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BROAD RUN EXPANSION PROJECT

BIOLOGICAL ASSESSMENT

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BIOLOGICAL ASSESSMENT

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ACRONYMS AND ABBREVIATIONS

BA	Biological Assessment
BSA	Biological Survey Area
CFR	Code of Federal Regulations
CIAA	Cumulative Impact Assessment Area
CS 106	Clay City Compressor Station 106
CS 114	Catlettsburg Compressor Station 114
CS 118A	Tyler Mountain Compressor Station 118A
CS 119A	Rocky Fork Compressor Station 119A
CS 563	Pinnacle Compressor Station 563
CS 875	Richmond Compressor Station 875
dbh	diameter at breast height
ESA	Endangered Species Act
FERC or Commission	Federal Energy Regulatory Commission
FERC Plan	FERC Upland Erosion Control, Revegetation, and Maintenance Plan
FERC Procedures	FERC Wetland and Waterbody Construction and Mitigation Procedures
FR	Federal Register
GIS	geographic information system
GPS	Global Positioning System
GSMNP	Great Smoky Mountain National Park
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resources Conservation Service
PMR	Potential Maternity Roost
POWER	POWER Engineers, Inc.
Project	Broad Run Expansion Project
PRT	Potential Roost Tree
RISM Plan	Revegetation and Invasive Species Management Plan
ROW	right-of-way
SPCC Plan	Spill Prevention, Control, and Countermeasures Plan
TDEC	Tennessee Department of Environment and Conservation
Tennessee	Tennessee Gas Pipeline Company, L.L.C.
TNHIP	Tennessee Natural Heritage Inventory Program
USACE	United States Army Corps of Engineers
USDOT	United States Department of Transportation
USFWS or Service	United States Fish and Wildlife Service
USFWS-TN	United States Fish and Wildlife Service Tennessee field office

1.0 INTRODUCTION

Tennessee Gas Pipeline Company, L.L.C. (Tennessee) is filing an application seeking the issuance of a certificate of public convenience and necessity from the Federal Energy Regulatory Commission (FERC or Commission) for the construction and operation of the Broad Run Expansion Project (Project) in the states of West Virginia, Kentucky, and Tennessee. The proposed Project involves:

- The construction of two new compressor stations in Kanawha County, West Virginia, to be known as the Tyler Mountain Compressor Station 118A (CS 118A) and the Rocky Fork Compressor Station 119A (CS 119A).
- The construction of a new compressor station in Madison County, Kentucky, to be known as the Richmond Compressor Station 875 (CS 875).
- The construction of a new compressor station in Davidson County, Tennessee, to be known as the Pinnacle Compressor Station 563 (CS 563).
- Modifications, including abandonment and replacement of certain compression units, system components, and associated facilities, at two existing compressor stations: (a) the Clay City Compressor Station 106 in Powell County, Kentucky (CS 106), and (b) the Catlettsburg Compressor Station 114 in Boyd County, Kentucky (CS 114).

Tennessee proposes to begin construction of the Project facilities in March 2016 and to place the facilities in service by November 1, 2017.

In January 2015, Tennessee requested a review of the proposed Project by the United States Fish and Wildlife Service (USFWS or Service) so that potential impacts to federally threatened or endangered species and migratory birds are adequately identified and addressed. As a result of the early coordination and per the recommendation of the USFWS Tennessee field office (USFWS-TN) the Project is pursuing compensatory mitigation based on the potential habitat for listed bat species within the CS 563 action area (Table 1). Through a formal, programmatic intra-Service consultation, the USFWS-TN has developed a streamlined consultation procedure where entities (federal or non-federal) can enter into a Memorandum of Agreement with the USFWS-TN that allows cooperators to gain flexibility in project timing with regard to the removal of suitable bat habitat.

This Biological Assessment (BA) is developed specifically for the CS 563 component of the Project within Davidson County, Tennessee. Separate informal consultations are ongoing with the West Virginia and Kentucky USFWS field offices. Refer to the FERC filing for a complete description of the sites within West Virginia and Kentucky (Tennessee 2015).

According to FERC Regulations Implementing the National Environmental Policy Act (18 Code of Federal Regulations [CFR] Part 380.13), "...the project sponsor is designated as the Commission's non-Federal representative for purposes of informal consultations with the U.S. Fish and Wildlife Service...under the Endangered Species Act of 1973, as amended (ESA)." As FERC's designated non-Federal representative, Tennessee is preparing the BA. Tennessee contracted POWER Engineers, Inc. (POWER) to help support the FERC application filing, including preparation of the BA.

TABLE 1 SPECIES POTENTIALLY AFFECTED

COMMON NAME	SCIENTIFIC NAME	FEDERAL STATUS	PRESENCE IN PROJECT AREA
Mammals			
Indiana Bat	<i>Myotis sodalis</i>	Endangered	Habitat
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	Threatened	Habitat
Plants			
Price's Potato-bean	<i>Apios priceana</i>	Threatened	Habitat

1.1 Project Area

The CS 563 site is approximately 13 miles north-northwest of Nashville, Tennessee. The Biological Survey Area (BSA) covers a total of 84.6 acres. Hereafter, the BSA will be referred to as the action area. "Action area" means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.

Approximately 26.0 acres will be permanently disturbed and maintained for operation of the facility (Table 2). Construction of CS 563 will temporarily disturb approximately 17.0 acres of land; however, this is a conservative estimate because vegetation clearing will be limited to that necessary to construct the Project. The approximately 41.6 acres outside the disturbance area but within the approximately 84.6-acre action area will be indirectly impacted.

The majority of the action area is undisturbed forested areas characterized as mature, second-growth oak-hickory forest and young, disturbed forest scrub-shrub. A utility corridor (pipeline) crosses the northwestern portion of the site and the associated right-of-way (ROW) is routinely maintained. Other habitats within the action area include young oak-hickory forest and small invasive plant species populations. Maps depicting the proposed permanent and temporary facilities are provided as follows:

- Appendix A1: Project Location Map
- Appendix A2: Topographic-based Site Maps
- Appendix A3: Aerial-based Site Maps
- Appendix A4: Preliminary Plot Plan
- Appendix A5: Potential Roost Trees and Potential Maternity Trees Map

TABLE 2 VEGETATION COMMUNITY IMPACTS

VEGETATION COMMUNITY	ACTION AREA ¹ (ACRES)	TEMP ² (ACRES)	PERM ³ (ACRES)
Developed			
Maintained Right-of-Way	4.3	0.0	2.6
Developed Subtotal	4.3	0.0	2.6
Forested/Scrub-Shrub			
Young Disturbed Forest and Scrub-Shrub	35.1	9.8	15.2
Young Oak-Hickory Forest	13.6	4.2	5.4

VEGETATION COMMUNITY	ACTION AREA ¹ (ACRES)	TEMP ² (ACRES)	PERM ³ (ACRES)
Mature Oak Hickory Forest	31.5	2.9	2.9
Forested/Scrub-Shrub Subtotal⁴	80.2	17.0	23.4
TOTAL⁴	84.6	17.0	26.0

1 Action Area = Total area surveyed.

2 TEMP = Area to be disturbed temporarily.

3 PERM = Area to remain in a disturbed state following construction (i.e., during operation of the facility)

4 Totals may not add up due to rounding.

1.2 Project Description

Tennessee proposes to construct a natural gas-fired compressor station to be known as CS 563 approximately 13 miles north-northwest of Nashville in Davidson County, Tennessee. The station will be located at approximate latitude 36°20'45.36" N and longitude 86°52'5.007" W¹, and will interconnect with three existing Tennessee pipelines.

Tennessee has purchased the property on which CS 563 will be constructed and operated. The CS 563 facility will be surrounded by a six-foot chain link security fence and accessed from the west via Whites Creek Pike (State Highway 65/U.S. Highway 431), which runs adjacent to the site. A new 30-foot-wide asphalt access driveway will be constructed within the site and maintained as part of permanent station operations. A 10-foot-wide gravel path will extend from the fenced compressor station facility to the fenced mainline valve site. A five-strand barbed wire fence will be installed around the perimeter of the property to be purchased by Tennessee.

All construction staging, equipment and material storage, and parking will occur within the proposed compressor station disturbance area. No additional contractor yards, staging or laydown areas, or rail yards are proposed as part of the Project. As needed for construction, Tennessee will obtain clean gravel and fill material from local commercial sources. Construction, demolition, and general debris will be disposed of at existing licensed commercial disposal facilities.

1.2.1 Environmental Compliance

Tennessee will implement an environmental compliance program for the Project. The construction contractor and all Tennessee construction inspection, environmental inspection, and oversight personnel will receive copies of all applicable environmental permits, plans, and procedures. The construction contractor will also be provided with detailed and specific environmental procedures and drawings to ensure compliance with the conditions of the FERC certificate order, Project permits, Tennessee best management practices and mitigation measures, and applicable notification requirements.

