Federal Energy Regulatory Commission

Office of Energy Projects

February 2021

Tennessee Gas Pipeline, L.L.C. **Docket No. CP20-493-000**

East 300 Upgrade Project

Environmental Assessment

Washington, DC 20426

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426

OFFICE OF ENERGY PROJECTS

In Reply Refer To:
OEP/DG2E/Gas 4
Tennessee Gas Pipeline, L.L.C.
East 300 Upgrade Project
Docket No. CP20-493-000

TO THE INTERESTED PARTY:

The staff of the Federal Energy Regulatory Commission (FERC or Commission) has prepared an environmental assessment (EA) for the East 300 Upgrade Project, proposed by Tennessee Gas Pipeline Company, L.L.C. (Tennessee) in the above-referenced docket. Tennessee requests authorization to modify two existing compressor stations and construct one new compressor station in Pennsylvania and New Jersey to create 115 million cubic feet per day of firm transportation capacity on Tennessee's existing 300 Line. The facilities are proposed to meet the market need of Tennessee's shipper, Consolidated Edison Company of New York, Inc.

The EA assesses the potential environmental effects of the construction and operation of the East 300 Upgrade Project in accordance with the requirements of the National Environmental Policy Act. The FERC staff concludes that approval of the proposed project, with appropriate mitigating measures, would not constitute a major federal action significantly affecting the quality of the human environment.

The proposed East 300 Upgrade Project includes the following facilities:

- modifications at existing Compressor Station 321 in Susquehanna County, Pennsylvania, including the installation of one Solar Taurus 70 turbine with an International Organization for Standardization (ISO) rating of 11,107 horsepower and auxiliary facilities;
- modifications at existing Compressor Station 325 in Sussex County, New Jersey, including installation of one Solar Titan 130 turbine with an ISO rating of 20,500 horsepower and auxiliary facilities; and
- one new 19,000-horsepower electric-driven Compressor Station 327 and associated auxiliary facilities in Passaic County, New Jersey.

The Commission mailed a copy of the *Notice of Availability* to federal, state, and local government representatives and agencies; elected officials; environmental and public interest groups; Native American tribes; potentially affected landowners and other interested individuals and groups; and newspapers and libraries in the project area. The EA is only available in electronic format. It may be viewed and downloaded from the

FERC's website (www.ferc.gov), on the natural gas environmental documents page (https://www.ferc.gov/industries-data/natural-gas/environment/environmental-documents). In addition, the EA may be accessed by using the eLibrary link on the FERC's website. Click on the eLibrary link (https://elibrary.ferc.gov/eLibrary/search), select "General Search" and enter the docket number in the "Docket Number" field (i.e. CP20-493). Be sure you have selected an appropriate date range. For assistance, please contact FERC Online Support at FercOnlineSupport@ferc.gov or toll free at (866) 208-3676, or for TTY, contact (202) 502-8659.

The EA is not a decision document. It presents Commission staff's independent analysis of the environmental issues for the Commission to consider when addressing the merits of all issues in this proceeding. Any person wishing to comment on the EA may do so. Your comments should focus on the EA's disclosure and discussion of potential environmental effects, reasonable alternatives, and measures to avoid or lessen environmental impacts. The more specific your comments, the more useful they will be. To ensure that the Commission has the opportunity to consider your comments prior to making its decision on this project, it is important that we receive your comments in Washington, DC on or before 5:00 pm Eastern Time on **March 22, 2021.**

For your convenience, there are three methods you can use to file your comments to the Commission. The Commission encourages electronic filing of comments and has staff available to assist you at (866) 208-3676 or FercOnlineSupport@ferc.gov. Please carefully follow these instructions so that your comments are properly recorded.

(1) You can file your comments electronically using the eComment feature on the Commission's website (www.ferc.gov) under the link to FERC Online. This is an easy method for submitting brief, text-only comments on a project;

(2) You can also file your comments electronically using the eFiling feature on the Commission's website (www.ferc.gov) under the link to FERC Online. With eFiling, you can provide comments in a variety of formats by attaching them as a file with your submission. New eFiling users must first create an account by clicking on "eRegister." You must select the type of filing you are making. If you are filing a comment on a particular project, please select "Comment on a Filing"; or

(3) You can file a paper copy of your comments by mailing them to the Commission. Be sure to reference the project docket number (CP20-493-000) on your letter. Submissions sent via the U.S. Postal Service must be addressed to: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 888 First Street NE, Room 1A, Washington, DC 20426. Submissions sent via any other carrier must be addressed to: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 12225 Wilkins Avenue, Rockville, MD 20852.

Filing environmental comments will not give you intervenor status, but you do not need intervenor status to have your comments considered. Only intervenors have the right to seek rehearing or judicial review of the Commission's decision. At this point in this proceeding, the timeframe for filing timely intervention requests has expired. Any person seeking to become a party to the proceeding must file a motion to intervene out-of-time pursuant to Rule 214(b)(3) and (d) of the Commission's Rules of Practice and Procedures (18 CFR 385.214(b)(3) and (d)) and show good cause why the time limitation should be waived. Motions to intervene are more fully described at https://www.ferc.gov/ferc-online/ferc-online/how-guides.

Additional information about the project is available from the Commission's Office of External Affairs, at **(866) 208-FERC**, or on the FERC website (www.ferc.gov) using the eLibrary link. The eLibrary link also provides access to the texts of all formal documents issued by the Commission, such as orders, notices, and rulemakings.

In addition, the Commission offers a free service called eSubscription which allows you to keep track of all formal issuances and submittals in specific dockets. This can reduce the amount of time you spend researching proceedings by automatically providing you with notification of these filings, document summaries, and direct links to the documents. Go to https://www.ferc.gov/ferc-online/overview to register for eSubscription.

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TECHNICAL ACRONYMS AND ABBREVIATIONS

AADT	annual average daily traffic
BCC	Birds of Conservation Concern
BCR	Bird Conservation Region
BMPs	best management practices
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
Commission	Federal Energy Regulatory Commission
CS	Compressor Station
CT	census tract
dB	Decibel
dBA	decibels on the A-weighted scale
EA	environmental assessment
EI	environmental inspector
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FHA	Flood Hazard Area
FERC	Federal Energy Regulatory Commission
FWS	U.S. Fish and Wildlife Service
GHG	greenhouse gas
GWP	global warming potential
HAP	hazardous air pollutant
HUC	hydrological unit code
IBA	Important Bird Area
IPaC	U.S. Fish and Wildlife Service's Information for Planning and Conservation System
L_{eq}	24-hour equivalent sound level
L_{dn}	day-night sound level
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NGA	Natural Gas Act
NJAC	New Jersey Administrative Code
NJDEP	New Jersey Department of Environmental Protection

NNSR	Nonattainment New Source Review
NO_2	nitrogen dioxide
NOI	*Notice of Intent to Prepare an Environmental Assessment for the Proposed East 300 Upgrade Project and Request for Comments on Environmental Issues*
NO_x	nitrogen oxides
NRHP	National Register of Historic Places
NSA	noise sensitive area
NSPS	New Source Performance Standards
NSR	New Source Review
OEP	Office of Energy Projects
ORU	Orange and Rockland Utilities
PADCNR	Pennsylvania Department of Conservation and Natural Resources
PADEP	Pennsylvania Department of Environmental Protection
PEM	palustrine emergent wetland
PHMSA	U.S. Department of Transportation Pipeline Hazardous Materials Safety Administration
Plan	FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan*
$PM_{2.5}$	particulate matter less than or equal to 2.5 microns in aerodynamic diameter
PM_{10}	particulate matter less than or equal to 10 microns in aerodynamic diameter
PNDI	Pennsylvania Natural Diversity Index
Procedures	FERC's *Wetland and Waterbody Construction and Mitigation Procedures*
PSD	Prevention of Significant Deterioration of Air Quality
RV	recreational vehicle
Secretary	Secretary of the Commission
SHPO	State Historic Preservation Office
SO_2	sulfur dioxide
SPRP	Tennessee's Spill Prevention and Response Procedures
SSA	Sole-Source Aquifer
tpy	tons per year
USACE	U.S. Army Corps of Engineers
USDOT	U.S. Department of Transportation
USGS	U.S. Geological Survey
VOC	volatile organic compounds

A. PROPOSED ACTION

1. Introduction

The staff of the Federal Energy Regulatory Commission (FERC or Commission) prepared this environmental assessment (EA) to address the environmental impacts of the construction and operation of the proposed East 300 Upgrade Project (Project). On June 30, 2020, Tennessee Gas Pipeline, L.L.C. (Tennessee) filed an application with the Commission in Docket No. CP20-493-000 under Section 7(c) of the Natural Gas Act (NGA) and Subpart A of Part 157 of the Commission's regulations. Tennessee seeks to obtain a Certificate of Public Convenience and Necessity (Certificate) to construct compression-related facilities in Pennsylvania and New Jersey, as described in section A.4, below. The Project would enable the transport of 115,000 dekatherms per day to meet the Project Shipper's (Consolidated Edison Company of New York, Inc. [Consolidated Edison]) specified market need as further discussed in section A.2.

We[1] prepared this EA in compliance with the requirements of the National Environmental Policy Act (NEPA); the Council on Environmental Quality's (CEQ) regulations for implementing NEPA (Title 40 of the Code of Federal Regulations, Parts 1500-1508 [40 CFR 1500-1508])[2]; and the Commission's regulations at 18 CFR 380. The EA is an integral part of the Commission's decision-making process on whether to issue Tennessee a Certificate to construct and operate the proposed facilities. Our principal purposes in preparing this EA are to:

- identify and assess potential impacts on the natural and human environment that could result from implementation of the proposed action;
- identify and recommend reasonable alternatives and specific mitigation measures, as necessary, to avoid or minimize Project-related environmental impacts; and
- facilitate public involvement in the environmental review process.

Tennessee has requested a Certificate by September 30, 2021, to begin construction by March 1, 2022, to meet an in-service date of November 1, 2022.

2. Project Purpose and Need

Under Section 7(c) of the NGA, the Commission determines whether interstate natural gas transportation facilities are in the public convenience and necessity and, if so, grants a Certificate to construct and operate them. The Commission bases its decisions on economic issues, including need, and environmental impacts. Approval would be

[1] "We," "us," and "our" refer to the environmental staff of the FERC's Office of Energy Projects.
[2] On July 16, 2020, CEQ issued a final rule, Update to the Regulations Implementing the Procedural Provisions of the National Environmental Policy Act (Final Rule, 85 Fed. Reg. 43,304), which was effective as of September 14, 2020; however, the NEPA review of this project was in process at that time and was prepared pursuant to the 1978 regulations.

granted if, after consideration of both environmental and non-environmental issues, the Commission finds that the Project is in the public interest.

Tennessee states that the Project is being proposed in response to Consolidated Edison's subscription for all of the incremental firm transportation capacity to be created by the Project (115,000 dekatherms per day [115 million cubic feet per day]) and to meet Consolidated Edison's specified market need. According to Tennessee, construction of the Project would help eliminate capacity constraints in the region, especially during periods of peak demand, ensuring that the regional supply is reliably able to meet residential, commercial, and industrial heating and cooling needs.

3. Scope of this Environmental Assessment

The resources and topics addressed in this EA include geology, soils, groundwater, surface waters, wetlands, fisheries, wildlife, vegetation, species of special concern, socioeconomics, land use, recreation, visual impacts, cultural resources, air quality, noise, reliability and safety, cumulative impacts, and alternatives. This EA describes the affected environment as it currently exists and the anticipated environmental consequences of the Project, and compares the Project's potential impact with that of various alternatives. This EA also presents our recommended mitigation measures.

As the lead federal agency for the Project, FERC is required to comply with Section 7 of the Endangered Species Act (ESA) and Section 106 of the National Historic Preservation Act. These statutes have been considered in the preparation of this EA. In addition to FERC, other federal, state, and local agencies may use this EA in approving or issuing any permits necessary for all or part of the proposed Project. Permits, approvals, and consultations for the Project are discussed in section A.10 below.

4. Proposed Facilities

The East 300 Upgrade Project would consist of the following:

- modifications at Tennessee's existing Compressor Station (CS) 321 in Susquehanna County, Pennsylvania, including one Solar Taurus 70 turbine with an International Organization for Standardization (ISO) rating of 11,107 horsepower (hp) and auxiliary facilities and appurtenances, including 1,114 hp emergency generator; additional cooling equipment; filter separators; suction, discharge, and vent piping; and ancillary facilities;
- modifications at Tennessee's existing CS 325 in Sussex County, New Jersey, including one Solar Titan 130 turbine with an ISO rating of 20,500 hp and auxiliary facilities and appurtenances, including 316 kilovolt emergency generator; additional cooling equipment; filter separators; and suction, discharge, and vent piping; and
- one new 19,000-hp electric-driven CS 327 and associated auxiliary facilities including an emergency generator, approximately 1,400 feet of 42-inch-diameter suction and discharge lines, vent piping, and appurtenances along Tennessee's existing 300 Line in the Township of West Milford in Passaic County, New Jersey.

Figure 1 illustrates the general Project location, and Appendix B provides topographic maps identifying the proposed Project facilities.

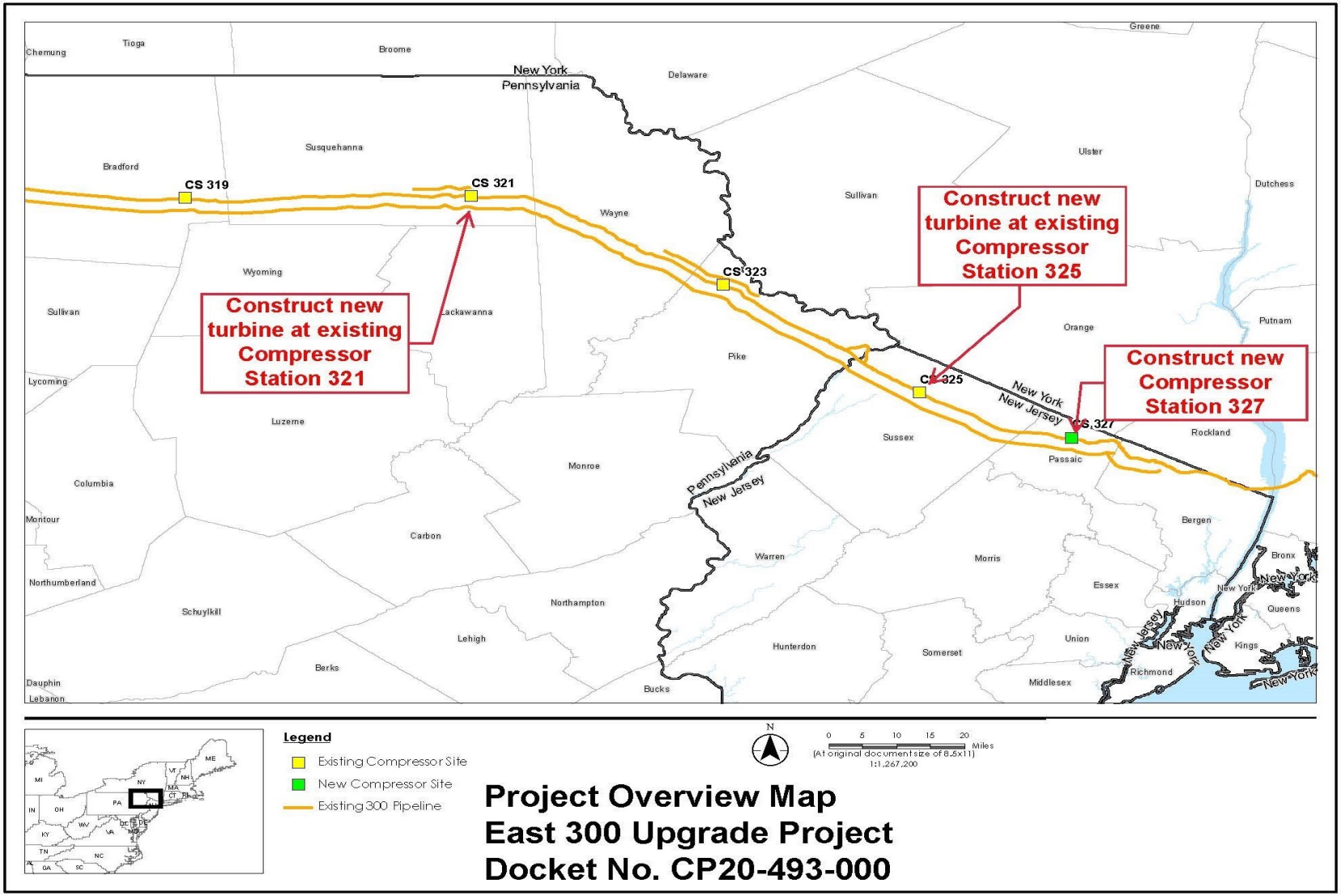

Figure 1: Project Overview Map

5. Construction and Operation Procedures

During construction and restoration of the Project, Tennessee would implement the measures contained in the following plans, in addition to other federal, state, and local permit requirements:

- the FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan) and *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures);[3]
- *Spill Prevention and Response Procedures* (SPRP);
- *Contaminated Soils Plan;*
- *Plan for Unanticipated Discovery of Contaminated Soils or Groundwater;*
- *Noxious and Invasive Weed Control Plan* (Weed Plan)*;*
- *Fugitive Dust Control Plan;*
- *Project-Specific Stormwater Pollution Prevention Plans*; and
- *Plan for the Unanticipated Discovery of Historic Properties or Human Remains During Construction*.

