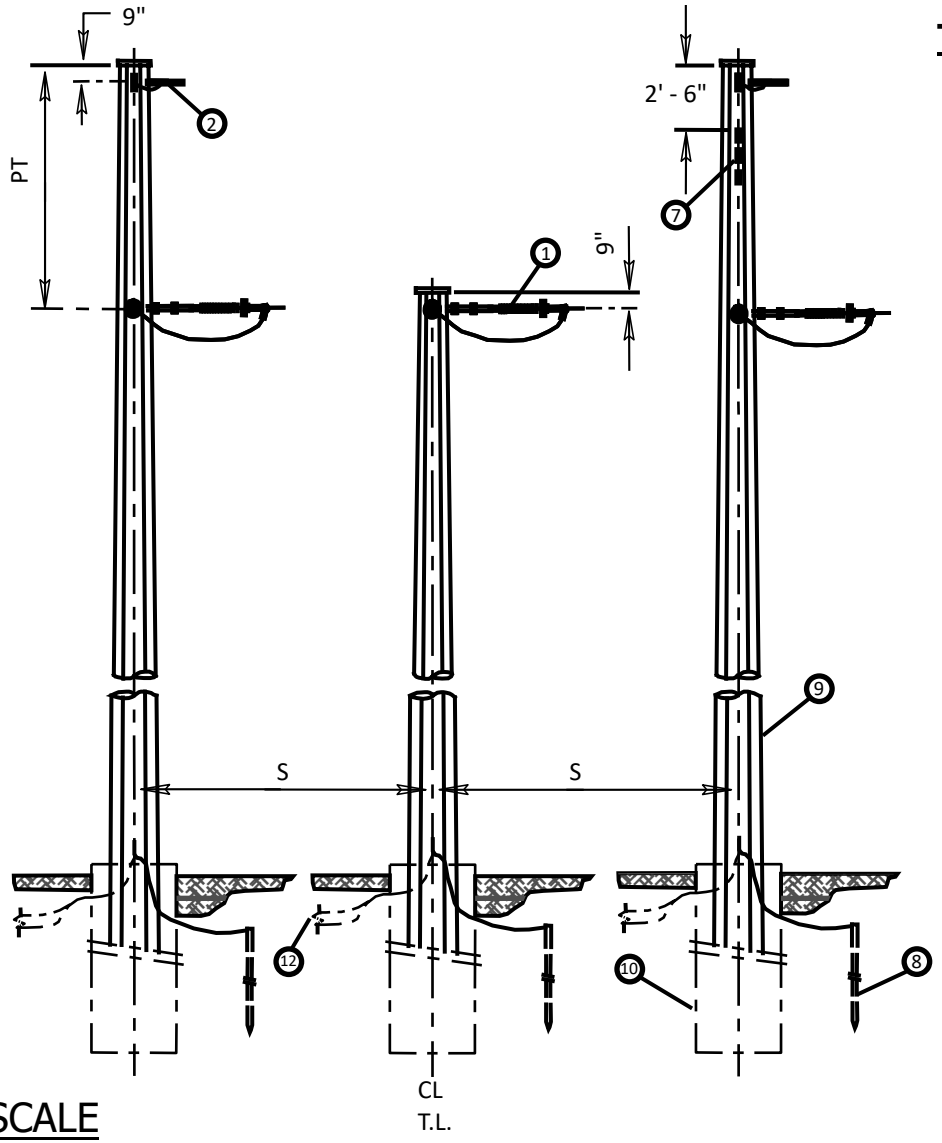
TYPICAL POLE STRUCTURE IN PROPOSED ROW

NO SCALE



NOT TO SCALE

70'-120', SELF SUPPORTED, DE, 3-POLE, NO GUYS
SINGLE CIRCUIT, DEADEND POLYMER, STEEL

ASSEMBLY LIST		
ITEM	QTY.	ASSEMBLY/DRAWING
1	6	INSUL (SEE TABLE 1)
2	4	OHG-DE-XX
REFERENCE DRAWINGS		
7	1	SGN-S
8	-	GND-S-XX
9	-	SEE MFR. DWG.
10	3	FOUNDATION TYPE T.B.D.
11	-	PVO-SHT11, VIEW PV-44
12	-	ANODE-XX (IF REQ.)