Tennessee proposes to implement the May 2013 FERC Upland Erosion Control, Revegetation, and Maintenance Plan (FERC Plan) and the May 2013 FERC Wetland and Waterbody Construction and Mitigation Procedures (FERC Procedures) for the Project. Tennessee has determined that due to extreme topography and the nature of the construction activities to occur within the confined compressor station work areas, certain activities will need to occur closer to the edge of surface water and wetland resources than is allowed by the FERC Procedures. Specifically, site conditions will not permit the 50-foot setback

¹ The State of Tennessee does not use the Public Land Survey System, a land surveying method that provides Section, Township, and Range coordinates commonly used to provide locational data.

for construction work areas or the 100-foot setback for parking. Tennessee has requested Commission approval for a modification to the FERC to allow placement of construction work areas closer than 50 feet and to allow parking within 100 feet of the edge of surface water and wetland resource boundaries. At locations where the setbacks cannot be maintained, Tennessee proposes to install reinforced silt fence to protect resources. Where sensitive resources are located downslope of construction work areas, additional protective measures may be employed, such as installing protective walls, using stream coverings, using special earth moving construction techniques, or other measures as dictated by site conditions.

Throughout construction and restoration, Tennessee will implement the measures contained in the following Best Management Practices (BMP) Plans (Appendix B), in addition to other federal, state, and local permit requirements:

- FERC Plan (May 2013)
- FERC Procedures (May 2013) (with requested modifications, as previously discussed)
- Revegetation and Invasive Species Management (RISM) Plan
- Spill Prevention, Control, and Countermeasures (SPCC) Plan

The RISM contains BMPs and recommendations for temporary and permanent seed mixes, application rates and timing windows provided by the Tennessee Department of Environment and Conservation (TDEC) and the Natural Resources Conservation Service (NRCS).

1.2.2 Compressor Station Construction

Staking, Flagging, and Signage

Prior to beginning any construction-related activities, survey crews will stake the limits of the construction work area. Similarly, sensitive areas to be avoided will be flagged or fenced, as appropriate. Resource buffer zones and/or avoidance areas (e.g., wetlands and threatened and endangered species habitat) and approved access routes will be clearly delineated using easily identifiable temporary signage. Potential Roost Trees (PRTs) and Potential Maternity Roosts (PMRs) within the construction footprint that will not be disturbed will be flagged or fenced for avoidance. Tennessee will also contact the national 811 “one-call” system so that buried utility lines can be identified and flagged by their respective owners.

Clearing and Grading

The proposed compressor station site will be cleared of existing vegetation. Tree felling and vegetation removal will only be performed in those areas necessary for installation of structures, piping, property and security fencing, and the access driveway. As shown on the attached preliminary plot plan (Appendix A4, the buildings and facilities comprising CS 563 have been sited to avoid PRTs and PMRs to the maximum extent possible. However, 21 PRTs and 5 PMRs fall within the construction and permanent operational footprints that will be cleared (Appendix A5).

Construction work areas will be graded as necessary to create level surfaces for the movement of construction vehicles and to prepare the area for the building foundations. Terrain within the compressor station site may require substantive cut and fill.

Where feasible, topsoil will be removed during grading from those areas where permanent facilities will be constructed. Up to 12 inches of available topsoil will be stripped and windrowed. Segregated topsoil will be protected throughout construction and spread across temporary construction work areas during cleanup and restoration.

Temporary erosion and sediment control measures will be installed following initial ground disturbance in accordance with the FERC Plan and Procedures (Appendix B). Typical construction details for erosion and sediment control measures are also provided in Appendix B.

Foundations

Excavation will be performed as necessary to accommodate the reinforced concrete foundation that is required for the new compressor units and buildings. Tennessee anticipates that foundation and piling/pier excavations may be as deep as 30 to 40 feet below finished grade elevation. Forms will be set, rebar installed, and concrete will be poured into the foundation settings. Concrete pours will be randomly sampled to verify compliance with minimum strength requirements. Backfill will be compacted in place, and excess soil will be used elsewhere or distributed around the site.

Equipment and Building Installations

Once the concrete foundations have been completed and determined to meet the design requirements, installation of the buildings and machinery for the compressor station will begin. Typically, the steel frames will be erected, followed by installation of the roofs, interior skin, insulation, and exterior skin. Cutouts for protrusions through the siding (e.g., inlet and exhaust vents) will be flashed to ensure the buildings are weather-tight. Various piping and electrical conduit systems will be connected once the machinery is placed. Electrical wiring will be installed for power and instrumentation.

Compression equipment is typically shipped to the site by truck after construction commences. The compressors will be offloaded and, when ready for installation, positioned on the foundation, leveled, grouted, and secured. Compressor station utilities supporting the operation of the gas compressor and cooling equipment will be housed in modularized, skid-mounted buildings.

Piping Connections

The pipe connections associated with the new compressors and pumps will be flanged, screwed, or welded. All welders and welding procedures will be qualified in accordance with U.S. Department of Transportation (USDOT) requirements (49 CFR 192). All piping system welds will be verified by a non-destructive testing method to ensure compliance with code requirements.

Hydrostatic Testing

Hydrostatic pressure testing will comply with USDOT regulations specified in 49 CFR 192, ASME B31.8, and applicable state and local regulations to verify mechanical integrity and to ensure that it can safely operate at the designed maximum allowable operating pressure. The hydrostatic pressure tests may require temporary pig traps and pipe caps to pressurize pipe segments and test for leaks. The construction contractor will obtain hydrostatic test water discharge permits as required by state and local agencies. The use of hydrostatic test water will comply with state regulations and existing water rights.

Test water will be obtained from a municipal or commercial water source, trucked to the site, and stored in frac tanks. Tennessee estimates that a total of 500,000 gallons of water will be needed to conduct hydrostatic pressure testing. This estimate is based on independent testing of the suction and discharge piping systems.

Test segments will be capped and filled with water, then pressurized for a minimum of eight hours in accordance with USDOT regulations (49 CFR 192). Detected leaks will be repaired and the segment retested, if necessary. Upon completion of a piping system test, the water will be returned to the tanks for

future piping system tests. Upon completion of hydrostatic testing of the piping systems, each line will be de-pressurized and dewatered. Test water will contact only new pipe; no additives are proposed.

Test water will be discharged on site in accordance with applicable National Pollutant Discharge Elimination System (NPDES) or state discharge permits. Discharge points will be selected to avoid stream and wetland features. Energy dissipating devices (e.g., hay bale filters and sediment bags) will be used where necessary to control erosion and sedimentation. The rate of discharge will be monitored and discharge lines will be securely supported and constrained at the discharge end. Typical construction details for erosion and sedimentation control devices and energy dissipating structures are provided in Appendix B. Measures to protect water resources (e.g., erosion and scour) are discussed in Section 7.0.

Once a pipe segment has been successfully tested and dried, the test cap and manifold will be removed and the test segment connected to the pipeline and station facilities.

Cleanup, Restoration, and Stabilization

Except where cut and fill is required, disturbed construction work areas will be graded to match pre-construction contours and drainage patterns. Weather and soil conditions permitting, disturbed work areas will be reseeded in accordance with the RISM Plan (Appendix B). Seedbed preparation, success criteria, and agency recommendations for seed mixes, rates, and dates are also discussed in the RISM Plan. Areas within the permanent compressor station site that are not encumbered with buildings, structures, or gravel/asphalt will be reseeded with a turf seed mix or landscaped.

Permanent erosion control measures, including silt fence and vegetation, will be installed in accordance with the RISM Plan (Appendix B). As needed, temporary erosion controls may be left in place or replaced with interim erosion control measures until sufficient vegetative cover has been re-established. Excess materials will be disposed of at a licensed commercial disposal facility in accordance with applicable laws.

Construction equipment will be removed and all remaining construction debris transported to a licensed commercial disposal facility. Before being placed into service, all controls and safety equipment and systems, including emergency shutdown, relief valves, gas and fire detection, engine over speed, and vibration will be checked and tested.

1.2.3 Special Construction Procedures

Rugged Topography and Steep Terrain

The CS 563 site has significant topography that may require special construction measures. In areas where the slope exceeds 30 percent, a special means of manipulating the construction equipment may be necessary to maintain safety. The preferred method will be “winching” the equipment. This process consists of placing and anchoring a tractor at the top of the slope and using a winch to manipulate the equipment up and down the slope.

Blasting

Tennessee anticipates that blasting may be needed to facilitate excavations in areas where bedrock underlies the site. Additionally, blasting techniques may be used at sites where significant cut and fill is required to create a level working surface. Tennessee’s construction contractor will develop and implement a blasting plan that addresses the procedures to be followed during blasting activities.