Tennessee would employ at least one environmental inspector (EI) per facility site to oversee and document environmental compliance and prepare inspection reports during the construction phase for submission to the FERC. All Project-related construction personnel would be informed of the EI's authority and would receive job-appropriate environmental training prior to commencement of work on the Project. FERC staff would maintain oversight of the Project's compliance with any conditions attached to any Certificate that the Commission may issue.

Project construction at existing CS 321 and CS 325 would require the expansion of each station's respective footprints. Expansions at these stations would take place entirely on land owned by Tennessee. Construction of new CS 327 would take place on a previously disturbed 43.9-acre parcel of land zoned for industrial and commercial uses for which Tennessee states it currently has an option to purchase.

The Project would be constructed, tested, operated, and maintained according to all applicable federal, state, and local laws, regulations, and requirements. These laws and regulations include the Natural Gas Pipeline Safety Act of 1968, as amended, the U.S. Department of Transportation (USDOT) Pipeline and Hazardous Materials Safety Administration's (PHMSA) *Transportation of Natural Gas or Other Gas by Pipeline, Minimum Federal Safety Standards* contained in 49 CFR 192, and the Commission's regulations at 18 CFR 380.15, *Siting and Maintenance Requirements*. In accordance with

[3] The FERC Plan and Procedures are a set of baseline construction and mitigation measures developed to minimize the potential environmental impacts of construction on upland areas, wetlands, and waterbodies. They can be viewed on the FERC website at http://www.ferc.gov/industries/gas/enviro/plan.pdf and https://www.ferc.gov/industries/gas/enviro/procedures.pdf.

49 CFR 192, new CS 327 would be inspected, and modified CS 321 and CS 325 would continue to be inspected for leaks as part of scheduled operations and maintenance.

5.1 Aboveground Facility Construction and Restoration

The construction process would begin with Tennessee mobilizing construction crews to the Project sites. Mobilization may include erecting a construction trailer/office, as well as delivery of equipment and materials (e.g., temporary fencing, construction materials, and power supplies) needed to complete Project work.

Following the establishment of workspace boundaries through staking and signage, clearing and grading activities required for the Project would be conducted in accordance with the FERC Plan and Procedures and Project-specific Stormwater Pollution Prevention Plans. The expansion areas at CS 321 and CS 325 and the new CS 327 footprint would be cleared of vegetation and debris and graded as necessary to create a level surface for the movement of construction vehicles and to prepare the area for constructing pads and foundations. Large obstacles, such as rocks and brush, would be removed, and the natural drainage would be preserved to the extent practicable.

Temporary erosion control devices would be installed prior to initial ground disturbance and maintained throughout construction. Cleared vegetation, including grasses and scrub-shrub species, would be disposed of in accordance with federal and state regulations either by spreading over the Project's construction workspaces or transported to a commercial disposal facility.

Excavation would be performed as necessary to accommodate the reinforced concrete foundation slabs on grade that are required for the new compressor units and buildings. Tennessee anticipates that foundations would be approximately 5 feet below finished grade elevation. Backfill would be compacted in place, and excess soil would be used elsewhere or distributed around the site.

Once the concrete foundations have been completed and determined to meet the design requirements, installation of the buildings and machinery for each compressor station would begin. Various piping and electrical conduit systems would be connected, and electrical wiring would be installed for power and instrumentation. The compressors would then 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 would be housed in auxiliary and electrical buildings.

Pipe and other equipment would be assembled and welded on site or arrive pre-fabricated. Aboveground piping would be installed adjacent to the new compressor units and will be hydrostatically tested prior to operation. Additionally, safety and control

devices would be installed and tested prior to operation. All piping system welds would be verified by a non-destructive testing method to ensure compliance with code requirements.

Hydrostatic pressure testing would be conducted in accordance with 49 CFR 192. The hydrostatic pressure tests may require temporary traps and pipe caps to pressurize pipe segments and test for leaks. The use of hydrostatic test water would comply with state regulations and existing water rights. Test water would be obtained from existing onsite wells or from municipal or commercial water sources. After testing, the water would be disposed of in accordance with state regulations. Test segments would be capped and filled with water, then pressurized for a minimum of eight hours. Upon completion of hydrostatic testing of the piping systems, each line would be de-pressurized and dewatered. Test water would contact only new pipe; no additives are proposed. Hydrostatic testing is further discussed in section B.3.2.

Following construction activities, disturbed areas would be restored in accordance with the FERC Plan. Permanent erosion and sediment control measures as outlined in the FERC Plan would be installed as appropriate.

5.2 Suction and Discharge Line Construction and Restoration

Suction and discharge lines would be installed at each station connecting compressor station facilities to Tennessee's existing 300 Line system. Similarly, vent piping (part of the natural gas venting and silencing systems) would be installed at each station. All such piping would be contained within property owned or leased by Tennessee.

A single trench would be excavated through the use of track-mounted equipment. Trench spoil would be deposited adjacent to the trench within the construction work areas. The suction/discharge pipelines would be buried below the ground surface to a depth that would meet or exceed the PHMSA standards set forth in 49 CFR Subpart G - General Construction Requirements for Transmission Lines and Mains, Section 192.327 - Cover. The trench would be excavated to a sufficient depth to allow a minimum of 36 inches of cover between the top of the pipe and the final land surface after backfilling.

The technique used for bedrock removal would depend on factors such as strength and hardness of the rock. If consolidated rock is encountered during construction, Tennessee would fracture and excavate the bedrock using standard construction equipment. Tennessee states that the nature of the bedrock in the Project area should not necessitate blasting, but that if Tennessee determines that blasting is required, it would submit a Blasting Plan to the Commission for review and approval prior to the commencement of any blasting activities. If blasting is required, Tennessee or its

contractor would first obtain any necessary approvals from state and local regulatory agencies.

Previously excavated materials would be pushed back into the trench using bladed equipment or excavator. Where the previously excavated material contains large rocks or other materials that could damage the pipe or coating, clean fill would be placed around the pipe prior to backfilling. Any excess excavated materials or materials unsuitable for backfill would be spread evenly over the workspaces or transported off-site for proper disposal. Backfilling would occur to approximate grade; however, a soil crown may be placed above the trench at the discretion of the Tennessee inspector and landowner to accommodate any future soil settlement. Subsoil and/or topsoil decompaction would be conducted, as necessary, depending on the land use. To minimize the possibility of subsurface water flow on slopes along the suction/discharge pipelines, sandbags or foam-type trench breakers would be placed across the trench prior to backfilling. Following installation, the area would be cleaned up and restored as outlined in section A.5.1, above.

5.3 Specialized Construction Techniques

Approximately 19 linear feet of vent piping would be installed across an isolated wetland located within the existing CS 321 parcel. The wetland crossing would be accomplished via the conventional lay method in accordance with all applicable permits and the FERC Procedures. Wetland impacts would not occur within the CS 325 and CS 327 workspaces.

Prior to the start of construction activities, wetland boundaries would be clearly marked with signs and/or highly visible flagging. Tennessee would install temporary erosion control devices along the edges of the workspace in wetlands and state-regulated buffers where there is a possibility for spoil to flow into undisturbed areas of the wetlands. Operation of construction equipment through wetlands would be limited to only that necessary for each stage of pipe installation (e.g., clearing, trenching). Vegetation would be cut to ground level, and grading would be performed only over the trench. Topsoil segregation techniques would be utilized along the trench in unsaturated wetlands to preserve the seed bank and allow for successful restoration of the disturbed area. Per the FERC Procedures, Tennessee would not utilize topsoil segregation techniques in inundated wetlands.

Trench plugs may be used to minimize the flow of water and sediment discharges into the wetland from the open trench. Following pipe installation, the trench would be backfilled, and excess backfill would be spread over adjacent upland areas and stabilized during clean-up. Tennessee would restore wetland contours to pre-construction conditions to the extent practicable upon construction completion.

5.4 Project Operation and Maintenance

The Project would be owned, operated, and maintained by Tennessee in the same manner as it currently operates its major interstate pipeline facilities, including compressor stations: in accordance with the requirements of the Commission; the PHMSA regulations set forth in 49 CFR 192; the provisions of the Natural Gas Pipeline Safety Act of 1968, as amended; industry-proven practices and techniques; and applicable laws and regulations.

Tennessee would incorporate the Project facilities into its ongoing comprehensive operations and maintenance program for its pipeline system in accordance with applicable regulatory requirements and Tennessee's operations and maintenance requirements. Tennessee's personnel would perform routine checks of the Project facilities, including calibration of equipment and instrumentation, inspection of critical components, and scheduled and routine maintenance of equipment and grounds. Operational testing would be performed on safety equipment to ensure proper function.

The modifications to CS 321 and CS 325 would not require any additional personnel for operations. To operate CS 327, Tennessee would add up to two new personnel and relocate six current personnel. CS 327 would be operated remotely and not require a continuous personnel presence on-site, but it would be linked to a central control system through a Supervisory Control and Data Acquisition system for continuous monitoring.

6. Construction Schedule

Tennessee proposes to begin Project mobilization and construction as early as March 1, 2022, in order to have the Project facilities completed for an anticipated November 1, 2022 in service date. In general, Project construction activities would be conducted between the hours of 7:00 am to 7:00 pm Monday through Saturday; however, weather conditions, site conditions, specialized construction techniques such as hydrostatic testing or tie-ins, emergencies, or other atypical circumstances may require extended construction hours, which may include night time and/or Sunday hours. If work hours are anticipated outside of the planned work hours, Tennessee would notify nearby landowners prior to the activity to accommodate any special needs.

The total construction workforce would vary depending on the phase of construction. The anticipated temporary and permanent workforce needs for each component of the Project are described in section B.7, below.

7. Land Requirements

The Project would impact 82.13 acres of land during construction and 22.25 acres during operation. All Project construction at CS 321 and CS 325, including private

access, equipment storage, and use of workspaces, would take place on land owned by Tennessee; Project construction at the CS 327 site would take place on land for which Tennessee currently has an option to purchase. To access the compressor station sites, Tennessee would use public roads as well as existing driveways and access roads within each station's existing or proposed new property boundaries. The fenceline boundaries of CS 321 and CS 325 would be expanded to accommodate the new facilities at each station. A summary of the land requirements for the Project is presented in table 1. A detailed description of the land use associated with construction and operation of the Project is provided in section B.5, below.

Table 1
Land Requirements Associated with the Project

Facility	Existing Operational Land (acres) [a]	Land Affected During Construction (acres) [b]	Land Affected During Operation (acres) [c]
CS 321	22.38	26.93	1.97
CS 325	5.75	29.97	8.17
CS 327	--	25.53	12.11
Project Total	**28.1**	**82.4**	**22.3**

[a] Footprint of existing operational compressor station and roadway.
[b] Land affected during construction is inclusive of all areas to be temporarily disturbed during construction, including existing fenced compressor facilities.
[c] Includes Project facility impacts only.

8. Non-Jurisdictional Facilities

Under Section 7 of the NGA, the Commission is required to consider, as part of its decision to authorize jurisdictional facilities, all factors bearing on the public convenience and necessity. The primary jurisdictional facilities for the Project are the proposed modifications at existing CS 321 and CS 325 and the proposed new CS 327.

Occasionally, proposed projects have associated facilities that do not come under the jurisdiction of the Commission. These non-jurisdictional facilities may be integral to the need for the proposed facilities (e.g., a gas-fueled power plant at the end of a jurisdictional pipeline) or they may be minor, non-integral components of the jurisdictional facilities that would be constructed and operated as a result of the proposed facilities.

Non-jurisdictional facilities for the Project would include a new underground 69-kilovolt transmission line constructed by Orange and Rockland Utilities (ORU),[4] a local electric utility, to provide electric service to CS 327. ORU would construct the transmission line from where the line's existing right-of-way intersects Burnt Meadow Road, approximately 2,740 feet south of the CS 327 site. The transmission line would be

[4] Alternatively identified as Rockland Electric Company.

installed along Burnt Meadow Road until it reaches the entrance to the CS 327 site. ORU would then install the electrical line within the electrical conduit constructed by Tennessee on the CS 327 site within the existing access driveway and new interior access between Burnt Meadow Road and Tennessee's new 69-kilovolt substation at the station site.

Construction of the 69-kilovolt transmission line and conduit would require approximately 9.18 acres of disturbance for construction based on a 100-foot-wide construction easement, of which approximately 1.84 acres would be maintained as a 20-foot-wide permanent operational easement. Approximately 2,900 linear feet of the transmission line and associated conduit would be installed underground within public roads. The remaining 1,100 feet of the transmission line and associated conduit would be installed underground within the CS 327 property. The 69-kilovolt transmission line project is in the planning and design and initial permitting phases. ORU currently estimates that the transmission line would be constructed and in-service in the fall of 2022, allowing Tennessee to meet its expected November 1, 2022 in-service date for the Project.

Based on communications with ORU, it is Tennessee's understanding that the transmission line construction project would be subject to state and local jurisdiction, and that ORU will obtain all required permits and approvals prior to initiating construction of the non-jurisdictional transmission line. In April 2020, Tennessee held an informal discussion with the New Jersey Highlands Council regarding the transmission line project, and plans to meet with New Jersey Department of Environmental Protection (NJDEP) and Passaic County officials to discuss the permitting process for the transmission line project.

In addition to the non-jurisdictional transmission line, Tennessee anticipates that approximately 1,000 feet of underground fiber-optic lines would be constructed from existing communication facilities at Burnt Meadow Road into the CS 327 site. The fiber optic line would be placed within three underground conduits, each approximately 1,000 feet long and 2 to 4 inches in diameter, within the same trench as the 69-kilovolt electric transmission line. The communications provider would permit, construct, own, and operate the communication lines.

Additional discussion regarding environmental impacts of the proposed non-jurisdictional facilities is provided in section B.11, below.

9. Public Review and Comment

On August 13, 2020, the Commission issued a *Notice of Intent to Prepare an Environmental Assessment for the Proposed East 300 Upgrade Project and Request for Comments on Environmental Issues* (NOI). The NOI was sent to affected landowners;

federal, state, and local government agencies; elected officials; environmental and public interest groups; Native American tribes; other interested parties; and local libraries and newspapers. In response to the NOI, the Commission received comments from the U.S. Environmental Protection Agency (EPA), the NJDEP, the Township of West Milford, Consolidated Edison, Food and Water Watch, Sustainable West Milford, and four individuals. Table 2 summarizes the comments received and indexes the section within this EA that each comment is addressed.

Table 2
Summary of Comments Received during Scoping for the Project

Comment/Concern	Section addressing Comment
Project purpose and need	A.2
water quality impacts	B.3
flood hazards / floodplains	B.3.2
listed threatened and endangered species	B.4.3
impacts on wildlife	B.4.2
use of native plants for restoration	B.4.2
cultural resources	B.6
air quality impacts	B.8.4; B.8.5
general conformity determination	B.8.2
noise impacts	B.9.3; B.9.4
public health and safety	B.8.5; B.10
socioeconomic impacts	B.7
climate change	B.11.2
greenhouse gases and greenhouse gas reduction goals	B.8.1; B.8.4; B.8.5, B.11.2
siting alternatives (CS 327)	C.3
energy alternatives	C.6
cumulative impacts	B.11

We also received comments related to the indirect impacts resulting from the production of natural gas that would be transported by the Project (sometimes referred to as "upstream" impacts) as well as the indirect impacts resulting from the various resultant uses of the natural gas transported by the Project (sometimes referred to as "downstream" impacts). Upstream and downstream impacts are not within the scope of this EA.

In addition, we received comments requesting that we prepare an Environmental Impact Statement (EIS) rather than an EA for this Project. The EA appropriately considers and discloses the environmental impacts of the Project and supports a finding of no significant impact. Therefore, an EIS is not required for this Project.[5]

[5] The CEQ regulations state, where an EA concludes in a finding of no significant impact, an agency may proceed without preparing an Environmental Impact Statement. See 40 CFR Parts 1501.4(e) and 1508.13.

10. Permits

A number of federal, state, and local regulatory agencies have permit or approval authority or consultation associated with the proposed Project. Table A-1 in appendix A provides a list of permits and consultations for the Project; the applicable local, state, and federal agencies; as well as permit/consultation status. Tennessee would be responsible for obtaining all permits and approvals required for construction and operation of the Project, regardless of whether or not they appear in the table.