VARIABLE DIMENSIONS & REF. DRAWINGS			
	69 kV	161 kV	230 kV
PT	10'-6"	13'-0"	15'-0"
S	20'-0"	25'-0"	30'-0"
INSUL	DEP/TRB-69-XX	DEP/TRB-161-XX	DEP/TRB-230-XX

NOTE: STRUCTURE IS TYPICAL, CONFIGURATION AND HARDWARE MAY VARY

TYPICAL STRUCTURE

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NOTES:
IN ORDER TO ENSURE THE SAFETY OF ALL PARTIES, THE PERMITEE SHALL CONTACT THE TEXAS ONE CALL SYSTEM (1-800-344-8377). A MINIMUM OF 48 HOURS PRIOR TO THE COMMENCEMENT OF ANY EXCAVATION (DIGGING, DREDGING, JETTING, ETC.) OR DEMOLITION ACTIVITY.

THE PERMITEE SHALL ALSO CONTACT OTHER GOVERNMENTAL ENTITIES THAT MAY HAVE OPTED OUT OF THE ONE CALL PROGRAM . THESE GOVERNMENTAL ENTITIES MAY HAVE OPERATIONS LOCATED IN THE AREA OF THIS PROJECT.

NO SURVEY DATA WAS COLLECTED IN THE PREPARATION OF THESE PLANS. INFORMATION USED TO PREPARE THESE PLANS WAS GATHERED FROM THE FOLLOWING SOURCES; CLIENT INFORMATION, INTERNET OR GOVERNMENT WEB SITE DATA.

APPLICANT IS SUBJECT TO ALL APPLICABLE STATE LAWS RELATED TO DAMAGES WHICH ARE DEMONSTRATED TO HAVE BEEN CAUSED BY THIS PROPOSED ACTION.

CALCULATIONS:

TOATAL CLEARING/GRUBBING LIMITS AREA:	6.42 ACRES
TOTAL LIMITS OF FILL AREA:	3.84 ACRES
TOTAL ACCESS ROAD AREA:	1.16 ACRES
TOTAL LIMITS OF SUBSTATION AREA:	2.25 ACRES
TOTAL DETENTION POND AREA:	0.20 ACRES
TOTAL LINEAR FEET OF STREAM IMPACTS FROM CULVERTS:	100 FEET
TOTAL EXCAVATION FOR POLE INSTALLATION:	188.5 CU. YDS. (6 POLES)
TOTAL EXCATION FOR DETENSION POND:	673.9 CU. YDS
TEMPORARY IMPACTS IN PEM WETLANDS:	0.19 ACRES
TOTAL LOSS OF WETLAND FUNCTIONS IN PEM WETLANDS:	0.003 ACRES
TOTAL LOSS OF WETLAND FUNCTIONS IN PFO WETLANDS:	1.63 ACRES
CONVERSION IMPACTS IN PFO WETLANDS FROM CLEARING/GRUBBING:	0.38 ACRES
TEMPORARY IMPACTS TO STREAMS (D-1, OW-2):	0.03 ACRES
NO DEPOSITION OF FILL ANTICIPATED IN OW-3:	0.00 ACRES
TOTAL FILL IN PEM WETLANDS FROM POLE INSTALLATION:	94.3 CU. YDS. (3 POLES)
TOTAL LIMESTONE FILL IN PFO WETLAND FROM ACCESS ROAD:	500.13 CU. YDS.
TOTAL EARTHEN FILL IN PFO WETLAND FROM ACCESS ROAD:	2,000.53 CU. YDS.
TOTAL LIMESTONE FILL IN PFO WETLANDS FROM SUBSTATION:	935.7 CU.YDS.
TOTAL EARTHEN FILL IN PFO WETLANDS FROM SUBSTATION:	7,485.9 CU. YDS.
TOTAL FILL IN PFO WETLANDS FROM RIP RAP IN DETENTION POND:	112.9 CU. YDS
TOTAL FILL IN OTHER WATERS FROM PROPOSED CULVERTS	7.41 CU. YDS.