Wetland and Waterbody Crossing Procedures

Wetland and surface water features within the site, including erosional drainage and conveyance features that are not subject to United States Army Corps of Engineers (USACE) jurisdiction, will be flagged or fenced for avoidance to the extent possible. Where water features will be impacted, Tennessee will implement applicable measures in the FERC Procedures (Appendix B) and as required by applicable USACE and state permit requirements. Temporary impacts to select streams and erosional drainages/conveyances will occur at locations where engineering, construction, and topographic constraints exist. Following construction, temporary fill materials will be removed and the features will be restored to pre-construction contours. Permanent fill of non-jurisdictional conveyance features will occur in areas where permanent buildings, structures, and gravel/asphalt surfaces will be located.

Construction of CS 563 will require the crossing of one USACE-jurisdictional ephemeral/intermittent stream. It is anticipated that station piping will be installed across the stream using typical open-cut crossing procedures. No wetlands will be crossed; however, a small wetland area (0.01 acre) and three additional USACE-jurisdictional streams (ephemeral and intermittent) will be spanned by a five-strand barbed wire fence to be installed around the perimeter of the property. Except where conveyance features will be permanently filled, stream contours, vegetation, and hydrology will be restored following construction.

1.2.4 Operation and Maintenance Procedures

The Project will be owned, operated, and maintained by Tennessee. All proposed Project facilities will be operated and maintained in compliance with USDOT regulations (49 CFR 192), the General Terms and Conditions of Tennessee's FERC Gas Tariff, as well as applicable conditions of the certificate order for the Project, and federal, state, and local regulations. Facilities will be periodically inspected and maintained.

In accordance with USDOT requirements, Tennessee will follow routine operations and maintenance procedures to ensure safe and reliable operation of Project. Standard Tennessee compressor station operation procedures include such activities as:

- Calibration, maintenance, and inspection of equipment
- Pressure, temperature, and vibration data monitoring
- Traditional landscape maintenance, such as mowing and fertilizer application
- Periodic checks of safety and emergency equipment and cathodic protection systems

In addition to onsite operations and maintenance activities, compressor station sites will be linked to a central control system through a supervisory control and data acquisition system that monitors the Tennessee system 24 hour per day, 365 days per year.

2.0 CONSULTATION HISTORY

Early coordination and pre-consultation with the USFWS-TN was conducted during a series of phone conversations and email correspondence. Per the recommendation of the USFWS-TN, the Project is pursuing compensatory mitigation based on the potential habitat within the Project area. A summary of the coordination and consultation to date with the USFWS-TN is provided in Table 3.

TABLE 3 USFWS TENNESSEE CONTACT SUMMARY

AGENCY	PROJECT COMPONENT	DATE	TYPE OF CONTACT	SUMMARY
USFWS –TN	CS 563	1/22/2015	Letter Correspondence	Tennessee submitted an Informal Section 7 ESA Consultation and Consultation for Migratory Bird Treaty Act Compliance Letter for the Broad Run Expansion Project.
USFWS-TN	CS 563	3/3/2015	Phone	USFWS requested clarification on acreage of disturbance, PRTs, and plants at the CS 563 site.
USFWS-TN	CS 563	3/3/2015	Email Correspondence	USFWS requested additional information on habitat for listed species and survey data.
USFWS-TN	CS 563	3/10/2015	Email Correspondence	Tennessee provided plant data, biological measures and acreage numbers for temporary and permanent construction impacts.
USFWS-TN	CS 563	3/10/2015	Phone	USFWS recommended compensatory mitigation for the Project based on potential impacts to listed bat species habitat. Requested the Project submit a BA.
USFWS-TN	CS 563	3/10/2015	Email Correspondence	USFWS provided contacts for the Tennessee Heritage Program and the mitigation guidance for compensatory mitigation.
USFWS-TN	CS 563	4/2/2015	Email Correspondence	USFWS provided additional guidance on calculating the compensatory mitigation and utilizing x/acre calculations. Recommend including northern long-eared bat in BA due to April 2015 listing. Also confirmed mitigation will cover Indiana bat, northern long-eared bat, and migratory birds

3.0 SURVEY METHODS

3.1 Approach to Data Collection

The first step in the approach to data collection for this BA was to conduct a habitat assessment. This included the identification and characterization of biological resources, including vegetation community types and special-status plant and animal species that are known to occur or have potential to occur in the action area. These survey areas were defined in an effort to have adequate biological resources information compiled that could encompass sufficient area to assess the potential for indirect effects from site preparation activities and construction.

Prior to conducting fieldwork, the biologists reviewed records of known occurrences to identify special-status species that may occur within the action area for each compressor station site. Those records were then compared with lists of federally or state-listed threatened, endangered, or other special-status species. In addition, recent and historical photography, topographic maps for Whites Creek, Tennessee quadrangles, and data from the National Wetland Inventory were reviewed for biological features. Details of all survey work and approaches to collecting data are described below.

3.2 Literature Review

Prior to conducting the biological field surveys, POWER obtained lists of federally threatened, endangered, proposed, and candidate species with the potential to occur in Davidson County, Tennessee from the USFWS. Additionally, information regarding the potential occurrence of federal and state listed special-status species in the vicinity of the CS 563 action area was obtained from the Tennessee Natural Heritage Inventory Program (TNHIP) (TNHIP 2015). A county-wide list of special-status species occurrences for Davidson County, Tennessee was obtained from the TNHIP. To identify existing and potential biological resources present in the vicinity of the proposed project, a geographic information system (GIS) search was performed to map baseline biological resource data (vegetation and water resources).

A total of 13 federally listed species were determined by review of USFWS and TNHIP data to potentially occur within the CS 563 action area (Table 4).

A review of information on each species was conducted to determine known habitats used by each species. The available habitat information for each species was used as a guide by POWER biologists during the biological field surveys.

3.3 Field Surveys

Biological resource surveys were conducted by POWER biologists during August and September 2014. The surveys included:

- Classification and mapping of vegetation communities present on site,
- Location of observed PRTs, PMRs, and shagbark hickory (*Carya ovata*) stands for listed bat species recorded with a Global Positioning System (GPS) unit (Trimble GeoXH mapping-grade GPS unit),
- Locations of invasive, non-native plant species recorded with GPS; and
- An inventory of wildlife observed on site during the field survey.

Surveys were conducted by walking transects throughout the survey area and recording observed species. Transects were spaced to maximize area coverage while maintaining high detection rates for bat roosts. Vegetation communities were classified according to site-specific adaptations of Braun (1950). The botanical inventories of the sites were floristic in nature, meaning that all plants observed were identified to the taxonomic level needed to determine whether they were special-status plant species. Wildlife species were observed either by visual observation, by vocalization, or by sign (e.g., tracks, burrows, scat).

TABLE 4 POTENTIAL FOR FEDERALLY LISTED SPECIES TO OCCUR WITHIN THE CS 563 ACTION AREA

COMMON NAME	SCIENTIFIC NAME	FEDERAL STATUS ¹	STATE STATUS ²	HABITAT DESCRIPTION	HABITAT OBSERVED ³
CRUSTACEANS					
Nashville Crayfish	<i>Orconectes shoupi</i>	LE	E	First order and larger streams, generally with bedrock bottom, under slabrock; endemic to Mill Creek watershed; Davidson and William Counties (TNHIP 2014).	No
INSECTS					
Baker Station Cave Beetle	<i>Pseudanophthalmus insularis</i>	C	N/A	Terrestrial cave obligate; northern Central Basin; known from single historical record in Davidson County (TNHIP 2014).	No
MAMMALS					
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	LT	N/A	Caves or abandoned mines in winter, forests in summer (TNHIP 2014).	Yes
Indiana Bat	<i>Myotis sodalis</i>	LE	N/A	Caves or abandoned mines in winter, forests in summer (TNHIP 2014).	Yes
MOLLUSKS					
Cumberlandian Combshell	<i>Epioblasma brevidens</i>	LE	E	Large creeks to large rivers, in coarse sand or mixtures of gravel, cobble, or rocks; Tennessee and Cumberland river systems (TNHIP 2014).	No
Tan Riffleshell	<i>Epioblasma florentina walkeri</i>	LE	E	Found in river headwaters, in riffles and shoals in sand and gravel substrates; Tennessee and Cumberland river systems (TNHIP 2014).	No
Pink Mucket	<i>Lampsilis abrupta</i>	LE	E	Generally a large river species, preferring sand-gravel or rocky substrates with mod-strong currents; Tennessee & Cumberland river systems (TNHIP 2014).	No
Orangefoot Pimpleback	<i>Plethobasus cooperianus</i>	LE	E	Large rivers in sand-gravel-cobble substrates in riffles and shoals in deep flowing water; Tennessee and Cumberland river systems (TNHIP 2014).	No
PLANTS					
Price's Potato-bean	<i>Apios priceana</i>	LT	E	Openings in rich woods (TNHIP 2014).	Yes
Pyne's Ground-plum	<i>Astragalus bibullatus</i>	LE	E	Ordovician limestone glades (TNHIP 2014).	No
Braun's Rockcress	<i>Boechera perstellata</i>	LE	E	Limestone bluffs (TNHIP 2014).	No
Leafy Prairie-clover	<i>Dalea foliosa</i>	LE	E	Rocky washes in glades (TNHIP 2014).	No
Short's Bladderpod	<i>Physaria globosa</i>	C	E	Limestone talus slopes and cliffs (TNHIP 2014).	No