B. ENVIRONMENTAL ANALYSIS

The following sections discuss the Project's potential direct and indirect impacts on environmental resources. When considering the environmental consequences of the Project, the duration and significance of any potential impacts are described below according to the following four levels: temporary, short-term, long-term, and permanent. Temporary impacts generally occur during construction, with the resources returning to pre-construction conditions almost immediately. Short-term impacts could continue for up to three years following construction. Long-term impacts would require more than three years to recover, but eventually would recover to pre-construction conditions. Permanent impacts could occur because of activities that modify resources to the extent that they may not return to pre-construction conditions during the life of the Project, such as with the construction of an aboveground facility. An impact would be considered significant if it would result in a substantial adverse change in the physical environment.

1. Geology

1.1 Physiographic Setting and Geologic Conditions

The existing CS 321 is in the Glaciated Low Plateau Section of the Appalachian Plateaus Physiographic Province in Pennsylvania (Fenneman, 1928; Fenneman and Johnson, 1946; U.S. Geological Survey [USGS], 2017; Pennsylvania Geological Survey, 2018). The Glaciated Low Plateau Section is generally low to moderate relief rounded hills and valleys with (Pennsylvania Geological Survey, 2018). The existing CS 325 is in the Middle Section of the Valley and Ridge Physiographic Province in New Jersey (Fenneman, 1928; Fenneman and Johnson, 1946; USGS, 2017; New Jersey Geological Survey, 2003). The Middle Section is characterized by parallel longitudinal valleys and mountain ridges (Fenneman, 1917) formed by mountain-building events followed by erosion by streams, glaciation, and then postglacial deposition (Witte and Monteverde, 2012). The proposed CS 327 would be in the mountainous New England Upland Section of the New England Physiographic Province in New Jersey (Fenneman, 1928; Fenneman and Johnson, 1946; USGS, 2017). The New England Upland Section is characterized by undulating hilly topography with streams running in well-graded and rounded valleys (Fenneman, 1928; Fenneman and Johnson, 1946; USGS, 2017; New Jersey Geological Survey, 2003).

Based on the soil survey data, the Project facilities are located in areas with a depth to bedrock ranging from 0 to greater than 78 inches (Natural Resources Conservation Service, 2019). The workspaces for CS 321, CS 325, and CS 327 each include areas of shallow depth to bedrock (fewer than 60 inches). Shallow depth to bedrock is present at 100 percent of the proposed workspace at CS 321, 9 percent of the proposed workspace at CS 325, and 18 percent of the proposed workspace at CS 327.

The technique used for bedrock removal would depend on factors such as strength and hardness of the rock. If consolidated rock is encountered during construction, Tennessee would fracture and excavate the bedrock using standard construction equipment. Tennessee does not anticipate that blasting would be required for construction of the Project. Should Tennessee determine that blasting is required, Tennessee would submit a Project-specific Blasting Plan for review and approval prior to the commencement of any blasting activities. If blasting is required, Tennessee or its contractor would first obtain any necessary approvals from state and local regulatory agencies.

1.2 Mineral and Non-Mineral Resources

Mineral resources in the vicinity of the Project area are limited to non-fuel resources. A review of the USGS database of active mines and mineral plants in the United States (USGS, 2005) indicated no active mines are within 0.25 mile of the Project. The proposed location for CS 327 is a former quarry site (Zimmer, 2019; USGS, 1981); however, the site has been used for other industrial and commercial purposes. USGS records indicate there is a sand and gravel quarry on the west side of Burnt Meadow Road, approximately 300 feet west of the proposed CS 327 site (USGS, 1981). According to USGS records, an additional quarry is approximately 900 feet northeast and adjacent to the site for CS 327 (USGS, 1987). Based on Tennessee's conversations with the landowner and a review of aerial photography, this additional quarry is no longer active. No impacts on mineral resources or mines are anticipated to occur as a result of construction or operation of the Project facilities.

1.3 Geologic Hazards

Geologic hazards are natural physical conditions that can, when present, result in damage to land and structures or injury to people. In general, geologic hazards include seismicity (earthquakes and faults), slope stability and landslides, subsidence and karst conditions, flooding/scour, soil liquefaction, soil expansion, and volcanism. The review of available data for the Project area showed that the Project sites are not characterized by surface faults, soil liquefaction, karst conditions, or volcanic conditions; thus, the Project would not be affected by these hazards. Seismic hazards and landslides are discussed below. Flooding is discussed below in section B.3.2.

<u>Seismic Hazards</u>

Seismic hazards include earthquakes, ground faulting, and secondary effects such as soil liquefaction. The Project is in areas of low to moderately low seismic risk. The USGS uses the historical occurrence of earthquakes and geologic setting to predict the future earthquake hazard in a region. Ground shaking caused by earthquakes is often expressed as a percentage of the acceleration due to gravity. The Project is mapped as having a 2 percent probability for an earthquake to occur in the next 50 years, with at least 6 to 20 percent of the force of gravity (Rukstales and Petersen, 2019), which is a

designation of low to moderately low seismic hazard. The Project is further mapped as having a 10 percent probability for an earthquake to occur in the next 50 years, with at least 2 to 5 percent of the force of gravity, which is a designation of low seismic risk. The perceived shaking from these events would range from light to moderate, with damage to well-built structures ranging from none to light. The USGS also estimates the chance for a minor, damaging earthquake to occur in the general area of the Projects in any given year to be from 4 to 19 percent (Rukstales and Petersen, 2019).

Based on the above analysis, the potential for a significant, damaging earthquake to occur in proximity to the Projects is low. In addition, the proposed facilities would be constructed and maintained in accordance with PHMSA requirements detailed in 49 CFR 192, which are designed to ensure the safe operation of the facilities under the range of expected natural conditions. For these reasons, we conclude that the risk of damage to the proposed facilities from seismic activity is not significant.

Landslides

A landslide is the downslope movement of soil, rock, and organic materials under the effects of gravity and also the landform that results from such movement. Landslides are commonly caused by earthquakes, modification of existing slopes by construction activities, or saturation of soils from rainfall, groundwater changes, leaking water pipes, or other events. Landslides can move very slowly (millimeters per year) in the case of soil creep or can occur extremely rapidly. As a general rule, the steeper a slope, the more susceptible it is to landslides. The topography in the Project areas is hilly; however, the Project workspaces have been previously developed or disturbed and are not on steep or undisturbed slopes. According to the USGS Landslide Susceptibility maps (USGS, 2019), previous landslides have not been identified in the Project areas. The workspaces at CS 321 and CS 325 are previously graded and would be unlikely to be impacted from slope instability. Steep, cut quarry walls are present along portions of the proposed CS 327 workspace. Tennessee would implement slope stabilization measures on these walls such as grading, filling, retaining walls, or other measures in order to minimize the potential for slope failure. Tennessee would also implement measures included in the FERC Plan, such as sediment barriers and/or slope breakers. We consider these measures adequate.

1.4 Paleontology

No known significant fossil locations were identified within the Project area based on a review of known paleontological sites. However, CS 321 and CS 325 are underlain by Devonian and Ordovician-aged sedimentary rocks, respectively, which have the potential to contain paleontological resources. CS 327 is underlain by Precambrian igneous and metamorphic rocks, which are unlikely to contain paleontological resources. If unique or significant fossil specimens are discovered during excavation activities, Tennessee would cease construction activities and consult with the appropriate county or

state paleontological specialist. Additionally, the majority of Project activities would take place within previously disturbed areas. Thus, we conclude that significant paleontological resources are unlikely to be affected by construction or operation of the Project.

The overall effect of the Project on topography and geology would be minor, and significant adverse effects on geological resources are not anticipated. Given the geologic conditions within the Project area, we do not anticipate that Project facilities would be compromised due to seismicity, subsidence or karst features, or landslides and that the proposed facilities would not result in significant impact on geologic or paleontological resources.

2. Soils

Information regarding the soil types and characteristics occurring in the Project area was obtained from the Natural Resources Conservation Service Soil Survey Geographic database, which provides detailed information useful for natural resource planning and management.

Construction activities such as clearing, grading, excavation, backfilling, heavy equipment traffic, and restoration activities could result in adverse impacts on soil resources in temporary work areas, on access roads, and at aboveground facilities. Clearing would remove protective vegetation cover and would expose soils to the effects of wind, sun, and precipitation, which could increase soil erosion and the transport of sediment to sensitive areas such as waterbodies or wetlands. Grading and equipment traffic could compact soil, reducing porosity and percolation rates, which could result in increased runoff potential. Soil contamination from equipment spills and/or leakage of fuels, lubricants, and coolants could also impact soils. Certain practices, such as the use of FERC's Plan and Procedures, and Tennessee's plans listed in section A.5 would help adequately minimize impacts on soils.

According to a search of federal and state databases, no reported sources of known or potential soil contamination were identified in the vicinity of the Project (EPA, 2020a; EPA, 2020b; NJDEP, 2020a; NJDEP, 2020b; Pennsylvania Department of Environmental Protection [PADEP], 2020a; PADEP, 2020b). Therefore, no impact from contaminated soil is anticipated. Should unanticipated contaminated soils be encountered during construction, Tennessee would evaluate and treat impacted soils in accordance with its *Plan for Unanticipated Discovery of Contaminated Soils or Groundwater* and applicable federal and state requirements. We have reviewed this plan and find it adequate.

Soil contamination from equipment spills and/or leakage of fuels, lubricants, and coolants could impact soils. Tennessee filed its SPRP, which addresses fluid leaks and spills. We reviewed the SPRP and find it adequate to address the storage and transfer of fuels and hazardous materials as well as the response to be taken in the event of a spill.

Adherence with Tennessee's SPRP would adequately minimize impacts on soils from inadvertent releases or spills during construction of Project facilities.

The U.S. Department of Agriculture defines prime farmland soils as those that have the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and that is available for these uses. Prime farmland soils can include either actively cultivated land or land that is potentially available for cultivation. Farmland that does not meet the criteria for prime farmland may still be considered farmland of statewide importance for the production of food, feed, fiber, forage, and oilseed crops. The criteria for defining and delineating farmland of statewide importance are determined by the local conservation districts. Generally, this land includes soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods.

Approximately 13.68 acres of the soils that would be temporarily impacted by Project activities at CS 325 are considered prime farmland and are actively cultivated. However, impacts on these soils would be minimized and mitigated by following the measures in the FERC Plan and would be allowed to return to cultivation. An additional 7.2 acres of land not classified as prime farmland or farmland of statewide importance would be impacted by construction activities at CS 325, of which 5.94 acres would be permanently converted to industrial use. Approximately 25.97 acres at CS 321 are classified as soils of statewide importance. However, no farmland would be removed from production as these soils are currently part of the industrial development of CS 321. No soils at CS 327 are classified as prime farmland or farmland of statewide importance. Tennessee would attempt to overcome compaction and revegetation issues by implementing appropriate best management practices (BMPs) such as those included in FERC's Plan. Based on previous experience with revegetation of pipeline facilities, and with adherence to the protocols outlined in the Plan and Procedures, we do not anticipate significant issues with compaction or successful revegetation.

Soil erosion would be mitigated through temporary erosion and sedimentation control measures and implementation of permanent measures in accordance with FERC's Plan and Procedures, as well as through Tennessee's plans listed in section A.5. Given the Project areas' soil characteristics and the impact minimization and mitigation measures described in these plans, we conclude that soils would not be significantly affected by Project construction and operation.

3. Water Resources and Wetlands

3.1 Groundwater Resources

The Project is underlain by the Piedmont and Blue Ridge Aquifer system and the Valley and Ridge Aquifer system. Groundwater movement within such aquifers occurs through secondary openings in the rock, such as faults, bedding planes, and other partings

that have been enlarged by dissolution (Trapp and Horn, 1997). CS 325 is underlain by the New Jersey Fifteen Basin Aquifers Sole-Source Aquifer (SSA), and CS 327 is underlain by the Highlands SSA (EPA, 2020h; NJDEP Division of Water Supply and Geoscience, 1996). CS 321 is not underlain by a SSA (Pennsylvania Department of Conservation and Natural Resources [PADCNR], 2020). No state-designated Public Community Well Head Protection Areas are crossed by the Project (PADCNR, 2020; NJDEP Division of Water Supply and Geoscience, 1996). No public drinking water wells have been identified within 150 feet of the Project areas (PADCNR, 2020; USGS, 2018). No springs were identified within 150 feet of the Project areas based on field surveys and the USGS National Water Information System tool (USGS, 2018). Tennessee has two water wells within the CS 321 and CS 325 footprints.

Groundwater Contamination

According to a search of federal and state databases, no reported sources of known or potential soil contamination were identified in the vicinity of the Project (EPA, 2020a, 2020b; NJDEP, 2020a, 2020b; PADEP, 2020a, 2020b). Therefore, no impact from contaminated soil is anticipated. Should unanticipated contaminated soils be encountered during construction, Tennessee would evaluate and treat impacted groundwater in accordance with its *Plan for Unanticipated Discovery of Contaminated Soils or Groundwater* and applicable federal and state requirements. We have reviewed this plan and find it adequate.

Pipeline and related infrastructure construction necessitate the use of heavy equipment and associated fuels, lubricants, and other potentially hazardous substances that, if spilled, could affect shallow groundwater and/or aquifers. Accidental spills or leaks of hazardous materials associated with vehicle fueling, vehicle maintenance, and material storage would present the greatest potential contamination threat to groundwater resources. Soil contamination resulting from these spills or leaks could continue to add pollutants to the groundwater long after a spill had occurred.

Implementation of proper storage, containment, and handling procedures would effectively minimize the chance of such releases. Tennessee's SPRP addresses preventative and mitigative measures that would be used to avoid or minimize the potential impacts of hazardous material spills during construction. We reviewed the SPRP and find it adequate. Adherence with Tennessee's SPRP would adequately minimize impacts on groundwater from inadvertent releases or spills during construction of Project facilities.

Groundwater Mitigation

We received comments in regard to impacts on SSAs and groundwater quality from the Project. Construction activities such as trench dewatering, blasting, and spills or leaks of hazardous materials have the potential to affect groundwater in several different ways. Clearing, grading, trenching, and soil stockpiling activities within the right-of-way

may cause minor fluctuations in local groundwater levels and/or increased turbidity due to erosion and sediment runoff, especially where shallow aquifers exist. Soil compaction caused by heavy equipment could reduce water infiltration rates. However, these potential impacts would be minimized by Tennessee's commitment to implement the measures identified in the FERC Plan, which includes testing for and mitigating compacted soils. Construction of aboveground facilities may result in minor, permanent increases of impervious areas; however, the facilities are unlikely to affect infiltration or groundwater recharge beyond the facility limits.

Based on geotechnical surveys conducted by Tennessee in April and May 2020, it is unlikely that shallow groundwater would be encountered during construction. In the event that shallow groundwater or precipitation accumulates in trenches or excavations, dewatering may be required. Dewatering may result in temporary fluctuations in local groundwater levels; however, Tennessee would dewater into adjacent, well-vegetated upland areas to allow infiltration and minimize impacts on the local water table in accordance with the FERC Plan and Procedures.

An accidental spill of fuel or hazardous material during refueling or maintenance of construction equipment could affect groundwater if not cleaned up properly. Spill-related impacts would be minimized by implementation of the measures included in the Project-specific SPRP. Some of the measures to be implemented include training personnel on the proper handling of fuels and other hazardous materials, instituting appropriate spill cleanup and notification procedure, ensuring equipment is in good operating condition and regularly inspecting equipment. No refueling or storage of hazardous liquids would be allowed within a 200-foot radius of the wells within the CS 321 and CS 325 footprints.

As discussed further in section B.3.2, Tennessee would utilize existing on-site wells (or a new on-site well in the case of CS 327), commercial water sources, or municipal water sources for hydrostatic test water. If hydrostatic test water is obtained from existing or new groundwater wells, the Project may result in temporary and localized groundwater depletions. However, based on the regional estimates of groundwater withdrawal volumes, the use of groundwater for hydrostatic testing would not result in a significant impact to groundwater resources in the Project area.

After installation of the Project facilities, the ground surface would be restored as close as practicable to original contours, and any exposed soils would be revegetated to ensure restoration of preconstruction overland flow and recharge patterns. Therefore, these minor, direct, and indirect impacts would be temporary and would not significantly affect groundwater resources. We conclude that groundwater impacts during construction would be effectively minimized or avoided by implementing construction practices outlined in FERC's Plan and Procedures and other plans listed in section A.5 of this EA.

3.2 Surface Water

CS 321, 325, and 327, are within three hydrological unit code (HUC) 12 watersheds, which are the Lower East Branch Tunkhannock Creek watershed, the Papakating Creek watershed, and the Upper Wanaque River Creek watershed, respectively.

There are no waterbodies within any of the Project workspaces; therefore, no direct impact on waterbodies is anticipated by the Project. There are no National Wild or Scenic Rivers, Section 10 Navigable Waters, those listed on the National Park Service's Nationwide Rivers Inventory, or otherwise sensitive surface waters within 0.50 mile of the Project facilities (National Park Service, 2018; National Wild and Scenic Rivers, 2018). There are no Section 303(d) of the Clean Water Act listed waters within 1 mile of the Project area. Therefore, impacts on sensitive or contaminated waterbodies are not anticipated.