SOUTHLINE SUBSTATION ROCK AND EARTHEN FILL:

TOTAL LIMESTONE FILL FOR SUBSTATION AND ACCESS ROAD:	3,129.84 CU. YDS.
TOTAL EARTHEN FILL FOR SUBSTATION AND ACCESS ROAD:	27,620.3 CU. YDS

NOTES & CALCULATIONS

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ENTERGY TEXAS, INC.

SOUTHLINE SUBSTATION &
TRANSMISSION LINE CUT-IN

LIBERTY COUNTY, TX

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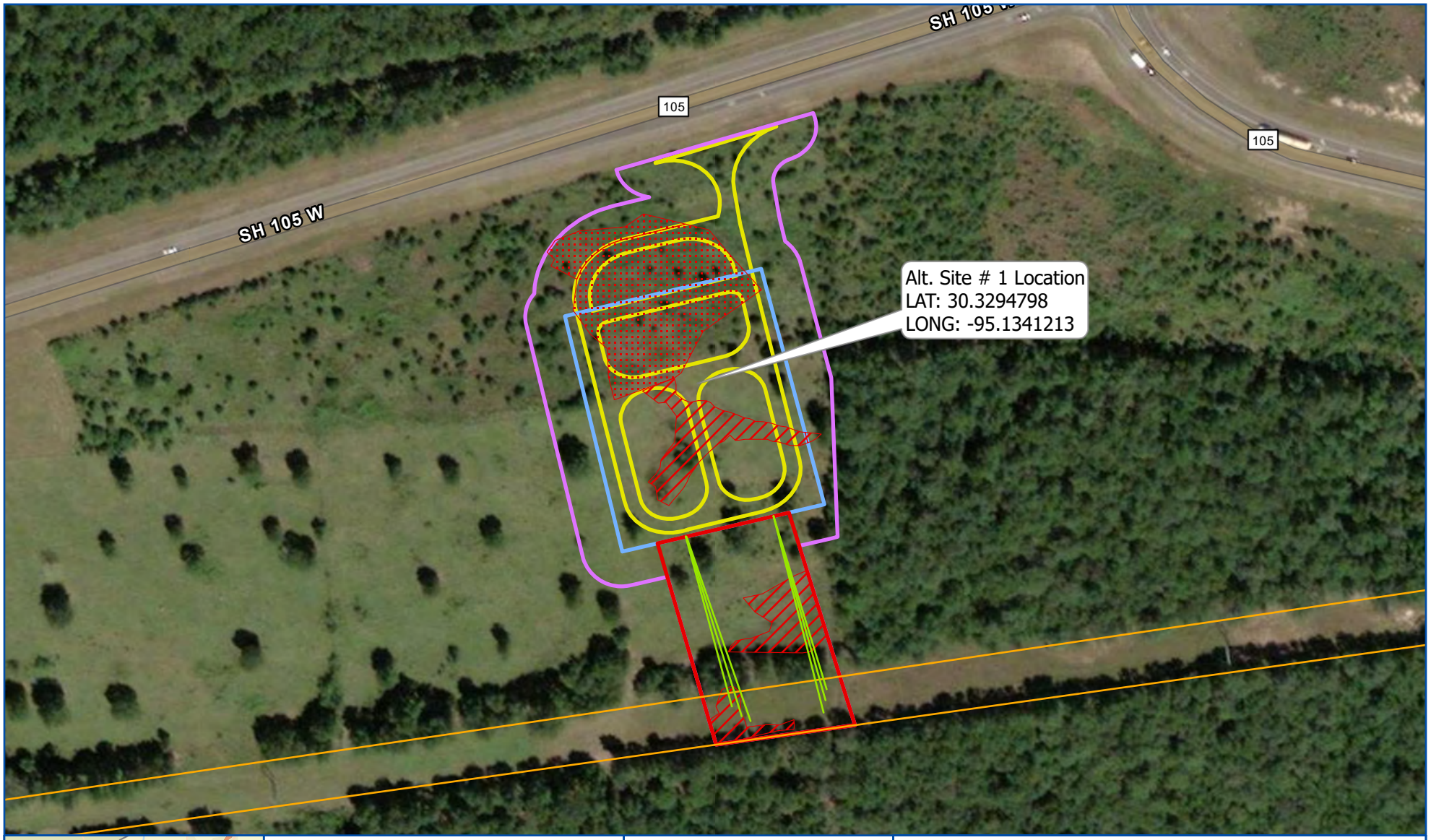
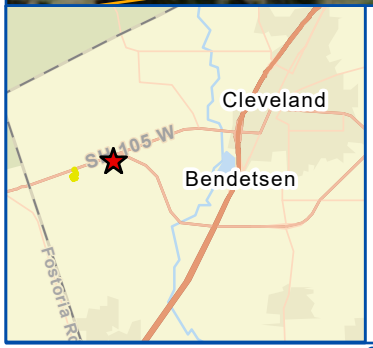
Path: T:\2021\2213920\ENVIRONMENTAL\Permitting\Southline Substation Permit Plats\Southline Substation Permit Plats.aprx