COMMON NAME	SCIENTIFIC NAME	FEDERAL STATUS ¹	STATE STATUS ²	HABITAT DESCRIPTION	HABITAT OBSERVED ³
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¹ Federal status codes: LE = Endangered; PE = Proposed Endangered; PT = Proposed Threatened; D3C = Delisted taxon, recovered; C = Candidate; N/A = Not Applicable. The list for federally listed species potentially occurring in the BSA was obtained at the county level from the USFWS endangered species database (Available at: <http://www.fws.gov/endangered>. Accessed on 8/13/14).

² State status codes: E = Endangered; T = Threatened; S = Special concern; D = Deemed in need of management; PE = Proposed Endangered; PT = Proposed Threatened; N/A = Not Applicable. The list for state listed species potentially occurring at CS 563 was obtained at the county level from the Tennessee Division of Natural Areas Database (Available at: <http://www.tn.gov/environment/natural-areas/data.shtml>. Accessed on 8/13/14).

³ Habitat specifications were determined to be present/not present on site by POWER biologists during the on-site biological investigation.

4.0 SPECIES ACCOUNTS AND STATUS OF SPECIES IN THE ACTION AREA

Based on the field survey results and per the USFWS-TN recommendation the following three species, Indiana bat, northern long-eared bat, and Price's potato-bean are reviewed in detail due to potential habitat within the CS 563 action area.

4.1 Indiana Bat

4.1.1 Regulatory Status

The Indiana bat was originally listed as being in danger of extinction under the Endangered Species Preservation Act of 1966 (32 Federal Register [FR] 4001, March 11, 1967), and is currently listed as endangered under the ESA of 1973, as amended (72 FR 19015 19016).

4.1.2 Critical Habitat

There is no designated critical habitat for this species within the action area (41 (187) FR 41914). The State of Tennessee lies just south of the center of the Indiana bat's range and contains numerous caves and forestlands known to contain and provide habitat for the species. One of the 23 Priority 1 hibernacula identified in the Indiana Bat Draft Recovery Plan (USFWS 2007) lies within Tennessee's state borders. This hibernaculum occurs within the Great Smoky Mountains National Park (GSMNP) system, located in the eastern part of the state (Blount County), approximately 150 miles east of CS 563 (USFWS-TN 2012). Known maternity colonies and evidence of these colonies are scattered through the middle and eastern portions of the state with notable clusters of maternity colonies occurring in and near the GSMNP. Evidence of maternity colonies has been found during the last decade at the Fort Campbell Military Reservation, on the Arnold Air Force Base, and in the Pickett County area near Dale Hollow Reservoir, approximately 98 miles southeast and 90 miles east of CS 563, respectively (USFWS-TN 2012).

4.1.3 Life History and Habitat Requirements

Suitable summer habitat for Indiana bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags ≥ 5 inches [12.7 centimeters] diameter at breast height [dbh]) that have exfoliating bark, cracks, crevices, or hollows), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These old/mature wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of other forested/wooded habitat (USFWS 2015a).

4.1.4 Survey Results

No Indiana bats were observed during field surveys; however 68 PRTs and 7 PMRs were documented within the action area. However, only 21 PRTs and 5 PMRs fall within the temporary construction and permanent operational footprints for CS 563 (Appendix A4 and Appendix A5).

4.2 Northern Long-eared Bat

4.2.1 Regulatory Status

The northern long-eared bat (is currently listed as threatened under the ESA (80 FR 17973 18033).

4.2.2 Critical Habitat

There is no designated critical habitat for this species (USFWS 2015b).

4.2.3 Life History and Habitat Requirements

The northern long-eared bat is found across much of the eastern and north central United States and all Canadian provinces from the Atlantic coast west to the southern Northwest Territories and eastern British Columbia. The species' range includes 37 states. Suitable summer habitat for the northern long-eared bat consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags ≥ 3 inches [7.6 centimeters] dbh that have exfoliating bark, cracks, crevices, and/or cavities), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These old/mature wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit characteristics of suitable roost trees and are within 1,000 feet of other forested/wooded habitat. The northern long-eared bat has also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat. Northern long-eared bats typically occupy their summer habitat from mid-May through mid-August each year and the species may arrive or leave some time before or after this period (USFWS 2015b).

4.2.4 Survey Results

No northern long-eared bats were observed during field surveys. As previously noted, 68 PRTs and 7 PMRs were documented within the action area; however, only 21 PRTs and 5 PMRs fall within the temporary construction and permanent operational footprints for CS 563 (Appendix A4 and Appendix A5).

4.3 Price's Potato-bean

4.3.1 Regulatory Status

The Price's potato-bean is currently listed as threatened under the ESA (55 FR 429 433).

4.3.2 Critical Habitat

No critical habitat rules have been published for the Price's potato-bean (USFWS 2015c).

4.3.3 Life History and Habitat Requirements

Populations occur in open woods and along wood edges in limestone areas, often where bluffs grade into creek or river bottoms. Several populations reportedly extend onto roadside or powerline ROWs (USFWS 2015c). The soils are described as well drained loams on old alluvium or over limestone. Habitat is described as mixed hardwoods (USFWS 2015c).

The Price's potato-bean has been reported at 21 sites in five states; however, approximately 40 percent of these occurrences are no longer extant. Currently, this species is known to have populations at only 13 sites. In the state of Tennessee, the species has been reported in five sites but only three of these have been verified as extant within the past 10 years. A large vigorous population occurs in Marion County where hundreds of plants are scattered on a bluff near a roadside, approximately 98 miles southeast of CS

563. A small but vigorous population (20 to 30 individuals), is located along a creek in Montgomery County (USFWS 2015c) and the population is approximately 16 miles northwest of CS 563.

4.3.4 Survey Results

No Price's potato-bean or other special-status plant species were observed during field surveys.

The TNHIP data did not have records for the Price's potato-bean within 5 miles of the CS 563 action area (TNHIP 2015). Correspondence received from the TNHIP stated that based on the lack of suitable habitat within the Project action area, they do "not anticipate any impacts to rare, threatened, or endangered plant species from this project."

5.0 EFFECTS OF THE PROJECT

5.1 Construction

5.1.1 *Indiana Bat and Northern Long-eared Bat*

Summer Habitat

The direct effect of the Project includes immediate effects on potential Indiana bat and northern long-eared bat habitat. Trees of adequate diameter with cavities, broken branches, and sloughing bark that would be suitable roost trees are present within the clearing limits. Clearing of trees in winter, when the northern long-eared and Indiana bats are in hibernacula, negates the possibility of direct take.

Additionally, roost trees often consist of dead snags, which are an ephemeral resource. Therefore, it is likely that Indiana bats and northern long-eared bats are adapted to the loss of maternity trees and the subsequent search for a new tree. However, elimination of entire forest stands and multiple PRTs may not be equivalent to the loss of single trees, and may result in loss of vital energy reserves during the search for suitable roost trees.

The proposed Project will result in the direct loss of approximately 43 acres of potential Indiana bat and northern long-eared bat habitat. The majority of which (34.6 acres, 82%) is relatively low quality habitat, typified by a low density of PRTs, high mid-story density, low percentage of trees with exfoliating bark, and an existing cleared ROW. In general, this is younger forest. Less than 15 percent of the habitat to be impacted is of high quality (5.8 acres, 13%), or mature oak hickory forest with ≥ 3 inches dbh (Table 2).

In addition to the direct removal of 43 acres of suitable Indiana bat and northern long-eared bat habitat, the Project may affect habitat at a landscape scale, thereby increasing the overall habitat impacts. Fragmentation of forested stands will reduce the amount of habitat available for both bat roosting and foraging. Habitat fragmentation generally leads to an increase in the amount of forest edge habitat and reduces the amount of interior forest habitat available. While certain wildlife species are favored by early-successional habitats produced along forest edge, research indicates that both the Indiana bat and northern long-eared bat are favored by preservation of large blocks of forest (Carter et al. 2005).