We received comments on impacts on reservoirs in close proximity to the Project. No surface water intakes are within 3 miles of CS 321; however, there is one surface water intake within 3 miles of the construction work space for CS 325 (Clove Brook, 2.82 miles) and five surface water intakes within 3 miles of the construction work space for CS 327 (Hewitt Brook, 0.28 mile; Wanaque River, 1.60 mile; Greenwood Lake, 1.70 mile; Belcher Creek, 2.20 miles; and Ringwood Creek, 2.90 miles [USGS, 2018]). The Monksville Reservoir is approximately 1,200 feet east of CS 327, and the nearest water intake on the reservoir is 3.5 miles southeast of the CS 327. No surface waters would be directly impacted by construction. Stormwater from the CS 327 site would flow into Hewitt Brook, which flows into Monksville Reservoir. The remainder of this section describes floodplain and other state-regulated surface water areas.

We received a comment indicating that NEPA identified waterbodies within the footprint of CS 327. We are not aware of any other NEPA analysis conducted for this site and based on the surveys conducted by Tennessee, no waterbodies are within the proposed temporary or permanent workspaces.

There are six stormwater management features within the workspace for CS 321, which were designed during past construction activity at CS 321 and are permitted under a PADEP Erosion and Sediment Control General Permit 2. Three of these features would be removed and reconstructed as part of the Project.

Two unnamed tributaries to Clove Brook are outside of the areas that would be disturbed by construction of CS 325. These tributaries are classified as FW2-TM [6] waters by New Jersey's Surface Water Quality Standards at New Jersey Administrative

[6] FW2 is the general surface water classification applied to those fresh waters that are not designated as FW1 or Pinelands Waters. TM — trout maintenance. "Trout maintenance waters" are waters designated at N.J.A.C. 7:9B-1.15(c) through (i) for the support of trout throughout the year.

Code (NJAC) 7:9B-1.1 et seq. For these waterbodies, New Jersey regulates a 150-foot riparian zone from the top of bank of the stream. Tennessee has designed the facilities to avoid this 150-foot riparian buffer; therefore, no impacts are anticipated.

Hewitt Brook is approximately 380 feet north and west of CS 327. Hewitt Brook is classified as an FW2-TP-C1[7] water by NJAC 7:9B – Surface Water Quality Standards. New Jersey regulates a 300-foot riparian zone from the top of bank of this stream.

Floodplains

Based on Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps, CS 321 is not within any area classified as a floodplain. CS 325 workspaces were designed to avoid any flood hazard zones. The CS 327 workspace and permanent facility site would be within an area of minimal flood hazard (Zone X) (FEMA, 2014; FEMA, 2015; FEMA 2020). Tennessee conducted a Flood Hazard Area (FHA) analysis for CS 325 and CS 327 per New Jersey's Flood Hazard Area Control Act Rules.

No permanent aboveground facilities associated with CS 325 or CS 327 would be constructed within a New Jersey-regulated FHA, riparian zone, or wetland transition area. No temporary workspace associated with CS 325 would be within an FHA. Temporary construction impacts would occur within the FHA, riparian, and wetland transition area at CS 327. Tennessee estimates that the construction within these areas would be less than six months in duration. Tennessee would utilize an existing gravel access road without adding any impervious areas to the road or altering its topography within the FHA or 300-foot regulated riparian buffer zone. Tennessee does not plan to cut, clear, or remove any riparian zone vegetation, unless the area was previously disturbed. The majority of area disturbed by construction would be utilized in a similar manner as it has been used in the past and Tennessee does not plan to improve or modify existing surfaces within the temporary workspace.

Hydrostatic Test Water

Hydrostatic testing would be performed in accordance with PHMSA pipeline safety regulations identified in 49 CFR Part 192, Transportation of Natural and other Gas by Pipeline: Minimum Federal Safety Standards, and in accordance state regulations and any water rights.

For hydrostatic testing, Tennessee anticipates that 50,000 gallons of water would be required for CS 321; 150,000 gallons of water for CS 325; and 175,000 gallons of

[7] TP — trout production. "Trout production waters" are waters designated at NJAC 7:9B-1.15(c) through (i) for use by trout for spawning or nursery purposes during their first summer. C1 — Category One waters. "Category One waters" are those waters designated in the tables in NJAC 7:9B-1.15(c) through (i), for purposes of implementing the antidegradation policies set forth at NJAC 7:9B-1.5(d), for protection from measurable changes in water quality based on exceptional ecological significance, exceptional recreational significance, exceptional water supply significance or exceptional fisheries resource(s) to protect their aesthetic value (color, clarity, scenic setting) and ecological integrity (habitat, water quality and biological functions).

water for CS 327. Tennessee would utilize existing on-site wells (or a new on-site well in the case of CS 327), commercial water sources, or municipal water sources for hydrostatic test water. Test water would be hauled off and disposed of at an off-site disposal facility in accordance with state requirements. Tennessee does not plan to use any additives during the hydrostatic testing.

Impacts and Mitigation

No waterbodies would be directly impacted during construction and operation of the Project. Minor and temporary indirect impacts from erosion originating from construction areas into adjacent waterbodies could occur during construction. Tennessee would implement the measures included in the FERC Plan and Procedures, such as the use of erosion and sediment control devices, which are designed to limit off-site construction impacts into adjacent waterbodies (such as erosion and sedimentation). Any riparian buffers disturbed would be restored in accordance with the FERC Procedures. Tennessee has also committed to not store any hazardous materials within the FHA and to utilize the areas within state-regulated FHAs and floodplains in a similar manner as previously used. Tennessee's implementation of the Plan, Procedures, and its SPRP would also help prevent spills, leaks, or other releases of hazardous materials that could adversely impact adjacent waterbodies, including waterbodies that are used as water sources.

We received comments regarding impacts on water quality and contamination to reservoirs in proximity to the Project, including contaminants such as chromium, benzene, and hydrocarbons. Tennessee indicated that chromium and benzene would not be handled at the Project site, therefore contamination of waterbodies from these chemicals is unlikely. As discussed above, Tennessee would implement FERC's Plan and Procedures, which includes the use of BMPs such as silt fence, filter socks, and other methods to control stormwater. Tennessee would also install permanent stormwater BMPs to handle runoff that would be created from new impervious surfaces. Stormwater BMPs would be designed to conform to the NJDEP's Stormwater Management Rules, which are designed to result in post-construction runoff and groundwater recharge similar to pre-construction conditions.

As discussed above, Tennessee would also implement its SPRP, which would minimize hazards to human health and/or the environment from any unplanned sudden or non-sudden releases of toxic, hazardous, or other polluting materials (including hydrocarbons such as gasoline) to the soil, surface water, or groundwater during construction. Tennessee would comply with the guidelines established in the Federal Spill Prevention Control, and Countermeasure regulations (40 CFR 112) for all three stations and with the New Jersey's Discharge Prevention Program (NJAC. 7:1E). Hydrocarbons, such as gasoline, would be onsite, but as discussed above, would be handled in accordance with Tennessee's SPRP to reduce the risk of spills and ensure appropriate response should a spill occur. Additionally, Tennessee would not store fuel

or hazardous/toxic material within the floodway or FHA on the CS 327 site. Based on the implementation of these measures and the Project would not have direct impacts on waterbodies, no significant impacts on surface water quality, water intakes, or the Monksville or Wanaque Reservoir are anticipated.

With no construction activities occurring directly within waterbodies, the use of commercially sourced, municipal water, or on-site wells for Project water needs, and the implementation of our Plan and Procedures and Tennessee's SPRP, we conclude that construction and operation of the Project would not have a significant impact on water resources.

3.3 Wetlands

The U.S. Army Corps of Engineers (USACE) and the EPA define wetlands as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." To be considered a wetland, an area must have hydrophytic vegetation, hydric soils, and wetland hydrology under normal conditions (USACE, 2007).

Tennessee conducted surveys for wetlands at CS 321 in November 2019 using the Routine On-Site Determination Method defined in the *Corps of Engineers Wetlands Delineation Manual* (USACE, 1987) and the *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Northcentral and Northeast Region – Version 2.0* (USACE, 2012). One wetland area was identified. Tennessee anticipates that approximately 0.012 acre of an isolated, palustrine emergent (PEM) wetland would be temporarily impacted to install a vent pipe. Tennessee plans to utilize conventional wetland construction methods to install the vent pipe and would segregate topsoil.

Tennessee conducted surveys for wetlands at CS 325 in March 2020 using the *Manual for Identifying and Delineating Jurisdictional Wetlands* (Federal Interagency Committee for Wetland Delineation 1989; 1989 Federal Manual) and portions of the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (USACE, 2012) as required by the State of New Jersey (NJAC 7:7A-3.1(a)). No wetlands were identified within the work areas, and Tennessee would maintain a 150-foot buffer in accordance with NJDEP requirements for wetlands outside of the work areas for CS 325.

Wetland surveys were also conducted in March 2020 at the CS 327 site to confirm previously identified wetlands. Previous surveys identified wetlands along Hewitt Brook outside of the western and northern limits of the CS 327 site and were confirmed in a March 19, 2018 Letter of Interpretation (File No. 1615-17-0004.1) issued by the NJDEP. These wetlands were considered exceptional value, and New Jersey requires a regulated transition area buffer of 150 feet.

While no wetlands were identified within the CS 327 site, Tennessee proposes some activities within the 150-foot transition area buffer of the wetlands immediately north of the site. These activities, including this use of an existing access road, would take place over a 6-month period. Tennessee would not alter the road topography or create impervious areas within the transition area nor would it clear, cut, or remove previously undisturbed riparian zone vegetation.

No Wetlands Reserve Program land would be impacted by the project (Natural Resource Conservation Service New Jersey, 2019; Natural Resource Conservation Service Pennsylvania, 2019).

Impacts and Mitigation

Approximately 0.012 acre of an isolated PEM wetland would be temporarily impacted during construction and restored to pre-construction conditions following construction. The primary impact of the Project on wetlands would be the temporary alteration of wetland function and value due to vegetation clearing and construction through the wetland at CS 321. Construction could also impact water quality within the wetland due to sediment loading or inadvertent spills of fuel or chemicals. The use of heavy equipment within the wetland could also result in the compaction of wetland soils. Impacts on the wetland would be greatest during and immediately following construction. The majority of these effects would be short term in nature and would cease shortly after the wetland is restored and vegetation is re-established. Upon completion of construction, topsoil, contour elevations, and hydrologic patterns would be restored to pre-construction conditions to promote the re-establishment of hydrophytic vegetation. The herbaceous vegetation would regenerate quickly (typically within 1 to 3 years), and the wetland would eventually transition back into a community with functionality similar to that of the preconstruction state.

Tennessee would adhere to wetland impact procedures, including installation of erosion control devices, as detailed in our Procedures to minimize any effects on the temporarily impacted wetland, or adjacent wetlands or state-regulated buffer areas. Tennessee would clearly mark wetland boundaries with signage or flagging. Tennessee also would avoid transition buffer areas regulated by NJDEP or minimize construction activities within these areas as discussed above to prevent offsite wetland impacts at CS 325 and 327, respectively.

Based on the minimal amount of temporary impacts to an isolated wetland within the existing boundaries of CS 321, the implementation of our Procedures, and the avoidance/minimization of work occurring in state-regulated wetland buffers, we believe that the Project would avoid or adequately minimize potential impacts associated with construction in wetlands.

4. Fisheries, Vegetation, and Wildlife

4.1 Aquatic and Fisheries Resources

No river systems or specific waterbodies known to support fisheries or aquatic species of special concern are within Project construction workspaces or would otherwise be affected by the Project. As discussed in section B.3.2, no waterbodies would be directly affected during construction and operation of the Project. However, some construction workspaces would overlap riparian areas associated with waterbodies nearby. Common fish species present in the waterbodies near the Project area include brook trout, brown trout, rainbow trout, largemouth bass, smallmouth bass, shiner, creek club, darter, walleye, white perch, yellow perch, sunfish, muskellunge, and northern pike.

Tennessee identified two unnamed tributaries to Clove Brook near CS 325. As stated in section B.3.2, these streams are classified as "Trout maintenance waters." Tennessee has designed the layout of the facility and construction workspace to avoid impacts on the existing streams and associated state-regulated riparian zone.

At the proposed CS 327 site, Tennessee identified Hewitt Brook, a stream classified as "Trout production waters" and "Category One" by the NJAC 7:9B, approximately 300 feet from proposed construction workspace. Minor temporary impacts would occur within the previously disturbed riparian zone of Hewitt Brook through the use of an existing access road. Tennessee is not proposing to alter the topography of the existing access road or create an impervious surface within the riparian zone. Tennessee has stated that it would not clear, cut, or remove riparian zone vegetation, or allow storage of hazardous substances within the riparian zone. In addition, Monksville Reservoir, which is used for recreational fishing, is approximately 1,200 feet east of the proposed location of new CS 327. As discussed in section B.3.2, Tennessee would implement measures to ensure Project construction and operation would have minimal to no impact on Hewitt Brook or the Monksville Reservoir.

Construction of the Project could result in impacts on nearby surface waters due to sediment loading and/or contamination as a result of runoff from construction activities near waterbodies. Sedimentation in nearby waterbodies could potentially affect aquatic species by altering microhabitats, smothering bottom dwelling species, and increasing suspended sediment in the water column. Increased levels of suspended sediment in the water column could affect some species ability to feed, mate, or reproduce due to low visibility, altered temperature and sunlight levels, and lower levels of dissolved oxygen.

To minimize the impacts on waterbodies and aquatic species, Tennessee proposes to implement construction practices designed to prevent sediment and potential contaminants from leaving the Project workspaces as outlined in the FERC Plan and Procedures, and Tennessee's SPRP. Additionally, Tennessee would implement stormwater BMPs that would conform to the NJDEP's Stormwater Management Rules, which are designed to result in post-construction runoff and groundwater recharge similar

to pre-construction conditions. If sediment and/or contaminants from the Project were to runoff into nearby streams or waterbodies, the increase in suspended solids and turbidity in the water would be minor and temporary. Tennessee would take precautions to ensure hazardous substances such as fuel are contained and do not get washed into nearby waterbodies. Overall, we conclude the Project would not have significant impacts on aquatic species or fisheries resources.

4.2 Vegetation and Wildlife

The Project is located within two ecoregions — the Laurentian Mixed Forest Province Ecoregion (existing CS 321), which is characterized by mixed stands of coniferous and deciduous forest species such as white pine, eastern hemlock, yellow birch, sugar maple, and American beech; and the Eastern Broadleaf Forest (Oceanic) Province Ecoregion (existing CS 325 and new CS 327), which is characterized by dominant species such as American beech, tulip tree, American basswood, sugar maple, northern red oak, white oak, and buckeye.

Terrestrial wildlife common to these ecoregions include species such as coyote, black bear, striped skunk, beaver, muskrat, bobcat, whitetail deer, gray fox, raccoon, gray squirrel, fox squirrel, northern cardinal, tufted titmouse, and Carolina wren.

During field surveys, Tennessee identified general wildlife habitat types throughout the Project area including upland forest, herbaceous scrub shrub areas, agricultural fields, and wetland habitat. These habitat types are further described below. The remaining areas affected by the Project is categorized as industrial, which does not provide high quality wildlife habitat. Industrial land is either sparsely vegetated or lacks vegetation due to the presence of impervious surfaces such as cement foundations, pavement, or gravel pads.

<u>Upland Forest</u>

Forested land within the Project area primarily consists of mixed early successional/second growth deciduous forest and wooded fencerows. Species present within these upland forest habitats includes eastern hemlock, American beech, sugar maple, eastern white pine, blue spruce, white ash, yellow birch, tulip tree, white oak, northern red oak, black oak, shagbark hickory, sweet birch, black walnut, American beech, black cherry, and butternut. The midlevel canopy is dominated with American hornbeam, barberry, and multiflora rose, and the understory is sparsely vegetated with some individuals of white ash saplings, multiflora rose, wineberry, Allegheny blackberry, and barberry. The herbaceous layer is dominated by mugwort, garlic mustard, spotted wintergreen, and Christmas fern. Upland forest in the Project area may provide habitat for a variety of common wildlife such as white-tailed deer, gray squirrel, racoon, northern cardinal, and Carolina wren.

Agricultural Field

The agricultural field areas within the Project area are plowed and planted yearly and primarily consist of timothy and corn. Agricultural fields generally provide poor to moderate cover habitat for wildlife. However, some species such as European starlings and mourning doves use these fields for foraging and nesting.

Herbaceous/Scrub Shrub

This habitat type, classified as areas that are not forested and not in agricultural use such as existing utility rights of ways and unimproved pastures, is classified as open land (see section B.5). Unimproved pastures are areas with mixed herbaceous vegetation interspersed with scrub-shrub vegetation. Existing utility easements are maintained in an herbaceous state through routine mowing and/or clearing. Common vegetation in these areas primarily includes grasses such as bluegrass, with sparsely scattered trees present to a lesser degree in some areas including eastern hemlock, American beech, sugar maple, eastern white pine, and blue spruce. Wildlife species such as whitetail deer, gray fox, raccoon, gray squirrel, fox squirrel, northern cardinal, tufted titmouse, and Carolina wren might use these areas for foraging, nesting, and travel corridors.