Section B – Alternative 1 Detail





0 125 250 Feet

N
W E
S

Legend

- Transmission Lines
- Existing Transmission Line ROW
- Transmission Line Cut-in
- Clearing/Grubbing Limits (5.48-acres)
- Substation Limits (2.40-acres)
- Access Road (20-ft. width)
- PSS Wetlands (0.82-acres loss, 0.11-acres conversion)
- PEM Wetlands (0.26-acres loss, 0.27-acres temporary)

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ENTERGY TEXAS, INC.

ALTERNATIVE SITE #1 OFF SITE

LIBERTY COUNTY, TEXAS

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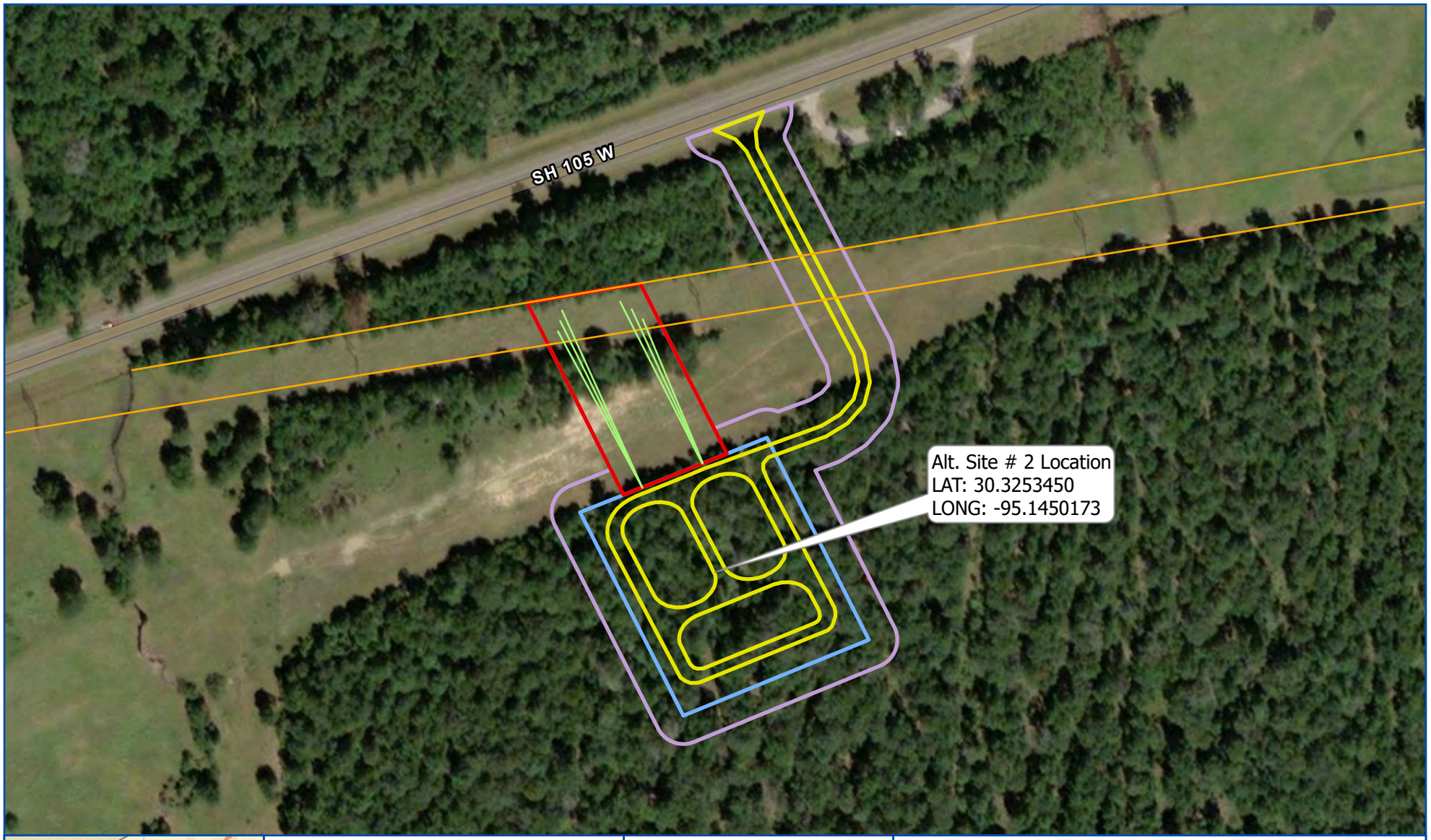
Path: \\AZFILER01\surveydata\2021\2213920\ENVIRONMENTAL\Permitting\Alternative Analysis\Southline Substation Alernatives\Southline Substation Alernatives.aprx

C.H. Fenstermaker & Associates, L.L.C. 135 Regency Sq. Lafayette, LA 70508, Ph. 337-237-2200 Fax. 337-232-3299 www.fenstermaker.com

Section C – Alternative 2 Detail



0 125 250 Feet

N
W E
S

Legend

- Transmission Lines
- Existing Transmission Line ROW
- Transmission Line Cutin
- Access Road (20-ft. width)
- Substation Limits (2.40-acres)
- Clearing/Grubbing Limits (6.25-acres)

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ALTERNATIVE SITE #2 OFF SITE