Winter Habitat

The USFWS maintains a list of known Indiana bat hibernacula, none of which are in Davidson County. Therefore, no effect to Indiana bat winter habitat is anticipated. There are no hibernacula documented for the northern long-eared bat. Therefore, no effect to northern long-eared bat winter habitat is anticipated.

5.1.2 *Price's Potato-bean*

Direct impacts that could occur include habitat loss or loss of individual plants. Individual plants may be removed during ground-disturbing activities or lost due to foot or vehicular traffic. Ground disturbance may also have impacts on the seed bank, reducing the amount of native seeds or increasing the amount of non-native seeds if soil is introduced to the action area by vehicles.

Project construction may remove habitat that is suitable to support this species. Clearing and grading associated with the compressor station may also result in the alteration of soil conditions, including changes to the topography and drainage of a site such that the capability of the habitat to support this species is impaired.

Many of the potential indirect effects can be categorized as habitat degradation, which could occur through proliferation of non-native plant species, spread of dust onto vegetation within or adjacent to

work areas, and soil compaction, all of which may affect the ability of native plants to survive or occur within affected areas. Roadsides are often prime areas for invasive plants to spread into as passing vehicles can easily transport and deposit seeds to new areas. Construction can also result in the generation of dust due to ground disturbance, excavation, or vehicular traffic.

5.2 Operation and Maintenance

5.2.1 *Indiana Bat and Northern Long-eared Bat*

No adverse impacts to Indiana or northern long-eared bats are expected as a result of the operation and maintenance of the proposed CS 563 site. Both species may use the surrounding area for summer and/or foraging habitat. If it becomes necessary to remove problem trees along the edge of the station footprint, mitigation measures will be employed as outlined for tree removal during construction (refer to Section 7.0). Occasional increased human presence, noise, and dust may occur and result in negligible impacts.

5.2.2 *Price's Potato-bean*

Occasional increased ground disturbance may also have impacts on the seed bank, reducing the amount of native seeds or increasing the amount of non-native seeds if soil is carried to the Project area by operation and maintenance vehicles. These impacts could be at times localized and temporary and at other times more widespread and permanent. Additionally, individual plants may be lost due to foot traffic.

6.0 REASONABLY FORESEEABLE ACTIONS

6.1 Cumulative Effects Evaluation

Cumulative effects are evaluated below for the listed species that may be affected by the Project and surrounding projects. Cumulative effects include the effects of future State, tribal, or private actions that are reasonably certain to occur in the action area. Future federal actions that are unrelated to the Project are not considered in this section because they require separate consultation pursuant to Section 7 of the ESA.

The Cumulative Impact Assessment Area (CIAA) for Project-related impacts to biological resources is defined as the five-mile buffer surrounding the compressor station site. This boundary was determined by researching the individual home ranges and migration corridors for the special-status wildlife species with potential to occur in the Project area (Table 4). Based on the types of plants and animals within the Project area, this buffer is anticipated to account for impacts to most plants' seed dispersion areas, and most animals' migration corridors or individual home ranges. Refer to the FERC filing for descriptions of projects identified within five miles of CS 563 (Tennessee 2015). The geographic extents of these projects in relation to the compressor station site are shown in Appendix C.

The following two projects are within five miles of the CS 563 site but are currently seeking federal permits and therefore not considered for this evaluation:

- Utica Marcellus Texas Pipeline Project
- Abandonment and Capacity Restoration Project

With respect to biological resources, only one project is located within five miles of the Project that will not trigger a federal action and was considered for this evaluation:

- Installation of an emergency generator at an existing radio site

It is reasonable to expect that the project will involve limited vegetation clearing, grading, and other ground-disturbing activities that have the potential to affect fish, wildlife, and vegetation resources within the CIAA.

Although direct impacts to individuals may be limited, indirect impacts may arise from increased human presence, fugitive dust generation, introduction of invasive species, soil and water contamination, and soil compaction. Increased human activity and the presence of heavy equipment, fugitive dust, noise, and construction-related materials and supplies will be temporary and short-term, lasting only for the duration of construction activities.

The proposed Project has the potential to directly impact approximately 42 acres of vegetated habitat; however, this is a conservative estimate because vegetation clearing will be limited to that necessary to construct the Project and not all of the impacts will be permanent. To further minimize direct impacts, temporary disturbance areas will be revegetated following construction (Appendix B). It is reasonable to assume that the radio site project will require minimal vegetation removal and be restricted to the existing radio site. Therefore impacts to bat species as a result of habitat fragmentation and degradation will be low.

A potential impact to existing plant species and populations is the introduction or spread of invasive, non-native species, such as noxious weeds. It is reasonable to assume that the radio site project may be working in areas with existing weed seed banks and/or populations.

7.0 GENERAL PRACTICES AND SPECIFIC MITIGATION MEASURES

Tennessee proposes the following impact minimization and avoidance measures for the Project.

7.1 Wildlife

Best management practices to minimize the potential for injury or death to wildlife include:

- Properly disposing of trash and food debris in secured containers;
- Allowing wildlife that have entered the work area to leave the area on their own;
- Providing environmental awareness training to construction personnel working on the Project;
- Checking for wildlife under vehicles and equipment that have been stationary for more than one hour and each morning prior to moving or operation;
- Checking trenches, excavations, and uncapped pipe segments for wildlife;
- Installing escape ramps at night;
- Complying with posted speed limits;
- Prohibiting firearms or pets at Project work sites;
- Minimizing vegetation clearing to those areas needed to safely and efficiently construct the compressor station facilities; and
- Revegetating disturbed work areas that will not be permanently graveled, paved, or otherwise encumbered by buildings or aboveground infrastructure

7.2 Vegetation

Measures to minimize vegetation-related impacts (in addition to the measures previously identified to minimize impacts on wildlife) include:

- Conducting focused pre-construction surveys during the appropriate blooming period(s) for federally listed threatened or endangered plant species in areas subject to ground-disturbing activities, and avoiding occurrences of these plants to the extent feasible;
- Revegetating disturbed areas within the permanent fenced compressor station facility using a standard turf mix, such as tall fescue;
- Restoring contours and seeding temporary disturbance areas within six working days following final grading (unless otherwise specified by local resource agencies), weather and soil conditions permitting;
- Preparing a seedbed to a depth of three to four inches using appropriate equipment; and
- Adhering to recommended seed mixes, application methods and rates, and timing windows provided by local resource agencies.

Measures to minimize the potential for the introduction and/or spread of invasive non-native species (including noxious weeds) include:

- Ensuring all construction equipment is cleaned prior to beginning work on the Project;
- Requiring the construction contractor to use certified weed-free straw or hay bales for sediment barrier installations and/or mulch;
- Using certified weed-free seed mixes for post-construction revegetation;
- Controlling noxious weeds within the compressor station sites using mechanical or herbicide application; as necessary,
- Adhering to applicable invasive species management practices in accordance with federal, state, and local regulations; and
- Removing excess dirt and mud from equipment and vehicles prior to leaving areas with weed populations.

7.3 Federally Listed Species

Wildlife and vegetation impact minimization and avoidance measures previously discussed will be implemented in addition to mitigation required by the FERC and the USFWS. Additional measures to protect special-status species include:

- Retaining a qualified biologist(s) to conduct general presence/absence surveys within 14 days prior to construction activities;
- Performing daily sweeps for special-status species in and around construction work areas before construction starts;
- Monitoring construction activities and issuing stop-work directives in the event that eminent take of a federally listed species is likely;
- Providing a worker education program for all construction personnel to include identification of listed species and their habitats, required protection measures, reporting requirements, and penalties for noncompliance;
- Establishing and maintaining applicable exclusion zones as needed throughout the duration of construction and restoration;
- Clearing trees and vegetation within the approved clearing window to minimize potential impacts to federally listed bat species (i.e., adhering to a seasonal restriction that prohibits the cutting of trees > 3 inches dbh between April 1 and September 30 during both construction and post-construction vegetation maintenance);
- Limiting clearing of identified PRTs and PMRs to the approved construction work space only (not including PRTs and PMRs that are flagged or fenced for avoidance); and
- Developing and implementing species-specific mitigation measures, as necessary, in consultation with the USFWS.

7.4 Migratory Birds

Wildlife and vegetation impact minimization and avoidance measures previously discussed will be implemented in addition to conservation and protection measures developed in consultation with the FERC, USFWS, and applicable state resource agencies. Measures to protect migratory birds and their habitats include:

- Conducting tree/vegetation clearing outside the nesting season (generally considered to be April 15 to August 1), where feasible, to discourage birds from establishing nests in Project work areas; and
- Conducting pre-construction nest surveys prior to initiating construction activities, unless vegetation clearing has been completed prior to the nesting season.