Wetland

Less than an acre of wetland habitat (emergent) would be affected by the Project. Emergent wetlands are characterized by a variety of grasses, sedges, and rushes. These wetland communities are often associated with areas containing standing water, saturated surface soils from a high groundwater table for extended periods of time, or areas that are maintained in an emergent state by regular vegetation maintenance (e.g., utility corridors).

Common vegetation within the wetlands identified within the Project area includes skunk cabbage, privet, multiflora rose, common reed, red maple, American elm, river birch, ironwood, spicebush, eastern cottonwood, autumn olive, mugwort, coltsfoot, soft rush, tussock sedge, meadow-sweet, jewelweed, sphagnum moss, sensitive fern, reed canarygrass, wrinkleleaf goldenrod, New England aster, and arrowleaf tearthumb. Common wildlife that might use wetland habitat in the Project area include turtles, song sparrows, red-winged blackbird, and various amphibian species.

Impacts and Mitigation

The Project would affect about 37 acres of land containing vegetation (table 3). Less than 3 acres of upland forest and about 12.6 acres of herbaceous/scrub shrub areas would be affected. Less than 0.1 acre of wetland vegetation would be affected. The remaining areas affected by the Project that are not classified as industrial (generally devoid of vegetation) are agricultural areas (about 21 acres). Industrial areas affected by the Project are not included in table 3.

Table 3
Vegetation Impacts (acres) [a]

Facility	Wetland [b]		Herbaceous/ Scrub Shrub		Upland Forest		Agricultural Field		Total	
	Const. [c]	Op. [d]	Const. [c]	Op. [d]	Const. [c]	Op. [d]	Const. [c]	Op. [d]	Const. [c]	Op. [d]
CS 321	0.01	0	5.6	0	0.09	0.09	0	0	5.7	0
CS 325	0	0	0.3	0.2	2.8	1.2	20.9	5.9	24.0	7.3
CS 327	0	0	6.6	2.9	0	0	0	0	6.6	2.9
TOTAL	**0.01**	**0.00**	**12.6**	**3.1**	**2.9**	**1.3**	**20.9**	**5.9**	**36.6**	**10.2**

[a] The Project would also disturb areas classified as industrial land, devoid of vegetation, and not included within the acreage impact totals in this table.
[b] Operational land use impacts associated with wetlands have been calculated based on the proposed permanent easement. Tennessee would maintain the new permanent easement in wetlands in accordance with the FERC Procedures.
[c] Land affected during construction is inclusive of operation impacts (permanent).
[d] Land affected during operation consists only of new permanent impacts.

Vegetation clearing would result in associated habitat loss and disturbance to some wildlife species. Permanent habitat loss would occur as the result of the construction and operation of new permanent facilities. Operation of the compressor stations would result in permanent conversion of 1.3 acres of upland forest, 3.1 acres of herbaceous/scrub shrub, and 5.9 acres of agricultural land areas to open areas or industrial land. To the extent practicable, Tennessee has sited the Project facilities and construction workspaces to occupy previously disturbed and open areas, thereby minimizing the acreage of forest lands affected.

Noise, dust, and human activity at the Project construction workspaces could disturb wildlife species, causing them to leave or avoid the area. Larger and more mobile species such as birds and mammals would relocate to nearby similar habitat during construction. However, small less-mobile species such as reptiles, amphibians, or smaller mammals and invertebrates, could be harmed or crushed by equipment. The Project sites are in an already existing industrial area where ambient noise levels are higher than what they would be in an undisturbed forested area. Therefore, any increases in noise levels due to the operation of the modified CS 321 and CS 327 and new CS 327 would not represent a new or novel noise impact on the local wildlife.

The EPA states that Project workspaces should be restored with plants native to the area. Tennessee would restore all habitat used for temporary construction immediately after construction in accordance with our Plan. Tennessee would require that its construction contractor ensure that restoration seed mixes are certified as weed-free from the supplier. The seed mixes would consist of a variety of native grasses and forbs appropriate for the restored areas and would be accompanied with an annual companion crop, as specified in the individual County Soil and Erosion Control Plan. Tennessee would consult with the Susquehanna Conservation District (for CS 321), the New Jersey Upper Delaware Soil Conservation District (for CS 325), and the Hudson Essex Passaic Soil Conservation District, New Jersey Highlands Council, and NJDEP

(for CS 327) to determine the appropriate seed mixes for restoration of construction workspaces. Wildlife would be able to utilize these areas again after restoration is complete.

Noxious Weeds

Noxious weeds and other invasive plants are non-native, undesirable native, or introduced species that are able to outcompete desired native species and thereby decrease overall species diversity. Noxious weeds often invade and persist in areas after disturbance. Noxious weeds are addressed by Executive Order 13112, which was set into federal law on February 3, 1999. Under the Executive Order, the federal government is required "to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause." The Executive Order further specifies that the federal government shall not authorize, fund, or carry out actions likely to cause or promote the introduction or spread of invasive species unless it has been determined that the benefits of such actions would outweigh the potential harm caused by invasive species after all prudent and feasible measures to minimize risk of harm are taken in conjunction with the actions.

Noxious weeds are a concern as they may be hazardous towards human health. Giant hogweed is considered hazardous to human health, as contact with the sap of this species can cause a skin reaction called photodermatitis in which where the skin becomes sensitive to ultraviolet light of the sun. Tennessee has committed to assess work areas for the presence of giant hogweed and to follow appropriate protocols to eliminate any occurrences within the Project area.

Tennessee's biological field surveys in 2019 and 2020 did not document extensive communities of invasive and noxious weeds in the Project area. However, disruption of current land uses could prompt the germination of noxious weeds. Noxious and invasive weeds that could occur in the general Project area include purple starthistle, yellow starthistle, Canada thistle, musk thistle, scotch thistle, dalmatian toadflax, yellow toadflax, Dyer's woad, field bindweed, hedge bindweed, goatsrue, giant hogweed, jimson weed, johnson grass, kudzu-vine, purple loosestrife, multiflora rose, shattercane, and mile-a-minute. Tennessee has developed a Weed Plan to implement preventive measures to minimize the establishment and spread of noxious and invasive weeds during ground-disturbing activities associated with construction of the Project.

Tennessee's Weed Plan includes:

- identification of pre-existing problematic plant species and treatment of existing infestations prior to construction;
- maintenance of construction equipment in a weed-free state during the construction process; and

- continued treatment of Tennessee's new and existing compressor stations for noxious weeds during the monitoring and maintenance phases of the Project.

The Weed Plan would be applicable to activities that would occur during pre-construction, construction, and operation of the Project; and covers access roads and staging areas as well as the installation of appurtenant and auxiliary facilities. To prevent potential impacts associated with improper herbicide application or accidental spills, Tennessee would use locally certified applicators and develop site-specific herbicide application, handling, and cleanup guidelines. Applications would follow EPA label guidelines and be performed in accordance with federal, state, and local laws and regulations.

Conclusion

Due to the fact that the Project would affect only a small amount of vegetated areas consisting of already disturbed and lower quality wildlife habitat (about 36 acres) and most of these areas would be restored post-construction using appropriate invasive species prevention measures, we conclude that the Project would not have significant adverse effects on vegetation or wildlife.

4.3 Special Status and Protected Species

Migratory Birds

On March 20, 2011, the U.S. Fish and Wildlife Service (FWS) and the Commission entered into a Memorandum of Understanding that focuses on avoiding or minimizing adverse effects on migratory birds and strengthening migratory bird conservation though enhanced collaboration between the two agencies. This voluntary Memorandum of Understanding does not waive legal requirements under the Migratory Bird Treaty Act (MBTA), ESA, NGA, or any other statutes and does not authorize the take of migratory birds.

Birds of Management Concern are a subset of all birds protected under the MBTA that pose difficult management challenges such as low population numbers and conflicts with human interests. Birds of Conservation Concern (BCC) are a subset of Birds of Management Concern and include all species, subspecies, and populations of migratory nongame birds that are likely to become candidates for listing under the ESA without additional conservation action. The Project is located within Bird Conservation Region (BCR) 28 – the Appalachian Mountain region of the United States.

BCR 28 includes the Blue Ridge, the Ridge and Valley Region, the Cumberland Plateau, the Ohio Hills, and the Allegheny Plateau. Tennessee used the FWS Information for Planning and Consultation (IPaC) System, in conjunction with the BCC list, to obtain a current list of migratory bird species that may be affected by the Project. Of the 25

BCC species within BCR 28, 12 have the potential to occur in the Project area (table 4). The table includes bald eagle and golden eagle, which are not specifically listed as BCC, but are protected under The Bald and Golden Eagle Protection Act of 1940.

Important Bird Areas (IBA) are discrete sites that provide essential habitat for one or more bird species and include habitat for breeding, wintering and/or migrating birds. The proposed site for the new CS 327 is adjacent to the Pequannock Watershed IBA, but the Project site is not considered to be a part of the IBA. Existing CS 325 is approximately 2 miles from the Clove Brook Road Corridor and Wantage Grasslands IBA. Construction and operation of the Project is not anticipated to impact IBAs.

The Bald and Eagle Protection Act (16 USC 668–668c), as amended, prohibits take of bald eagles or golden eagles, including their parts, nests, or eggs, without a permit from the FWS. Tennessee did not identify bald or golden eagle nests within the Project area during field surveys. Because construction activities could take place during nesting seasons for raptors and other migratory birds, direct and indirect impacts could occur on nesting birds, eggs, and young. Direct and indirect impacts on nesting birds could result in abandonment of a nest and death of eggs or young. Increased noise levels and human presence from construction near nesting habitats would disturb nesting species and potentially result in increased stress and decreased ability to successfully rear their young.

Table 4
Migratory Bird Species of Conservation Concern with the Potential to Occur within the Project Area

Common Name	Scientific Name	Project Component	Seasonal Occurrence in the Project Area	Habitat
*Bald Eagle	*Haliaeetus leucocephalus*	CS 321, CS 325, CS 327	Year-round	Typically nest in mature trees near reservoirs or large rivers.
Black-capped Chickadee	*Poecile atricapillus practicus*	CS 321, CS 325, CS 327	Year round	Mixed and deciduous woods; willow thickets, groves, and shade trees.
*Wood Thrush	*Hylocichla mustelina*	CS 321, CS 325, CS 327	Summer	Mainly deciduous woodlands. Breeds in the understory of woodlands, mostly deciduous but sometimes mixed, in areas with tall trees.
Yellow-bellied Sapsucker	*Sphyrapicus varius*	CS 321, CS 325, CS 327	Year round	Typically occur in mixed coniferous and deciduous woods, especially around aspens. May be found in any kind of woods or even dry brush in migration.
*Black-billed Cuckoo	*Coccyzus erythropthalmus*	CS 325, CS 327	Summer, Fall	Wood edges, groves, thickets. Breeds mostly in deciduous thickets and shrubby places, often on the edges of woodland or around marshes.
*Bobolink	*Dolichonyx oryzivorus*	CS 325, CS 327	Summer	Typically occur in hayfields, meadows, and marshes.
*Canada Warbler	*Cardellina canadensis*	CS 325, CS 327	Summer	Forest undergrowth, shady thickets. Breeds in mature mixed hardwoods of extensive forests and streamside thickets.
*Cerulean Warbler	*Dendroica cerulea*	CS 325	Summer	Prefers elm, soft maple, oak, birch, hickory, beech, basswood, linden, sycamore, or black ash. Nests only in tall forest with clear understory.
Eastern Whip-poor-will	*Antrostomus vociferus*	CS 325, CS 327	Summer	Breeds in rich moist woodlands, either deciduous or mixed; seems to avoid purely coniferous forest.
*Golden Eagle	*Aquila chrysaetos*	CS 325	Fall	Nest site is most often on cliff ledge, also frequently in large tree, rarely on ground. Sites may be used for many years.
*Northern Saw-whet Owl	*Aegolius acadicus acadicus*	CS 325	Fall	Breeds most commonly in coniferous forest of various kinds, including open pine forest, spruce-fir associations, white cedar swamps; also mixed woods such as pine-oak and spruce-poplar.
*Prairie Warbler	*Dendroica discolor*	CS 325, CS 327	Summer	Brushy slashings, bushy pastures, low pines. Breeds in dry old clearings, edges of forest, and sandy pine barrens with undergrowth of scrub oaks, especially on ends of slopes and ridges.
*Golden-winged Warbler	*Vermivora chrysoptera*	CS 327	Summer	Open woodlands, brushy clearings, undergrowth. Breeds in brushy areas with patches of weeds, shrubs, and scattered trees (such as alder or pine).
*Rusty Blackbird	*Euphagus carolinus*	CS 327	Summer	River groves, wooded swamps; muskeg in summer. Breeds in the muskeg region, in wet northern coniferous forest with many lakes and bogs.

* Species marked with asterisk are Species of Greatest Conservation Need as listed in the New Jersey Wildlife Action Plan.

Tennessee proposes to initiate construction in March 2022 and to conduct most clearing prior to March 31. If clearing needs to be done during the nesting season (April 1 – August 31 for the Project area), Tennessee would conduct pre-construction bird surveys within the construction areas no more than 15 days prior to the start of clearing activities. If any raptor nests are observed, Tennessee would contact the FWS to determine any necessary avoidance or mitigation measures. If active passerine nests are identified, nesting activity would be documented by the biologist and the FWS would be consulted. Should eggs and/or young birds be found within the area to be cleared,

Tennessee would coordinate with local licensed bird rehabilitation facilities to facilitate removal in accordance with FWS Memorandum MBPM-2, dated June 14, 2018.

Because of Tennessee's proposed minimization and avoidance measures discussed above, we conclude that impacts on migratory birds would be minor and temporary, primarily consisting of temporary displacement of individuals to nearby suitable habitat until construction is complete.

Endangered, Threatened, and Special Status Species

Under the ESA, federal agencies, in consultation with the FWS, are required to ensure that any action they authorize, fund, or carry out will not jeopardize the continued existence of a federally listed or proposed threatened or endangered species or result in the destruction or adverse modification of designated or proposed critical habitat. As the federal lead agency, the Commission is responsible for consulting with the FWS under Section 7 of the ESA. In accordance with Section 380.13(b) of the Commission's regulations, 18 CFR 380.13(b) (2020), Tennessee has been designated as the Commission's non-federal representative for purposes of informal consultation with the FWS.

Four federally listed species have the potential to occur in the Project area. The Project has the potential to affect three of these species--the northern long-eared bat, Indiana bat, and bog turtle. The fourth species, small whorled pogonia (a plant), has the potential to occur in the Project area, based on known species range; however, Tennessee did not find suitable habitat during field surveys. We have determined that the Project would have *no effect* on the small whorled pogonia and thus it is not discussed further in this EA. Our determinations of effect for the remaining federally listed species are included in the discussion below and summarized in table 5.

A review of the FWS's IPaC and a Pennsylvania Natural Diversity Index (PNDI) environmental review were completed for CS 321 on May 14, 2020. The PNDI system is a comprehensive search of the natural heritage data from the Pennsylvania Game Commission, PADCNR, Pennsylvania Fish and Boat Commission, and the FWS. The search results provided by the PNDI stated that all four agencies have determined that no impact is anticipated to federally listed or proposed species and/or species of concern within the Commonwealth of Pennsylvania as a result of planned construction activities associated with the modifications at existing CS 321. No further consultation is necessary in Pennsylvania.

In New Jersey, there are five state-listed species which the Project may affect. These species include the eastern small-footed bat, little brown bat, tricolored bat, vesper sparrow, and wood turtle. Potential impacts on special status species at Project locations in New Jersey (CS 325 and CS 327) are described below and summarized in table 5. In

addition, several species that are designated "Species of Greatest Conservation Need" in the state of New Jersey may occur in the Project area and are discussed further below.

Table 5
Federal and State of New Jersey Listed Threatened and Endangered Species Potentially Affected by the Project

Common Name	Scientific Name	Federal Status [a]	State Status [b]	Project Component	Determination of Effect
Federally Listed Species					
Northern Long-eared Bat	*Myotis septerntrionalis*	T	T	CS 325, CS 327	Not likely to adversely affect
Indiana Bat	*Myotis sodalis*	E	E	CS 325, CS 327	Not likely to adversely affect
Bog Turtle	*Clemmys muhlenhergii*	T	E	CS 325, CS 327	Not likely to adversely affect
State (NJ)-listed Species					
Eastern Small-footed Bat	*Myotis leibii*	NL	E	CS 325, CS 327	Adverse impacts are not likely
Little Brown Bat	*Myotis lucifugus*	NL	E	CS 325, CS 327	Adverse impacts are not likely
Tricolored Bat	*Perimyotis subflavus*	NL	E	CS 325, CS 327	Adverse impacts are not likely
Vesper Sparrow	*Pooecetes gramineus*	NL	E	CS 325	Adverse impacts are not likely
Wood Turtle	*Glyptemys insculpta*	NL	T	CS 325	Adverse impacts are not likely

E – Endangered; T – Threatened; NL – Not Listed

[a] Federal listings for threatened and endangered species were obtained from the FWS's IPaC website (2020).
[b] State listings for threatened and endangered species were obtained from the PNDI Environmental Review and NJDEP's Landscape Project v.3.3 data.