LIBERTY COUNTY, TEXAS

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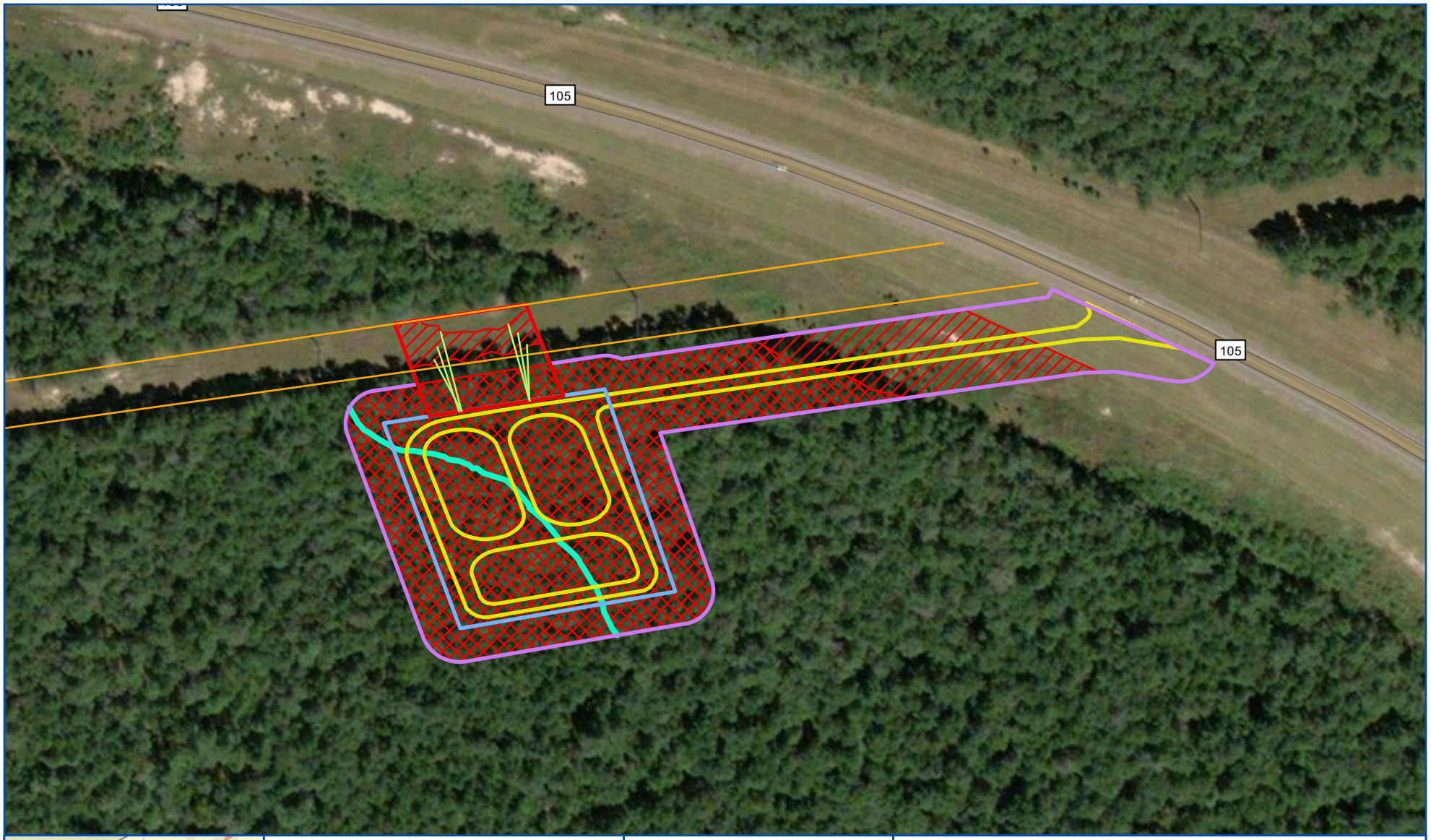
Section D – Alternative 3 Detail



0 125 250 Feet

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W E
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Legend

- Transmission Lines
- Existing Transmission Line ROW
- Transmission Line Cut-in
- Substation Limits (2.40-acres)
- Clearing/Grubbing Limits (5.88-acres)
- Access Road (20-ft. width)
- Other Water (525ft.)
- PFO Wetlands (2.23-acres loss, 2.09-acres conversion)
- PEM Wetlands (0.12-acres loss, 0.81-acres temporary)

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ENTERGY TEXAS, INC.