If migratory bird nests are identified and activities that may disturb migratory bird habitat are unavoidable during the nesting season, protective measures to be implemented may include:

- Notifying the USFWS of the location of the nest(s) and determining appropriate site-specific protection measures, as necessary, in consultation with the USFWS and/or applicable state resource agency;
- Retaining a qualified biologist to monitor active nests and the associated birds' behavior;
- Establishing an appropriate buffer zone around the nest, as necessary, in consultation with the USFWS and/or applicable state resource agency; and

- Halting construction within the designated protective buffer zone until the young have fledged or until further instruction is given by the applicable agency. Personnel vehicles will still be allowed to travel along existing access roads that may fall within the active nest buffer zone.

7.5 Water Resources

Tennessee will implement its SPCC Plan (Appendix B) to protect water resources from accidental spills. Measures to be implemented to minimize potential impacts from accidental spills of fuels, solvents, and lubricants include:

- Training personnel on the proper handling of fuels and other hazardous materials, and appropriate spill cleanup and notification procedures;
- Ensuring all equipment is in good operating condition;
- Inspecting equipment for leaks regularly and repairing identified leaks promptly; and
- Maintaining a 400-foot setback from community and municipal wells and a 200-foot setback from private wells for hazardous materials storage and equipment and vehicle maintenance and refueling activities.

Tennessee will minimize potential impacts from discharges associated with dewatering groundwater from trenches and excavations in accordance with the FERC Procedures (Appendix B). Measures to be implemented to minimize potential impacts from hydrostatic test water discharges include:

- Regulating the discharge rate of water,
- Discharging to an adequately sized settling basin,
- Using energy-dissipation devices to prevent scouring, and
- Complying with all environmental conditions of the state-issued NPDES permit for overland discharges.

In accordance with the FERC Procedures (Appendix B), the following setbacks from surface water and wetland resources will be maintained throughout construction and operation to minimize indirect impacts to water resources from spills, erosion, and sedimentation:

- Construction spoil piles will be set back a minimum of 10 feet.
- No hazardous materials storage, concrete coating, refueling, herbicide application, or pesticide use will occur within 100 feet.

USACE-jurisdictional feature crossings will also be conducted in accordance with the requirements of USACE Nationwide Permit 12 Utility Line Activities and the associated Tennessee Department of Conservation Aquatic Resource Alteration Permit. Measures to protect water resources include:

- Establishing an exclusion area within the construction work area to avoid direct impacts to wetlands,
- Installing erosion and sediment controls prior to initial soil disturbance where required,
- Inspecting and maintaining erosion and sediment controls throughout the duration of construction and restoration,
- Repairing or replacing erosion and sediment controls within 24 hours of identifying deficiencies, and
- Restoring temporary disturbance areas to pre-construction contours and drainage patterns (except where cut and fill is required).

8.0 DETERMINATION OF EFFECT

8.1 Indiana Bat and Northern Long-eared Bat

There are no documented records of occurrences for the Indiana bat or the northern long-eared bat within one mile of the CS 563 action area (TNHIP 2015). Tennessee has committed to the protection of potential Indiana bat and northern long-eared bat habitat associated with construction of CS 563 by (1) minimizing tree clearing within the work area where possible, (2) not clearing identified PRTs and PMRs outside the identified work space, (3) seasonal cutting restrictions, and (4) employing an in-lieu fee mitigation strategy, allowing for a monetary contribution to the Indiana Bat Conservation Fund in order to off-set habitat impacts.

The proposed Project will result in the direct loss of approximately 43 acres of potential summer and/or foraging habitat for the Indiana bat and northern long-eared bat. Therefore we conclude that the project *is likely to adversely affect* the Indiana bat and northern long-eared bat through the loss of potential habitat.

8.2 Price's Potato-bean

There are no records or known populations within Davidson County. If any of these species are encountered during pre-construction focused surveys, all individuals or populations within Project disturbance areas would be marked and avoided to the maximum extent possible. Focused plant surveys will be conducted in July 2015, during the appropriate blooming period. The implementation of mitigation measures would minimize impacts to the Price's potato-bean habitat resulting in a determination that the proposed Project *may affect but is not likely to adversely affect* the Price's potato-bean.

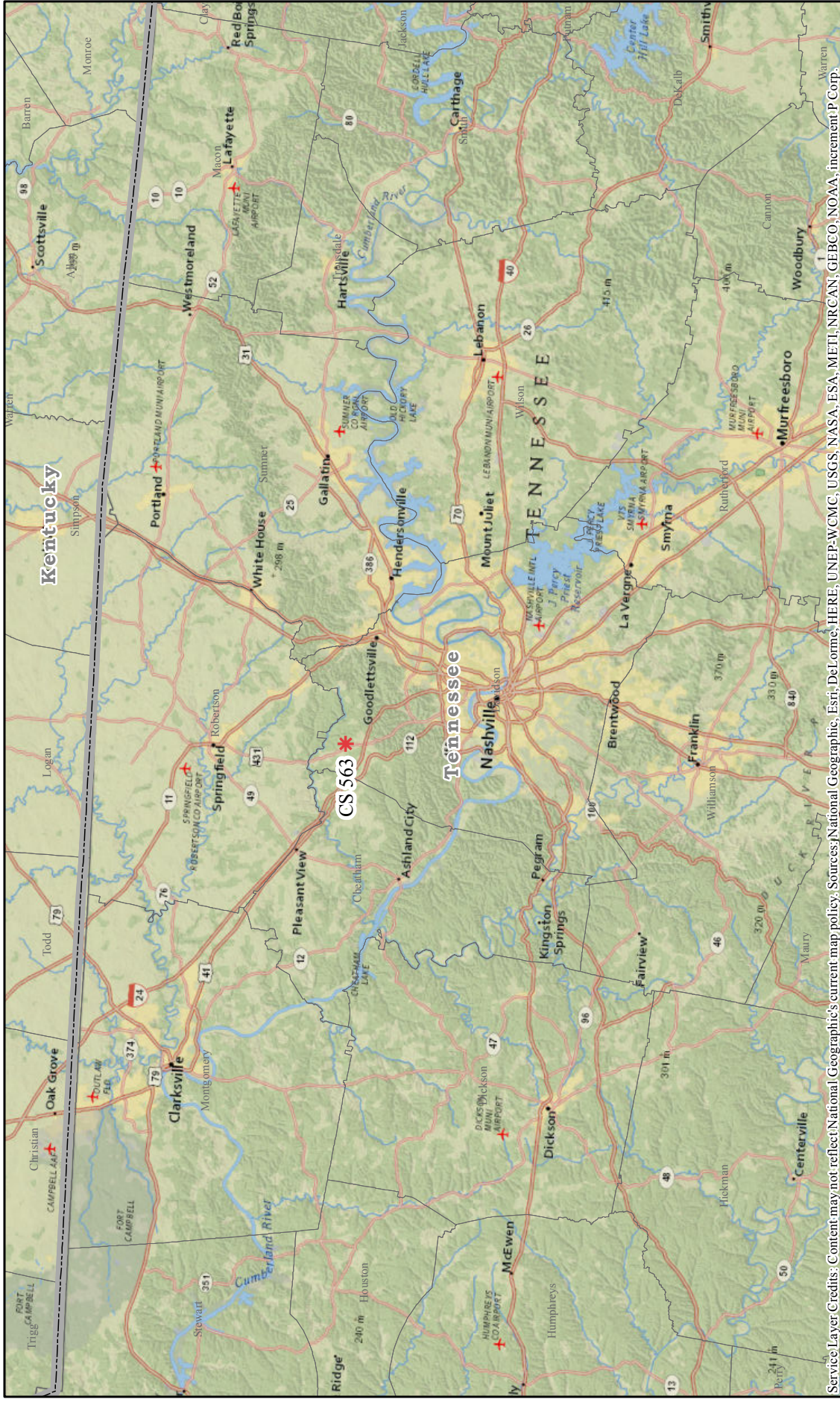
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APPENDIX A MAP BOOKS

- Appendix A1: Project Location Map
- Appendix A2: Topographic-based Site Maps
- Appendix A3: Aerial-based Site Maps
- Appendix A4: Preliminary Plot Plan
- Appendix A5: Potential Roost Trees and Potential Maternity Trees Map



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Appendix A1: Project Location (Tennessee)