Federally Listed Species

Northern Long-eared Bat and Indiana Bat

The northern long-eared bat is federally and state-listed as threatened due primarily to the ongoing threat of the disease known as white nose syndrome. The northern long-eared bat's range extends throughout the northeast, the Carolinas, down South to Alabama, and out west to Wisconsin. It typically hibernates during the winter in small crevices and cracks within caves and mines with constant temperatures, high humidity, and no air currents. In the summer, the northern long-eared bat roosts singly or

in colonies beneath the bark or in cavities or crevices of live and dead trees (snags). Males and non-reproductive females may also roost in caves or mines during the summer.

In January of 2016, the FWS finalized a rule under authority of Section 4(d) of the ESA that provides measures that are necessary and advisable to provide for the conservation of the northern long-eared bat. The rule prohibits purposeful take of the species throughout its range except to remove it from human structures or to otherwise protect human health or property. The rule generally allows incidental take of northern long-eared bats, but prohibits incidental take in the following circumstances:

- actions are prohibited if they cause take of bats within the hibernacula or alter the environment of a hibernacula in a manner that causes incidental take;
- tree removal activities are prohibited at any time of year within 0.25 mile of the entrance/exit of a known, occupied hibernacula; and
- tree removal activities are prohibited from destroying a known, occupied maternity roost tree, or any tree within a 150-foot radius of a maternity roost tree, between June 1 and July 31 (all tree removal activities may resume outside of this date range, including removal of the maternity roost tree).

The Indiana bat is federally and state-listed as endangered. Major threats to this species include human disturbance and white nose syndrome. Its range is similar, yet less extensive, as that of the northern long eared bat, concentrated in the Midwest, Appalachian region, and parts of the Northeast, including Pennsylvania and New Jersey. Similar to the northern long-eared bat, the Indiana bat hibernates during winter in caves or abandoned mines and roosts in dead and dying trees with exfoliating bark in the summer months.

The Project would involve clearing of 2.9 acres of forest, which has the potential to affect sensitive bat species and their habitat, including roosting trees. Generally, construction activities and noise/vibrations from equipment also has the potential to disturb nearby roosting and hibernating bats. As stated previously, wildlife species in the Project area, including bats, are most likely adapted to the higher ambient noise levels due to the existing industrial infrastructure. The Project might cause a minor indiscernible increase in noise, which is not likely to result in significant adverse impacts on bats.

Tennessee identified suitable roosting habitat at CS 325 and CS 327. Habitat within the CS 325 Project area includes small stands of second growth upland hardwood species such as maple, oak, and hickory that can serve as summer roost habitat. However, the majority of summer foraging habitat present within the Project area at CS 325 has been previously cleared. The Project area at CS 325 may include travel corridors due to the proximity of the Project areas to water sources. Habitat within the CS 327 Project area includes a small stand of second growth upland hardwood species such as

sugar maple and red oak that can serve as summer roost habitat. However, the majority of the habitat within the Project area at proposed the CS 327 site is previously disturbed industrial area (i.e., mined areas/quarry). Tennessee did not identify any hibernacula within 0.25 mile of any of the Project sites.

Tennessee has agreed to conduct clearing between October 1 and March 31 at CS 325 and between November 16 and March 31 at CS 327. The FWS provided its concurrence[8] that if these tree clearing windows are implemented, the Project is not likely to adversely affect the northern long-eared bat and the Indiana bat. We agree.

Bog Turtle

The bog turtle is listed as federally threatened and state-listed as endangered in both Pennsylvania and New Jersey. Bog turtles inhabit slow, shallow, muck-bottomed rivulets of sphagnum bogs, calcareous fens, marshy/sedge-tussock meadows, spring seeps, wet cow pastures, and shrub swamps. Bog turtles depend on a diversity of microhabitats within wetlands for foraging, nesting, basking, hibernation, and shelter.

The workspaces associated with CS 325 are located adjacent to wetlands containing suitable bog turtle habitat. The proposed modifications to the station include areas of new impervious surface, but all proposed infrastructure and stormwater management systems would be located greater than 300 feet from the wetlands. Tennessee would adhere to all required buffers to protect bog turtles as determined by the FWS and NJDEP. Further, Tennessee would develop and implement a bog turtle mitigation and monitoring plan, in consultation with the FWS. The FWS concurred[9] with the determination that, with implementation of the protection buffers and the forthcoming mitigation and monitoring plan, the Project may *affect, but would not likely adversely affect* the bog turtle. We agree.

State-listed Species

Tennessee and the NJDEP in its comment letter submitted to FERC on August 25, 2020 identified ten state-listed species that could occur in the Project area. We determined that there would be no impact on five of the species (bobcat, bobolink, grasshopper sparrow, savannah sparrow, and barred owl) due to the fact that there is no suitable habitat for these species in the Project area. An analysis of the other five species (eastern small-footed bat, little brown bat, tricolored bat, vesper sparrow, and wood turtle) is provided below and summarized in table 5.

[8] FWS letter to Tennessee dated September 24, 2020.
[9] *Id*.

Eastern Small-footed Bat

The Eastern small-footed bat is listed as endangered in the state of New Jersey primarily due to habitat destruction, particularly hibernation sites. This species inhabits forested areas with rocky outcroppings and prefers to hibernate in cooler caves or mines with low humidity. These bats use a variety of roosting sites within wooded areas, including crevices in rocks, talus slopes, and outcroppings; beneath tree bark and in tree crevices; in caves; and occasionally in man-made structures. They tend to forage for flying insects both in and on the edges of wooded areas at or below canopy height, usually above bodies of water. Summer roost habitat as well as foraging habitat is potentially present within the CS 325 and CS 327 sites, but not within the Project workspaces. Because minimal tree clearing would occur during the winter or early spring months and no suitable winter hibernacula is within the Project area, we determined that the Project is not likely to have an adverse impact on this species.

Little Brown Bat

The little brown bat is listed as endangered in the state of New Jersey. Its primary threat is white nose syndrome. This species inhabits forested areas along riverbanks or near other water sources. These bats prefer to hibernate in caves or mines with warmer temperatures and high humidity. They typically roost in tree crevices, beneath loose bark, but may be found in rock and woodpiles. They forage for insects typically over waterbodies and open areas such as meadows. Summer roost habitat as well as foraging habitat is potentially present within the general area of the CS 325 and CS 327 sites, but not within the Project workspaces. Because minimal tree clearing would occur during the winter or early spring months and there are no suitable hibernacula within the Project area, we determined that the Project is not likely to have an adverse impact on this species.

Tricolored Bat

The tricolored bat is listed as endangered in the state of New Jersey primarily due to habitat destruction and white nose syndrome. Tricolored bats are known to inhabit wooded landscapes that are partly open, with large trees and a lot of edge habitat. They are found in grasslands, old fields, suburban and urban areas, orchards, and hardwood forest. These bats typically hibernate during the winter in underground caves and mines where temperature and humidity are stable. Tricolored bats usually roost in areas of open woods near bodies of water in crevices of rocks, live or dead trees, and sometimes man-made structures. They have been found to forage in a variety of habitats, including early successional and open habitats, forest edge habitat, and forested riparian areas.

Summer roost habitat as well as foraging habitat is potentially present within the CS 325 and CS 327 sites, but not within the Project workspaces. Because minimal tree

clearing would occur during the winter or early spring months and there are no suitable hibernacula within the Project area, we determined that the Project is not likely to have an adverse impact on this species.

Vesper Sparrow

The vesper sparrow is listed as endangered in the state of New Jersey due primarily to habitat loss. It is also listed in the New Jersey Wildlife Action Plan as a Species of Greatest Conservation Need. These sparrows typically prefer large tracts of cultivated fields, grasslands, and pastures, which provide nesting habitat, cover, foraging sites, and perches. The fields located in the northern and western portion of the Project area at CS 325 are actively farmed. Because these areas are actively farmed and disturbed frequently, they would not likely provide high quality habitat for the vesper sparrow. Although the Project would affect a small amount of sparrow habitat (about 30 acres total of open fields and agricultural land), most of these areas would be restored after construction. In addition, noise from construction could disrupt individuals' behaviors and habits, including feeding and breeding, if sparrows are present in or near the Project area.

Tennessee would conduct tree clearing during the winter or early spring months to avoid impacts on breeding birds. If shrub or herbaceous vegetation needs to be cleared from April 1 through August 31, Tennessee would implement the mitigation measures similar to the those that would be implemented for migratory birds, as discussed above, to include pre-construction bird surveys no more than 15 days prior to the start of clearing activities. If active nests are identified, nesting activity would be documented by the biologist, and the FWS would be consulted. Should eggs and/or young birds be found within the area to be cleared, Tennessee would coordinate with local licensed bird rehabilitation facilities to facilitate removal in accordance with FWS Memorandum MBPM-2 dated June 14, 2018. Because Tennessee would follow the above measures to protect nesting birds and the fact that vesper sparrows are not likely using areas within or adjacent to the Project area, we determined that the Project is not likely to have adverse impacts on this species.

Wood Turtle

Wood turtles are listed as threatened in the state of New Jersey mainly due to habitat loss from stream degradation and forest fragmentation. Wood turtles inhabit both aquatic and upland habitats during portions of their life cycle. They are known to mate, forage, and hibernate in streams that are generally clear and undisturbed. During the summer months they use upland habitat near these streams to lay eggs and forage, and during the winter months from November to February, they hibernate in aquatic habitats.

Wood turtles are also found in undisturbed forests and meadows or abandoned farmland and railroad beds.

Wood turtle habitat may be present in areas adjacent to the Project at CS 325; however, no habitat is present within the Project workspaces and, in general, the Project sites and surrounding areas are disturbed industrial and agricultural areas. Noise from construction may cause disruptions to normal behaviors such as feeding, mating, and breeding if wood turtles were to be residing near the Project area. However, noise from construction would be short-term and there would be no direct impacts on wood turtle habitat. Additionally, as discussed in section B.3.2 above, Tennessee would implement measures to minimize impacts on nearby stream habitat. Therefore, we determined that the Project is not likely to have significant adverse impacts on wood turtles.

Overall, due to Tennessee's proposed mitigation measures and the minor amount of potentially suitable habitat that would be affected by construction and operation, we conclude that there would not be a significant impact on state-listed species.

Other State Species of Special Concern

Tennessee reviewed the New Jersey Wildlife Action Plan, which lists Species of Greatest Conservation Need determined by the NJDEP Division of Fish and Wildlife. In coordination with the NJDEP, Tennessee identified 14 migratory bird species that are considered Species of Greatest Conservation Need listed in the New Jersey Wildlife Action Plan. An analysis of impacts and mitigation for these species in the Project area is provided in the migratory birds section and table 4 (species marked with an asterisk) and table 5 (vesper sparrow).

In a letter dated October 19, 2020, the NJDEP Endangered and Nongame Species Program notified Tennessee of the potential for several Species of Greatest Conservation Need and state-listed species (specifically the bog turtle [state and federally listed], eastern box turtle, and northern copperhead snake) to occur in the Project area and requested that Tennessee implement measures to ensure these species are not harmed by Project activities. Tennessee has agreed to implement the measures recommended by the NJDEP Endangered and Nongame Species Program, which include the following measures listed below:

- Tennessee would ensure the construction contractor implements the FWS-approved bog turtle mitigation and monitoring measures for all turtle species in the area, which includes employing a qualified herpetologist to monitor the site during construction;
- vehicles would travel at a speed below 10 miles per hour, and personnel would watch for turtles and snakes traveling across or basking on the road.

If a turtle or snake is observed, personnel would not attempt to "straddle" the turtle or snake with a vehicle in an effort to pass over it, but instead call for the monitor's assistance to document the sighting and remove the turtle or snake from harm's way;

- all on-site personnel would be notified of the potential presence of northern copperheads (a venomous species), New Jersey laws protecting them, and safety procedures workers should follow;

- Tennessee would instruct its construction contractor to minimize the presence of northern copperheads at and around aboveground facilities and implement human and animal safety measures. For example, eliminating space under buildings where snakes could shelter for extended periods and "surprise" field technicians, promoting safety awareness to future personnel tending to the facility by posting signage of the snake's potential presence (and New Jersey laws), and minimizing the risk of entanglement/ entrapment of snakes and turtles by avoiding the use of certain materials (e.g., plastic netting) and/or abandonment of trash materials (e.g., silt and chain-linked fencing, netting, rope/string, etc.); and

- Tennessee would employ the use of a NJDEP Endangered and Nongame Species Program-approved venomous snake monitor.

Overall, due to Tennessee's proposed mitigation measures and the minor amount of potentially suitable habitat that would be affected by construction and operation, we conclude that there would not be a significant impact on Species of Greatest Conservation Need.

5. Land Use, Recreation, and Visual Resources

During construction, the Project would impact approximately 82 acres of industrial, agricultural, and open lands. Following the completion of construction activities, all disturbed land within the Project facilities not covered by gravel or facility foundations would be restored to previous contours and maintained in an herbaceous state. The Project facilities would permanently affect approximately 22 acres of land during operation.

Temporary and permanent areal land impacts are summarized in table 6.

Table 6
Land Uses Affected by Project Construction and Operation (acres)

Facility	Agricultural		Open Land		Forested Land		Industrial Land		Wetland		Project Total	
	Const[a]	Op[b]	Const[a]	Op[b]	Const[a]	Op[b]	Const[a]	Op[b]	Const[a]	Op[b]	Const[a]	Op[b]
CS 321	0.00	0.00	5.63	0.00	0.09	0.09	21.2	1.88	0.01	0.00	26.93	1.97
CS 325	20.88	5.94	0.30	0.24	2.80	1.16	5.99	0.83	0.00	0.00	29.97	8.17
CS 327	0.00	0.00	6.63	2.86	0.00	0.00	18.90	9.25	0.00	0.00	25.53	12.11
Project Total[c]	**20.9**	**5.9**	**12.6**	**3.1**	**2.9**	**1.3**	**46.1**	**12.0**	**0.01**	**0.0**	**82.5**	**22.3**

[a] Land affected during construction is inclusive of operation impacts (permanent).
[b] Land affected during operation consists only of new permanent impacts.
[c] Sum of columns and rows may differ due to rounding.

5.1 Land Use Impacts

Construction at existing CS 321 would primarily affect previously developed areas at the station. The construction at existing CS 325 would affect about 21 acres of agricultural land, 6 acres of industrial land, and 3 acres of forested and open land. About 6 acres of agricultural land and 1 acre of forested land at CS 325 would be permanently converted to industrial use. CS 327 would be constructed on a site that is presently mostly in industrial use. Operation of CS 327 would permanently convert 6.6 acres of open land to industrial land. Temporary construction areas would be allowed to revert to open or forested land use after completion of construction and would be restored in accordance with the Plan.

About 21 acres of agricultural land would be affected in total during construction of the Project. The primary impacts on agricultural land would include temporary reductions in agricultural production in areas of cultivated cropland and potential reduced yields of future crops. No specialty crops, including nurseries, vineyards, orchards, citrus groves, dairies, aquaculture, or tree farms would be affected by the Project. Agricultural land in the construction area generally would be taken out of production for one growing season. The impacted agricultural land would be able to be returned to production following construction, except for the 6 acres required for operation of the expanded CS 325.

5.2 Recreation Land and Other Designated Areas

No designated Coastal Zone Management Areas, registered National Natural Landmarks (National Park Service, 2020a, 2020b, 2020c), designated Wilderness Areas, Wild and Scenic Rivers (National Park Service, 2020d), Native American Reservations (Bureau of Indian Affairs, 2014), or designated National Trails are within 0.25 mile of

any proposed Project activities (National Park Service, 2010, 2020a). No National Scenic Byways would be crossed or impacted by the Project (FHWA, 2020).

Two state parks in New Jersey, including a state park trail and one Wildlife Management Area, are in the Project's vicinity. These include High Point State Park (0.85 mile west of the CS 325 construction workspace), Long Pond Ironworks State Park (53 feet southeast of the new CS 327 site boundary), Highlands Trail, a part of Long Pond Ironworks State Park (290 feet south of the new CS 327 site boundary), and Wanaque Wildlife Area (0.90 mile northeast of the new CS 327 site boundary) (NJDEP, 2020c, 2020d). Potential noise impacts from Project construction on Long Pond Ironworks State Park and the Highlands Trail are discussed in section B.9.3, below.

Construction activities would not take place in High Point State Park, and impacts are not anticipated due to the distance of the park from the existing CS 325. Construction and operation of CS 327 would not impact the nearby Long Pond Ironworks State Park, as construction activities would not occur on park land or interfere with access to the park. Project construction would not impact the parking areas or access to the Highlands Trail or Wanaque Wildlife Area. The Project may result in noise impacts on users of the Long Pond Ironworks State Park, Highlands Trail, and Wanaque Wildlife Area during the construction period from heavy equipment, earth moving, and building erection activities. Noise impacts are further addressed in section B.9.