ALTERNATIVE SITE #3 ON SITE

LIBERTY COUNTY, TEXAS

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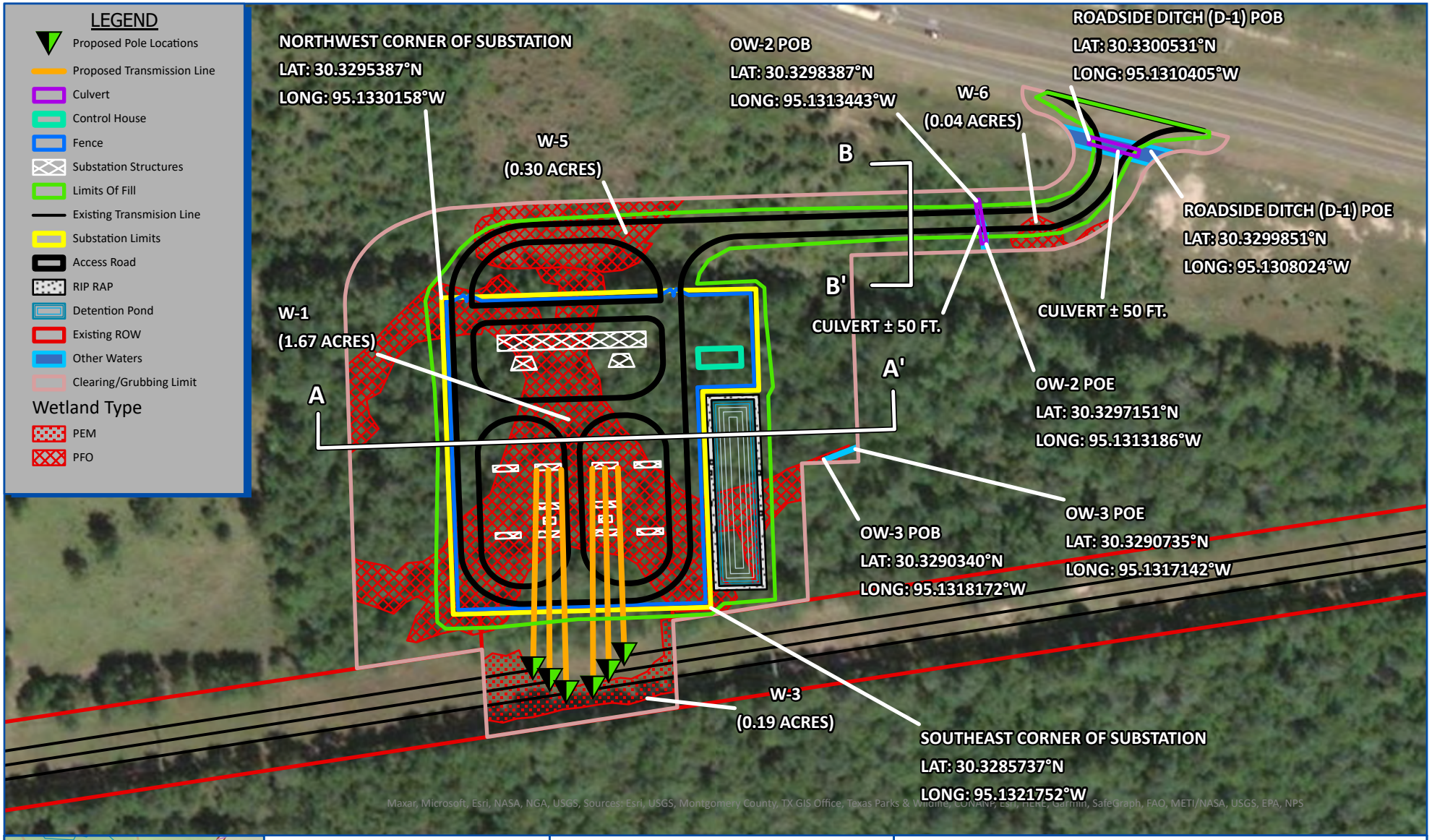
Section E – Alternative 4 Detail



0 50 100 200 Feet

N

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SHEET 4 OF 4

ENTERGY TEXAS, INC.

ALTERNATIVE 4 ON SITE
(PREFERRED OPTION)

LIBERTY COUNTY, TX

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