Legend

- * Compressor Station Site
- County Boundary
- State Boundary

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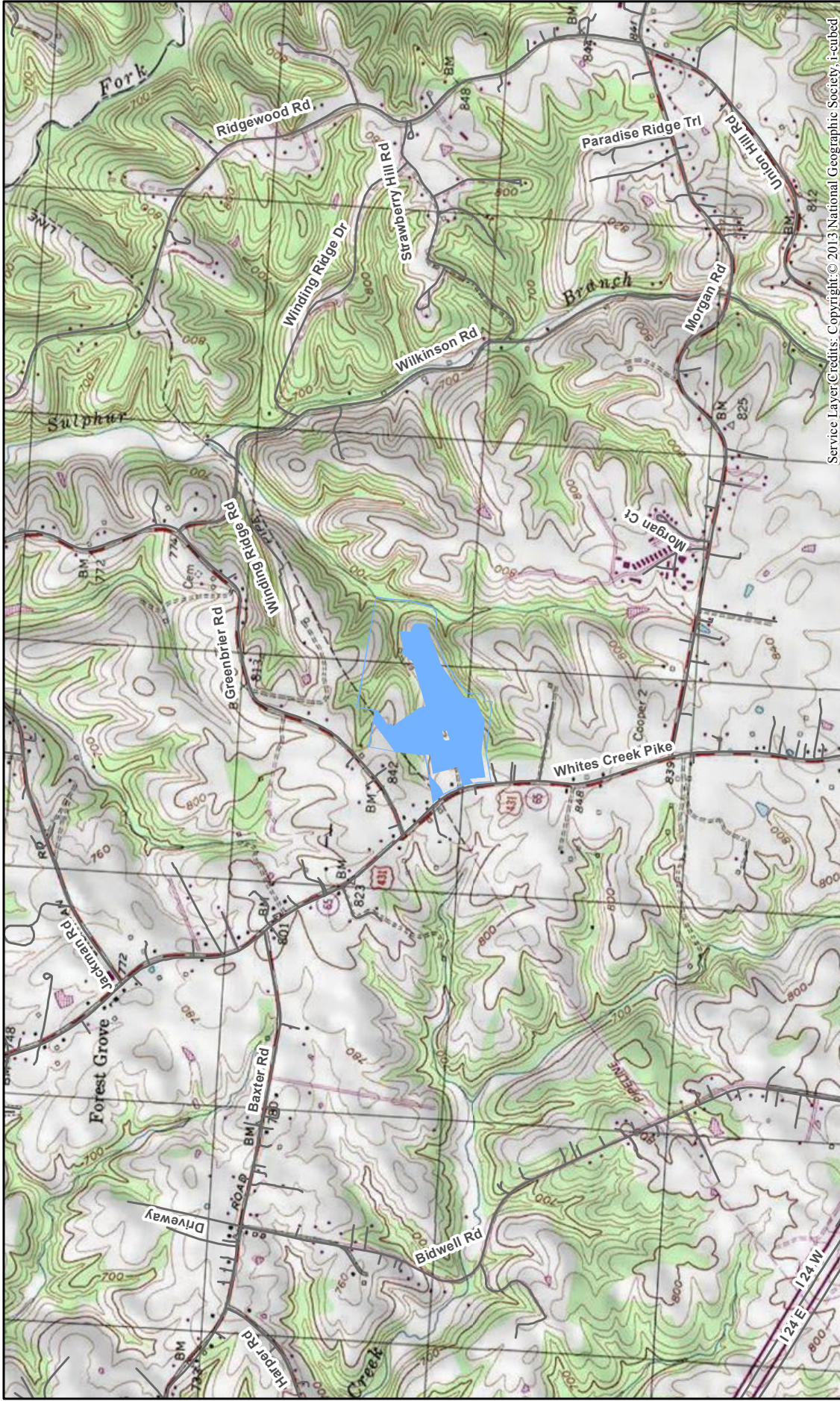
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Date: 1/18/2015

**Broad Run
Expansion Project**

POWER ENGINEERS

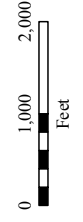
Tennessee Gas Pipeline
L.L. ROYCE COMPANY



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Legend

- Streets
- Construction Footprint



Date: 1/23/2015

**Appendix A2:
Construction Footprint**

CS 563

**Broad Run
Expansion Project**

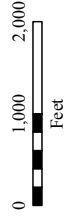




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Legend

-  Streets
-  Operational Footprint



Date: 1/25/2015

**Appendix A2:
Operational Footprint**

CS 563

Broad Run
Expansion Project



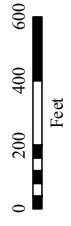
Tennessee Gas Pipeline
Company, L.P.
A BENTLEY SYSTEMS COMPANY