The proposed CS 327 would be located within the Highlands Preservation Area as designated under the New Jersey Highlands Water Protection and Planning Act (Highlands Act). Objectives of the Highlands Act include protecting water quality, ensuring economic vitality, preservation of agricultural lands, avoidance of unplanned sprawl and inappropriate development, protection of environmentally sensitive lands, implementation of a regional approach to land use preservation of the natural beauty of the Highlands (NJDEP, 2019). Projects within the Highlands Preservation Area are subject to review under the Highlands Act and implementing rules.

Tennessee submitted a Highlands Applicability Determination application for the Project to the NJDEP and the New Jersey Highlands Council on August 28, 2020, requesting a determination that the Project is a public utility use and is therefore exempt from the Highlands Act. Tennessee is continuing to consult with NJDEP and the New Jersey Highlands Council on this issue.

5.3 Residential Land

No residences are within 50 feet of Project workspaces. The closest residential structures are approximately 145 feet north of CS 321, 215 feet south of CS 325, and 230 feet north of the new CS 327 site. The potential of the Project's construction to result in

dust and noise impacts on nearby residential areas is addressed in sections B.8.4 and B.9.3, respectively.

Impacts on residential areas from construction of the Project are anticipated to be minimal. Construction and operation activities at CS 321 and CS 325 would occur within and adjacent to these existing stations. The new CS 327 would be located on a site currently used for industrial activities. Tennessee would minimize potential construction-related impacts on residential areas in the Project vicinity in accordance with the Plan.

No known future planned residential or commercial developments are within 0.25 mile of the Project.

5.4 Visual Resources

The visual character of the Project area outside of the existing fenced operational area of CS 321 and CS 325 is generally a rural landscape. Proposed CS 327 is within an area characterized by industrial and commercial land uses. The Project is not within any federal, state, or locally designated scenic areas, such as National Wild and Scenic Rivers and scenic roads/highways.

Impacts on visual and/or aesthetic resources would primarily occur during construction as a result of the presence of construction equipment; as such, most impacts on visual resources would be temporary. The construction of the expanded compression facilities at CS 321 and CS 325 would create some minor permanent impacts on the visual landscape; however, these would be consistent with the visual scope and scale of the existing compressor station facilities. As such, additional visual screening is not warranted.

Construction and operation activities at new CS 327 would have a minor visual impacts on nearby residences or passersby because of an existing forested berm located along the west side of the site and existing forested buffers on the north and south sides of the property. The area to the west of new CS 327 is an existing light industrial parcel surrounded by a forested buffer that would screen the new CS 327 from residences and motorists. Tennessee states that buildings and equipment will be painted to blend into the existing natural environment, and downward-facing shielded lights would be installed to mitigate off-site exposure.

6. Cultural Resources

Section 106 of the National Historic Preservation Act, as amended, requires the FERC to take into account the effect of its undertakings on properties listed, or eligible for listing, on the National Register of Historic Places (NRHP), and to afford the Advisory Council on Historic Preservation an opportunity to comment. Tennessee, as a non-federal party, is assisting the FERC in meeting our obligations under Section 106 and its implementing regulations at 36 CFR 800.

Tennessee completed cultural resources surveys for the CS 321, CS 325, and CS 327 sites, and provided the resulting survey reports (one for each station) to the FERC and the Pennsylvania and New Jersey State Historic Preservation Offices (SHPO) for their respective states. The surveys included both archaeological and architectural resources.

For CS 321, the survey employed surface inspection augmented by excavation of 174 shovel test units and covered approximately 19.4 acres. Previously surveyed portions of the compressor station were not resurveyed. As a result of the survey, the circa 1955 Tennessee Gas Headquarters, an early 20th century dwelling, and five isolated finds were identified. None of these were recommended as eligible for the NRHP. In separate letters dated September 8, 2020, the Pennsylvania SHPO indicated that Project activities would have no effect on significant archaeological resources, and that no aboveground historic buildings, structures, districts, and/or objects would be affected by the Project. We agree with the SHPO.

For CS 325, the survey employed surface inspection augmented by excavation of 359 shovel test units, and covered approximately 20.5 acres. Previously surveyed portions of the compressor station were not resurveyed. As a result of the survey, a surface scatter of brick and asphalt, an early 20th century garage, and four isolated finds were identified. None of these were recommended as eligible for the NRHP, and no further work was recommended. In a letter dated July 29, 2020, the New Jersey SHPO concurred. We concur also.

For CS 327, the survey employed surface inspection only, due to the compressor station site's location in an area considered low-probability for archaeological resources. The survey covered approximately 64 acres. As a result of the survey, a mid-20th century quarry (Ringwood Quarry) was identified and recommended as not eligible for the NRHP. In its July 29, 2020 letter, the New Jersey SHPO concurred that the Ringwood Quarry was not eligible for the NRHP, but requested additional information regarding archaeological resources. Tennessee provided additional information, and on October 19, 2020, the SHPO indicated that there were no historic properties affected by the Project. We agree with the SHPO.

Tennessee contacted the following Native American tribes, providing a Project description, summary of field investigations, and mapping: Absentee-Shawnee Tribe of Oklahoma; Cayuga Nation; Delaware Nation; Delaware Tribe of Indians; Onondaga Nation; Seneca-Cayuga Nation; Shawnee Tribe; Stockbridge-Munsee Community of Wisconsin; and Tuscarora Nation. Tennessee also followed-up with the tribes, and provided them with the cultural resources survey reports and the Project unanticipated discoveries plan. The Delaware Nation responded and indicated no immediate concerns, but requested to be notified of inadvertent discoveries during construction. The unanticipated discoveries plan provides for notification of tribes. No other comments

have been received. We sent our NOI to these same tribes. No responses to our NOI have been received.

As part of the NJDEP's comments in response to our NOI, the New Jersey SHPO reiterated its July 29, 2020 comments. The SHPO also indicated it had been contacted by the state-recognized Ramapough Lenape Nation, who wished to be consulted regarding the Project. We sent our NOI to the Ramapough Lenape Nation. No response to our NOI has been received. Tennessee also contacted the Ramapough Lenape Nation, providing a Project description, summary of field investigations, and mapping. No response has been received.

Tennessee provided a plan to address the unanticipated discovery of cultural resources and human remains during construction. We requested revisions to the plan. Tennessee provided a revised plan, which we find acceptable.

7. Socioeconomics

7.1 Existing Conditions

The Project activities in Susquehanna County, Pennsylvania (related to the additional compression at existing CS 321) and in Sussex County, New Jersey (related to the additional compression at CS 325) would take place within rural settings where low- to medium-density, single-family detached dwellings and a mix of agricultural and open spaces dominate the surrounding landscapes. The new CS 327 is proposed for a developed site in West Milford Township, Passaic County, New Jersey in an area characterized by woodlands containing scattered pockets of commercial development and residences.

The following sections provide the socioeconomic setting for the county, cities, and communities that may be affected by construction and operation of the Project. All population, housing, income, and employment data come from U.S. Department of Commerce, Bureau of the Census (U.S. Census, 2010 and 2018).

7.2 Population and Employment

Impacts on the local population would primarily result from the short-term influx of temporary employees during construction. Susquehanna County, Pennsylvania has an estimated population of approximately 41,300; Sussex County, New Jersey has an estimated population of 142,300; and Passaic County, New Jersey has an estimated population of 504,000. Tennessee estimates that the peak construction workforce would consist of between 40 and 60 people at each of CS 321 and CS 325 and approximately 50 to 70 personnel at CS 327, with approximately 40 percent of these workers being non-local. Table 7 lists several criteria describing the existing socioeconomic conditions in the Project area.

Table 7 Existing Socioeconomic Conditions in the Project Area				
State/County	**Per Capita Income (U.S. Dollars 2018)**	**Median Household Income (U.S. Dollars 2018)**	**Civilian Labor Force [a]**	**Unemployment Rate (Percent of Civilian Labor Force)**
Commonwealth of Pennsylvania	32,889	59,445	6,750,179	3.1
Susquehanna County	29,630	53,059	19,452	3.4
Clifford Township	34,137	60,461	1,230	3.6
State of New Jersey	40,895	79,363	4,718,206	3.2
Sussex County	42,639	90,520	81,160	3.1
Wantage Township (within Sussex County)	36,518	87,420	6,116	3.5
Passaic County	30,800	66,476	257,256	2.4
West Milford Township (within Passaic County)	41,980	98,333	14,607	3.4

[a] The major industries in the Project area include educational services and health care and social assistance.

Source: U.S. Census, 2014-2018 American Community Survey 5-Year Estimates

Conservatively assuming that approximately 20 percent of the anticipated non-local workers bring three family members with them, the total increase in the population of each affected county would be approximately 40 people. This temporary increase of 120 people would be short-term and would not significantly impact the population in Susquehanna, Sussex, or Passaic counties. In addition, there would be no new permanent employees required to operate CS 321 or CS 325, as these facilities would be operated by existing employees either locally or remotely, and only two new permanent employees to operate CS 327. Due to the anticipated small size of the work force in each Project area, construction period impacts on income and employment are expected to be positive, although minor. Because only two permanent employees would be hired in Passaic County, long-term impacts on employment would not be significant.

7.3 Housing

Tennessee anticipates that most of the non-local construction workers are likely to use temporary housing such as hotels, motels, apartments, and recreational vehicle (RV) parks within commuting distance of the Project, and that 30 percent of the non-local workers would provide their own housing units (e.g., travel trailers or RV campers).

Table 8 identifies the availability of rental, seasonal, and other temporary housing options available in the Project area.

Table 8
Temporary Housing Units Available within the Project Area

State / County / Township	Percent Rental Vacancy Rate [a]	Number of Rental Units [b]	Number of Units for Seasonal, Recreational, or Occasional Use [b]	Number of RV Parks [c]	Number of Hotels and Motels [d]
Pennsylvania	5.8	96,671	176,810	227	3,795
Susquehanna County	3.5	147	4,140	11	27
Clifford Township (within Susquehanna County)	8.6	22	260	2	10
New Jersey	5.2	63,742	135,527	90	2,425
Sussex County	7.9	814	3,347	18	47
Wantage Township (within Sussex County)	14.3	78	62	1	0
Passaic County	3.7	2,970	843	2	35
West Milford Township (within Passaic County)	7.9	92	418	0	4

[a] Source: U.S. Census, 2014-2018 American Community Survey Table DP04
[b] Source: U.S. Census, 2014-2018 American Community Survey Table B25004
[c] Good Sam Club, 2020; Google Maps, 2020
[d] Google Earth, 2020; Google Maps, 2020; hotelsmotels.info, 2020

Only minor impacts on local housing markets are expected to occur, however, as approximately 147 rental units are located in Susquehanna County, 814 rental units are in Sussex County, and over 2,900 rental units are in Passaic County; and there are approximately 27 hotel or motels within Susquehanna County, 47 hotels in Sussex County, and 35 hotels in Harrison County. Additionally, there are 11, 18, and 2 RV parks within Susquehanna, Sussex, and Passaic counties, respectively.

Given the number of hotel/motel rooms and campsites available within the counties where the Project construction would occur, construction crews should not encounter difficulty in finding temporary housing. Because no permanent employees would be hired at CS 321 and CS 325, long-term impacts on housing would not occur. With a population of approximately 504,000 persons, the housing stock in Passaic County would not be affected by the housing needs of the 2 additional staff that would be hired to run to operate CS 327. In summary, temporary and long-term/permanent impacts on housing are expected to be negligible.

7.4 Public Services

Construction of the Project could result in a temporary increased demand on local public services, such as medical, fire, police, and education services. Potential temporary impacts on services could include traffic-related incidents, medical emergencies, increases in traffic violations, and issuances of permits for construction vehicles subject to load and width restrictions. The community medical services in the Project vicinity typically provide short-term or continuing general health care services and are capable of responding to minor or routine medical needs.

With respect to the adequacy of Project area medical facilities to handle Project-related injuries, the U.S. Bureau of Labor Statistics reports that in 2018 the incidence rate (number of injuries and illnesses per 100 full-time workers) for Oil and Gas Pipeline and Related Structures Construction (North American Industry Classification System 23712) was 0.7 recordable cases per year. For comparison, this compares to 2.9 recordable cases for residential building construction or 3.7 recordable cases for all industries including private, state, and local government. With a peak construction work force of 50 to 70 workers per county, any Project-related increase in demand for medical facility services would not be expected to exceed the capacity or level of service provided by existing medical facilities in the Project area.

Although the potential for police, fire, and medical services may increase slightly during construction activities, adequate public services exist in the Project area to handle a civil, criminal, or emergency event. Furthermore, there would be no large influx of workers. We anticipate that most non-local construction workers would not relocate to the Project area with school-age children due to the relatively short duration of construction activities. For these reasons, impacts on public services during construction are expected to be negligible.

7.5 Construction Expenditures and Tax Collections

Project construction and operation would impact the local economy in each affected county. The Project would result in increased local payrolls, direct purchase of goods and materials, and increased sales and property tax collections during construction and operation.

Construction activities would have a net positive impact on local and regional businesses, based on Tennessee's estimate that construction workers would spend as much as 25 percent of their paychecks locally on goods, services, and entertainment, in addition to $250 to $500 per week spent on temporary housing by non-local workers. The total local expenditures by workers is estimated to be approximately $3.8 million, including $1.3 million each in Susquehanna and Sussex Counties and $1.2 million in Passaic County.

Local and/or regional businesses would also see increased revenues from construction material and equipment fuel purchases. Tennessee estimates that approximately $5.5 million would be spent locally on construction materials, including $1.1 million for CS 321, $1.7 million for CS 325, and $2.7 million for CS 327.

Tennessee has provided an estimate of anticipated local sales tax revenues that would be collected on these expenditures, as shown in table 9.

Table 9
State and Local Sales Tax Rates and Revenues

County	Total Tax Rate (percent)	Local Construction Material Purchase	Local Expenditures by Workers	Total Sales Tax Revenue
Susquehanna (PA)	6.00	$1,100,000	$1,300,000	$144,000
Sussex (NJ)	6.625	$1,700,000	$1,300,000	$198,750
Passaic (NJ)	6.625	$2,700,000	$1,200,000	$192,125
	Total:	**$5,500,000**	**$3,800,000**	**$534,875**

Sources: New Jersey Division of Taxation, 2020; Pennsylvania Department of Revenue, 2020

Based on the cost of the land under review for the Project, and the local property tax rates in the Project area, Tennessee estimates the local property taxes to be paid would be approximately $895,909 annually, including $135,233 from existing CS 321 in Susquehanna County; $102,106 from existing CS 325 in Sussex County; and $658,570 from new CS 327 in Passaic County.

7.6 Traffic and Transportation

The movement of personnel, equipment, and materials to the construction work areas could adversely impact the transportation system in the Project area. Area roadways include a network of county, state, and federal roads. A major transportation route available for general access to CS 321 is state highway PA-374, a state-maintained two-lane, paved, north-to-south highway. The annual average daily traffic (AADT) for PA-374 near CS 321 was 600 eastbound vehicles in 2018 (Pennsylvania Department of Transportation, 2020).

The proposed Project work in Sussex County would take place at Tennessee's existing CS 325 at 164 Libertyville Road, Wantage Township, New Jersey. The nearest AADT for the entrance to CS 325 is the AADT reported for 650 Libertyville Road near Hickory Road, approximately 0.42 mile west of the entrance to the existing Tennessee facility, with an AADT of 1,583 vehicles in 2017 (New Jersey Department of Transportation, 2020).

The entrance to the new CS 327 site is approximately 0.11 mile south of the intersection of Burnt Meadow Road and Greenwood Lake Turnpike (County Road 511). Greenwood Lake Turnpike is a locally maintained, divided two-lane, north-to-south

roadway. The nearest AADT reported for Greenwood Lake Turnpike is approximately 1.0 mile west of the proposed CS 327, measuring an AADT of 12,675 vehicles in 2017 (New Jersey Department of Transportation, 2020).

Tennessee anticipates that the Project would generate a maximum of 80 trips per day during the peak of construction at CS 321 and CS 325, while there would be approximately 103 trips per day to CS 327.

The construction workday would typically begin at 7:00 am eastern time, and the arrival of construction traffic is estimated to span from 6:00 am to 8:00 am. Deliveries of materials and equipment by truck would occur throughout the construction work day from 7:00 am to 5:00 pm. For large equipment deliveries, Tennessee and its construction contractor would establish escorts and flaggers from the public right-of-way to the final destination. Construction crews would typically leave the work site between 4:00 pm and 6:00 pm on each workday. The construction contractor would have a street sweeper to keep public rights-of-way clean.

The roadways that would be used to access the CS 321 and CS 325 sites have relatively low annual average daily traffic levels. The movement of construction personnel, equipment, and materials to the work areas would result in short term, minor impacts on roadways--typically, a traffic increase of about 1-2 percent based on current traffic. It is anticipated that Project construction working hours and deliveries would usually take place during off-peak hours, and that many workers would also be carpooling to the worksite, which would help keep Project-related traffic to a minimum. Further, Tennessee would employ traffic control measures, such as flagmen and signs when appropriate, to minimize impacts on local traffic.