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar

Legend

- Streets
- Construction Footprint



Date: 1/23/2015

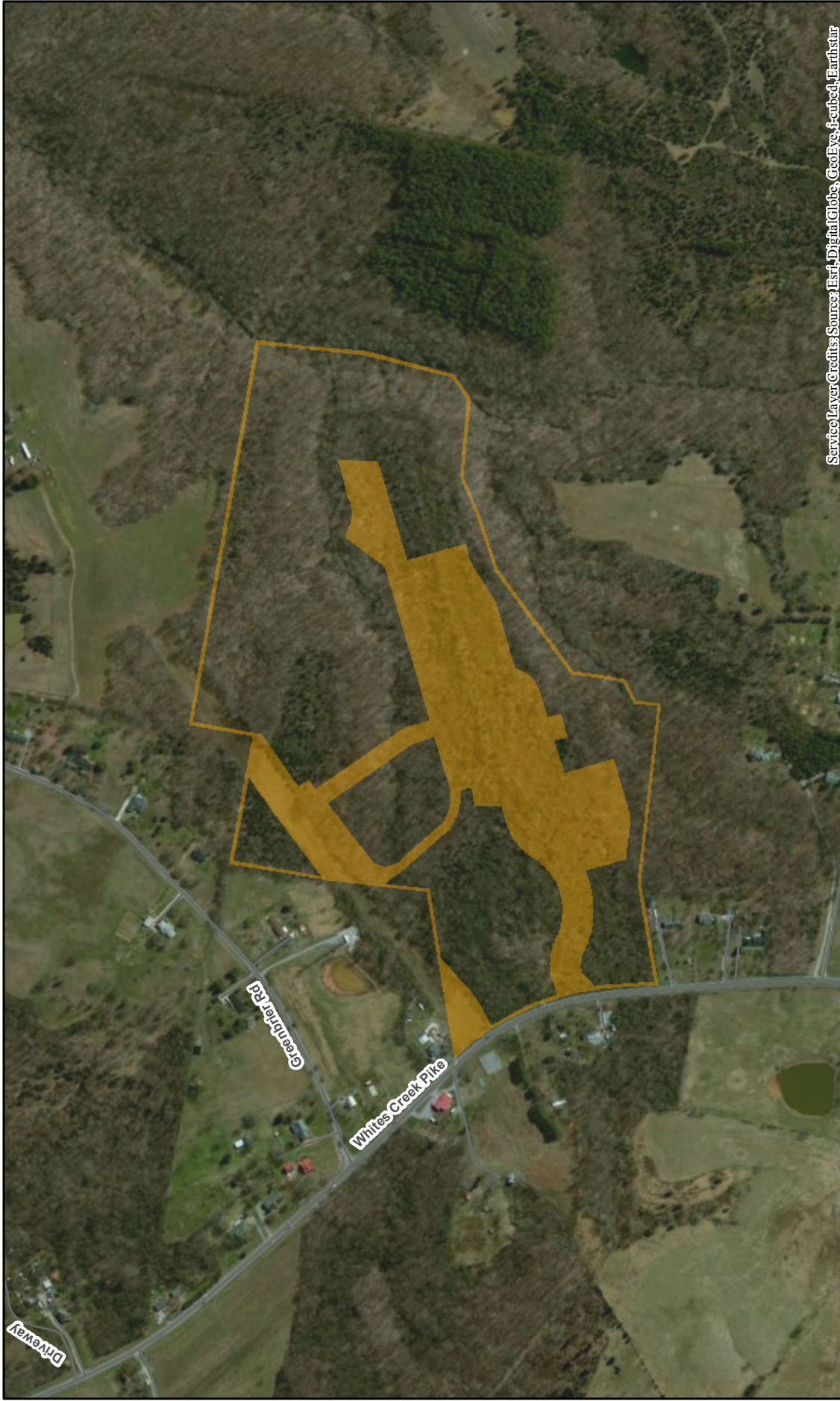
**Appendix A3:
Construction Footprint**

CS 563

**Broad Run
Expansion Project**



Tennessee Gas Pipeline
Company, L.P.
A BAKER HUGHES COMPANY



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, f-cube, Earthstar

Legend

- Streets
- Operational Footprint

**Appendix A3:
Operational Footprint**

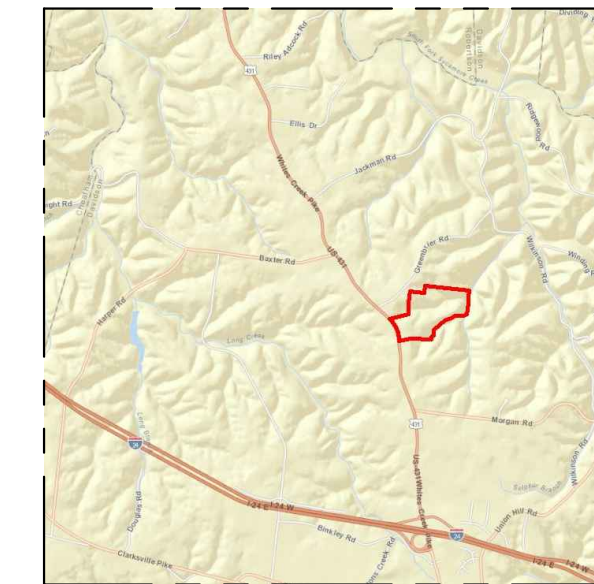
CS 563

**Broad Run
Expansion Project**



Tennessee Gas Pipeline
Company, L.P.
A BAKER HUGHES COMPANY

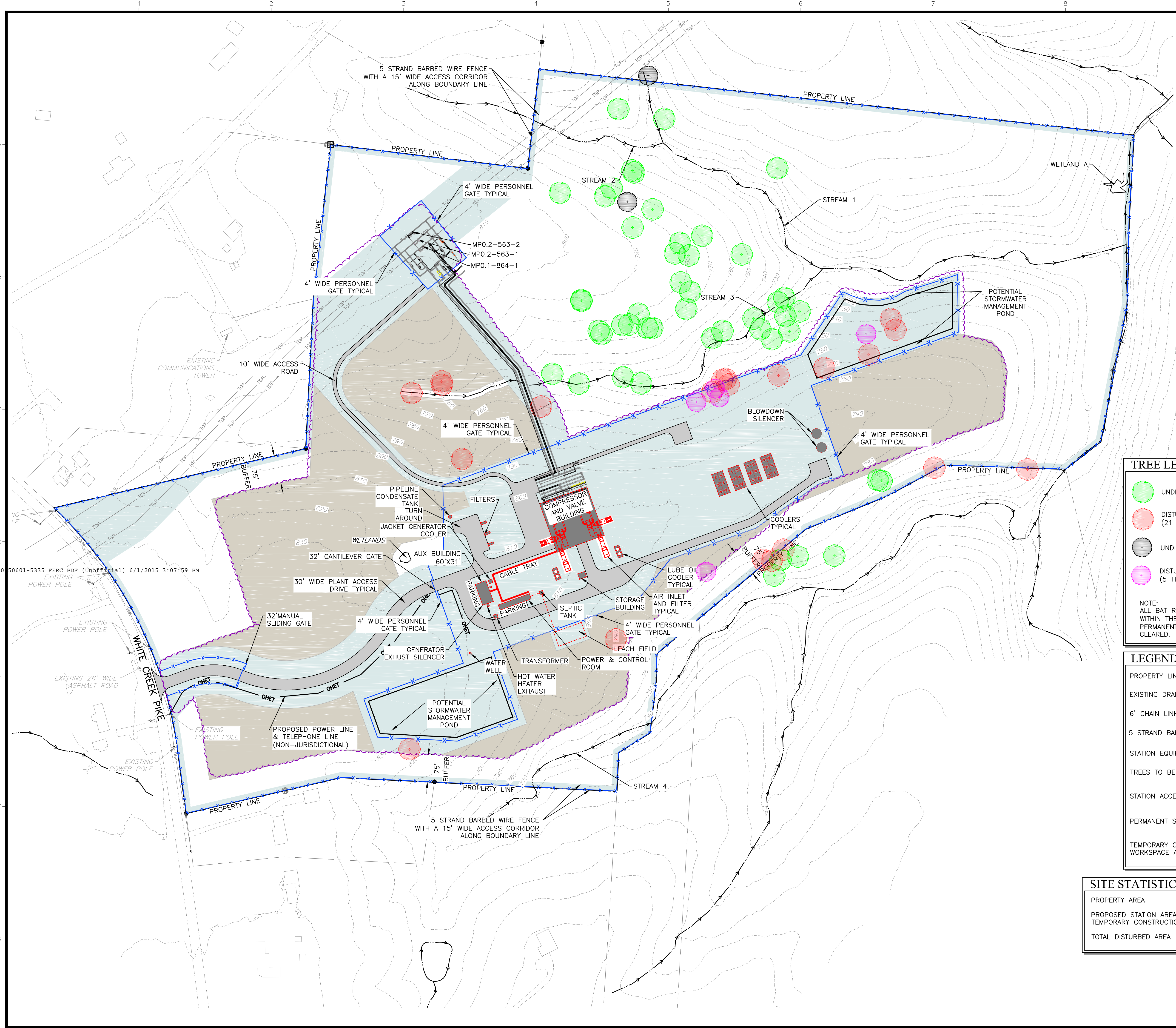
Date: 1/18/2015



VICINITY MAP (NTS)



0 120' 240'
SCALE: 1" = 120'



TREE LEGEND

- UNDISTURBED POTENTIAL BAT ROOST TREE
- DISTURBED POTENTIAL BAT ROOST TREE (21 TREES)
- UNDISTURBED MATERNITY ROOST TREE
- DISTURBED MATERNITY ROOST TREE (5 TREES)

NOTE:
ALL BAT ROOST TREES AND MATERNITY ROOSTS WITHIN THE TEMPORARY/CONSTRUCTION AND PERMANENT/OPERATIONAL FOOTPRINTS WILL BE CLEARED.

LEGEND

- PROPERTY LINE: - - - - -
- EXISTING DRAINAGE FEATURES: - - - - -
- 6' CHAIN LINK FENCE: - X - X -
- 5 STRAND BARBED WIRE: - X - X - X -
- STATION EQUIPMENT: - - - - -
- TREES TO BE REMOVED: - - - - -
- STATION ACCESS ROAD: [Grey Box]
- PERMANENT STATION AREA: [Light Blue Box]
- TEMPORARY CONSTRUCTION WORKSPACE AREA: [Light Brown Box]

SITE STATISTICS

PROPERTY AREA	= 79.9 AC
PROPOSED STATION AREA	= 26.0 AC
TEMPORARY CONSTRUCTION WORKSPACE AREA	= 16.7 AC
TOTAL DISTURBED AREA	= 42.7 AC

REVISIONS

NO.	DATE	BY	DESCRIPTION	PROJ. ID	APPR.
F	5/28	BLJ	ISSUED W/ REVISED PLOT PLAN	68151	DBW
E	3/3	BLJ	ISSUED FOR REVIEW	68151	DBW
D	2/25	BLJ	ISSUED FOR REVIEW	68151	DBW
C	12/11	BLJ	ISSUED FOR REVIEW	68151	DBW
B	11/14	BLJ	ISSUED FOR REVIEW	68151	DBW
A	10/17	BLJ	PRELIMINARY	68151	DBW

Tennessee Gas Pipeline Company, L.L.C.
a Kinder Morgan company

BAT ROOST TREES EXHIBIT
BROAD RUN EXPANSION PROJECT
COMPRESSOR STATION 563
7650 WHITE CREEK PIKE, JOELTON
DAVIDSON COUNTY, TENNESSEE

Division:	CENTRAL	Op. Area:	PORTLAND
State:	TENNESSEE	Co./Par.:	DAVIDSON
Section:	NA	Township:	NA
Range:	NA	Range:	NA
Drafter:	BLJ	Date:	10/3/2014
Project ID:	68151	Type:	ACAD
Scale:	1"=100'	Scale:	1"=100'
File Name:	TO-C563-A1-YA-01.DWG	File Name:	TO-C563-A1-YA-01.DWG
Appr:	DBW	Date:	10/3/2014
Sheet:	1 of 11	Sheet:	1 of 11

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May 28, 2015 7:42AM



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<p>Legend</p> <p>— Streets</p> <p>□ Survey Area Boundary</p>	<p>Biological Resources</p> <p>▲ Delineated Potential Maternity Roost</p> <p>* Delineated Potential Roost Tree</p>	<p>Appendix A5: Biological Resources</p> <p>CS 563</p>
<p>   Date: 12/15/2014 </p>		<p>Broad Run Expansion Project</p> <p>   </p>

APPENDIX B BEST MANAGEMENT PRACTICES PLANS

- FERC Upland Erosion Control, Revegetation, and Maintenance Plan
- FERC Wetland and Waterbody Construction and Mitigation Procedures
- Revegetation and Invasive Species Management Plan
- Spill Prevention, Control, and Countermeasures Plan