The site for the proposed CS 327 is currently being used for mulching and recycling operations, and Tennessee states that there is currently truck traffic and deliveries to and from the site that would be displaced by the proposed Project. During construction of the new station, Tennessee anticipates that there would be a minor increase of traffic on local roads due to construction crews and equipment delivery trucks arriving and leaving the Project site. The CS 327 site would be accessed via Burnt Meadow Road at a T-intersection with Greenwood Lake Turnpike, another two-lane road. This intersection is controlled by a stop sign located on the northbound lane of Burnt Meadow Road. The existing entrance to the site would be used in-kind with no improvements during construction. Vehicles for workers, deliveries, and contractors would not be staged on Burnt Meadow Road and would turn into the Project site and park in the temporary workspace for the Project.

Tennessee would also direct its construction contractors to comply with local weight limitations and restrictions on area roadways and to remove any soil that falls from equipment onto roadway surfaces. Additionally, Tennessee would coordinate with state and county officials to obtain all necessary permits for temporary construction-related impacts on roadways in the area. As a result of these measures, existing local

traffic is not expected to be significantly impacted by construction of the Project. Based on the temporary and short-term potential traffic interruptions, we conclude that impacts from Project-related construction traffic would be minor.

Occasional site visits by existing operations personnel would be required for routine facility maintenance at CS 321 and CS 325, and two new operational personnel would access CS 327 on a daily basis. This represents a negligible impact on local traffic and transportation routes.

7.7 Environmental Justice

Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies (EPA, 1998). For projects with major aboveground facilities, FERC regulations (18 CFR 380.12(g)(1)) direct us to consider the impacts on human health or the environment of the local populations, including impacts that would be disproportionately high and adverse for minority and low-income populations.

The EPA and CEQ emphasize the importance of importance of incorporating environmental justice reviews in analyses triggered by NEPA and other federal agency reviews. The CEQ developed the guidance document, "Environmental Justice: Guidance Under the National Environmental Policy Act" (1997), followed by the EPA's "Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses" (1998), to help federal agencies identify environmental justice communities and address potential impacts. According to these guidance documents, the basic components of an environmental justice assessment include:

- a demographic assessment of the affected community to identify minority and/or low-income populations that may be present;
- an assessment of all potential impacts of the project to determine whether any would result in a significant adverse impact on the affected environment; and
- an integrated assessment to determine whether any high and adverse impacts would disproportionately affect minority and low-income groups present in the study area.

Population and income data published by the U.S. Census Bureau were analyzed at the census tract level and compared to the respective county. According to the EPA's Promising Practices for Environmental Justice Methodologies in NEPA Reviews (EPA, 2016) and other guidance documents for environmental justice analyses, a minority population is identified when the percentage of minorities in an affected area either exceeds 50 percent or is meaningfully greater than in the general population of the larger surrounding area (CEQ, 1997; EPA, 1998). For our environmental justice evaluations, we consider an increase of 10 percentage points to be meaningfully greater. Minority

groups may be African American, Native American and Alaskan Native, Asian, Native Hawaiian and Pacific Islander, Hispanic or Latino Origin, or any combination of these.

In accordance with CEQ and EPA guidance, low-income populations were identified with the annual statistical poverty levels from the Census Bureau (CEQ, 1997; EPA, 1998). A low-income population was identified if the poverty rate within the census block group was above 20 percent or if the poverty rate was 10 percentage points higher than the respective parish or county. Table 10 provides the racial and ethnic percentages and the percentage of persons with incomes below the poverty line for census tracts within 1.0 mile of the proposed Project sites.

Table 10
Project Area Demographics

Country/ State/ County/ Township/ Census Tract	Persons Below Poverty Level (%)	White (Not Hispanic) (%)	Black or African American (%)	Asian (%)	American Indian and Alaskan Native (%)	Native Hawaiian and Other Pacific Islander (%)	Some other race (%)	Two or more races (%)	Hispanic or Latino (%)	Total Minority (%) a/
United States	14.1	61.1	12.3	5.4	0.7	0.2	0.2	2.4	17.8	38.9
Common-wealth of Pennsylvania	12.2	76.8	11.1	3.3	0.1	0	0.2	1.8	7.1	23.2
Susquehanna County	12.3	96.3	0.7	0.3	0.1	0	0	0.9	1.7	3.7
Clifford Township	9.5	97.4	0.1	0.4	0.1	0	0	1.1	0.9	2.6
Census Tract 329.01	12.4	96.6	0.3	0.6	0.1	0	0	1.1	1.3	3.4
State of New Jersey	9.5	55.8	13.5	9.3	0.1	0	0.4	1.7	19.9	44.2
Sussex County	4.8	86.8	2.0	2.0	0	0	0.1	1.2	7.8	13.2
Wantage Township	4.3	91.3	0.5	1.6	0.1	0	0	1.9	4.7	8.7
Census Tract 3718	4.1	89.9	0.8	2.4	0.0	0	0	1.7	5.2	10.1
Passaic County	13.6	41.8	10.5	5.1	0.2	0	0.3	1.2	40.9	58.2
West Milford Township	4.9	84.6	1.7	1.7	0.8	0.2	0.8	1.3	8.9	15.4
Census Tract 2568.02	3.2	89.0	0.3	0.1	0.0	0	0.6	1.1	8.9	11.0

Source: American Community Survey, 2014-2018, Table DP03, DP05
a/ "Minority" refers to people who reported their ethnicity and race as something other than non-Hispanic White.

Existing CS 321 is located in Census Tract (CT) 329.01 in Clifford Township, Susquehanna County, Pennsylvania. Clifford Township has a total minority population of 2.6 percent, which is slightly lower than the county or state percentages. CT 329.01 has a minority population percentage of 3.4, which is less than 50 percent and is also lower than Susquehanna County and the Commonwealth of Pennsylvania. Approximately 12.4 percent of the population in CT 329.01 is below the poverty level. This percentage is similar to that of Susquehanna County and the Commonwealth of Pennsylvania. Therefore, no environmental justice populations exist in the CS 321 Project area based on race and ethnicity or poverty.

Existing CS 325 is located in CT 3718 in Wantage Township, Sussex County, New Jersey. Wantage Township has a total minority population of 8.7 percent, which is slightly lower than Sussex County but significantly lower than the State of New Jersey, which has a minority population percentage of 44.2. CT 3718 has a minority population percentage of 10.1, which is less than 50 percent and is also lower than Sussex County and the State of New Jersey. Approximately 4.1 percent of the population in CT 3718 is below the poverty level. This percentage is similar to that of Wantage Township and Sussex County and lower than the State of New Jersey (9.5 percent). Therefore, no environmental justice populations exist in the CS 325 Project area based on race and ethnicity or poverty.

New CS 327 would be located in CT 2568.02 in West Milford Township, Passaic County, New Jersey. CT 2568.02 has a minority population percentage of 11.0, which is less than 50 percent and is also lower than West Milford Township, Passaic County, and the State of New Jersey. Approximately 3.2 percent of the population in CT 32568.02 is below the poverty level. This percentage is lower than that of the West Milford Township, Passaic County, and the State of New Jersey. Therefore, no environmental justice populations exist in the CS 327 Project area based on race and ethnicity or poverty.

As described throughout this EA, the proposed Project would not have a significant adverse impact on the environment or on individuals living in the Project area. We conclude that the Project would not have a disproportionately high adverse environmental or human health impact on minority or low-income residents.

8. Air Quality

The term "air quality" refers to relative concentrations of pollutants in the ambient air. The subsections below describe air quality concepts that are applied to characterize air quality and to determine the significance of increases in air pollution resulting from construction and operation of the Project.

8.1 Existing Environment

The Project areas are within Susquehanna County, Pennsylvania and Sussex and Passaic Counties, New Jersey. The climate in in Project areas is characterized by warm and humid summers (average temperature of around 70 °F) and cold winters (average temperature of about 30 °F). The Project region experiences an average annual precipitation of around 38 to 40 inches of rain (National Climatic Data Center, 2020).

Ambient air quality is protected by the Clean Air Act (CAA) of 1970, as amended in 1977 and 1990. The EPA oversees the implementation of the CAA and establishes National Ambient Air Quality Standards (NAAQS) to protect human health and

welfare.[10] NAAQS have been developed for seven "criteria air pollutants" including nitrogen dioxide (NO_2), carbon monoxide (CO), ozone, sulfur dioxide (SO_2), particulate matter less than or equal to 2.5 microns in aerodynamic diameter ($PM_{2.5}$), particulate matter less than or equal to 10 microns in aerodynamic diameter (PM_{10}), and lead, and include levels for short-term (acute) and long-term (chronic) exposures. The NAAQS include two standards, primary and secondary. Primary standards establish limits that are considered to be protective of human health and welfare, including sensitive populations such as children, the elderly, and asthmatics. Secondary standards set limits to protect public welfare, including protection against reduced visibility and damage to crops, vegetation, animals, and buildings (EPA, 2020c). Both New Jersey and Pennsylvania have adopted the NAAQS; in addition, Pennsylvania has established standards of its own for the pollutants beryllium, fluorides, and hydrogen sulfide. Additional pollutants, such as volatile organic compounds (VOC) and hazardous air pollutants (HAP), are emitted during fossil fuel combustion. These pollutants are regulated through various components of the CAA that are discussed further in section B.8.2, below.

The EPA and state and local agencies have established a network of ambient air quality monitoring stations to measure concentrations of criteria pollutants across the United States. The data are then averaged over a specific time period and used by regulatory agencies to determine compliance with the NAAQS and to determine if an area is in "attainment" (criteria pollutant concentrations are below the NAAQS), "nonattainment" (criteria pollutant concentrations exceed the NAAQS) or "maintenance" (area was formerly nonattainment and is currently in attainment). Susquehanna County is designated as being in attainment for all criteria pollutants; however, Pennsylvania, including Susquehanna County, is within the Ozone Transport Region, established by the CAA. States within the Ozone Transport Region must develop emission standards contained within State Implementation Plans, requiring the installation of certain levels of controls on emission sources of nitrogen oxides (NO_x, which include NO_2) and VOC, pollutants that form ozone. Sussex and Passaic Counties are classified as serious/moderate nonattainment for 8-hour ozone under the 2008 and 2015 standards, respectively. In addition, Passaic County is currently classified as being in maintenance for the 2006 24-hour $PM_{2.5}$ and 1997 annual $PM_{2.5}$ NAAQS (EPA, 2020d).

Greenhouse gases (GHG) occur in the atmosphere both naturally and as a result of human activities, such as the burning of fossil fuels. Carbon dioxide (CO_2), methane, and nitrous oxide are GHGs that are emitted during fossil-fuel combustion. GHGs are non-toxic and non-hazardous at normal ambient concentrations; however, they were identified as pollutants by the EPA due to the impacts on the global climate. The primary GHGs that would be emitted by the Project are CO_2, methane, and nitrous oxide. During construction and operation of the Project, these GHGs would be emitted from the majority of construction equipment, the operation of the proposed new turbines at the

[10] The current NAAQS are listed on the EPA's website at https://www.epa.gov/criteria-air-pollutants/naaqs-table.

modified CS 321 and CS 325, as well as fugitive methane leaks from each of the modified stations as well as new CS 327.

Emissions of GHGs are typically quantified and regulated in units of carbon dioxide equivalents (CO_2e). The CO_2e takes into account the global warming potential (GWP) of each GHG. The GWP is the measure of a particular GHG's ability to absorb solar radiation as well as its residence time within the atmosphere. The GWP allows comparison of global warming impacts between different gases; the higher the GWP, the more that gas contributes to climate change in comparison to CO_2. For comparison, CO_2 has a GWP of 1, methane has a GWP of 25, and NO_x has a GWP of 298 (EPA 2020e).[11]

8.2 Regulatory Requirements

The provisions of the CAA that are applicable to the Project are discussed below. See section B.8.5 for estimated potential operational emissions for the Project facilities.

Prevention of Significant Deterioration and Nonattainment New Source Review

Proposed new or modified air pollutant emission sources must undergo a New Source Review (NSR) prior to construction or operation. Through the NSR permitting process, state and federal regulatory agencies review and approve project emissions increases or changes, emissions controls, and various other details to ensure air quality does not deteriorate as a result of new or modified existing emission sources.

The modified CS 321 and CS 325 would not exceed the Prevention of Significant Deterioration (PSD) major source thresholds for any pollutants, nor would either station have potential emission rates of any pollutant for which a Nonattainment New Source Review (NNSR) review would be required. Therefore, the proposed construction and operation of the modified CS 321 and CS 325 do not trigger PSD or NNSR Review.

Class I Areas

Under the PSD program, 156 mandatory federal Class I areas are currently designated by the EPA to protect certain areas (e.g., wilderness areas, national parks, national forests) to ensure that deterioration of existing air quality-related values, such as visibility, is minimized in these areas. Relative to Class II and III areas, Class I areas have the most restrictive allowable PSD air quality increments. For a new major source or major modification located within 62 miles (100 kilometers) of a Class I area, the

[11] These GWPs are based on a 100-year time period. We have selected their use over other published GWPs for other timeframes because these are the GWPs the EPA has established for reporting of GHG emissions and air permitting requirements. This allows for a consistent comparison with these regulatory requirements.

facility is required to notify the appropriate federal land manager and assess the impacts of that project on the nearby Class I area.

The modified CS 321 and CS 325 would be subject to Title V permitting requirements; as discussed below, potential emissions from both stations would remain well below PSD major source thresholds. There are no Class I areas within 62 miles (100 kilometers) of either compressor station; the nearest Class I area is the Lye Brook Wilderness in Southwest Vermont, about 150 miles (241 kilometers) north of the stations. As further discussed in section B.8.5 below, CS 327 would produce only very minor amounts of emissions during operation, and therefore would have no impact on Class I areas.

Title V Permitting

Title V is an operating air permit program run by each state for each facility that is considered a "major source." The major source threshold for an air emission source within an attainment area, or within a marginal or moderate nonattainment area is 100 tpy for criteria pollutants, 10 tpy for any single HAP, and 25 tpy for total HAPs. For sources within serious ozone or PM_{10} nonattainment areas, the thresholds are 50 tpy for VOC or NO_x and 70 tpy for PM_{10}. The proposed modified CS 321 and CS 325 meet the definition of a major source and would therefore each would require a Title V permit as further described in section B.8.3, below. CS 327 would not require a Title V permit, due to the very limited amount of emissions associated with the electric-driven compressors that would fall well below all applicable Title V emission thresholds.

New Source Performance Standards

The EPA promulgates New Source Performance Standards (NSPS) for new, modified, or reconstructed sources to control emissions to the level achievable by the best-demonstrated technology for stationary source types or categories as specified in the applicable provisions discussed below. NSPS also establishes fuel, monitoring, notification, reporting, and recordkeeping requirements.

NSPS Subpart OOOOa sets emission standards and compliance schedules for VOC and SO_2 emissions for new, modified, or reconstructed wet seal centrifugal compressor and reciprocating compressors; limits for bleed rates for natural-gas driven pneumatic controllers; requires work practice standards for compressor rod packing compressor units; and sets fugitive leak monitoring and repair requirements for compressor stations. Tennessee's air quality permit applications for the proposed modified CS 321 and CS 325 detail that the stations would be subject to the site-wide fugitive emissions monitoring requirements of Subpart OOOOa under 40 CFR 60.5365a(j). However, on September 14, 2020, the EPA promulgated amendments to Part 60 Subpart OOOOa, referred to as the "Review Rule," in 85 Federal Register 57018. The amendments, which became effective on September 14, 2020, removed sources in the transmission and storage segment from the Subpart OOOOa source category. Based

on this EPA action, Subpart OOOOa requirements would not currently apply to either proposed Project sources at CS 321 and CS 325 or CS 327.

NSPS Subpart KKKK applies to stationary combustion turbines with a heat input at peak load equal to or greater than 10 million British thermal units per hour, based on the higher heating value of the fuel, which commenced construction, modification, or reconstruction after February 18, 2005. Each of the new natural gas-fired turbines at the modified Compressor Stations 321 and 325 would have a heat input value of greater than 50 million British thermal units per hour and thus are subject to Subpart KKKK.

Subpart JJJJ applies to owners and operators of stationary spark ignition internal combustion engines that commence construction after June 12, 2006 (depending on engine power and date of manufacture), and to owners and operators of all stationary ignition internal combustion engines that are modified or reconstructed after June 12, 2006. The new emergency engines at CS 321, CS 325, and CS 327 will be subject to Subpart JJJJ.

Tennessee would comply with the all applicable NSPS standards and requirements, as necessary and as stated in the air permits issued by the PADEP and NJDEP for new CS 327 and modified CS 321 and CS 325, respectively.

National Emission Standards for Hazardous Air Pollutants

The 1990 CAA Amendments established a list of 189 HAPs, resulting in the promulgation of National Emission Standards for Hazardous Air Pollutants. The National Emission Standards for Hazardous Air Pollutants regulate HAP emissions from specific source types at major or area sources of HAPs by setting emission limits, monitoring, testing, record keeping, and notification requirements. The modified CS 321 and CS 325 each would have the potential to emit less than the combined HAP total threshold of 25 tpy and single HAP threshold of 10 tpy, and are therefore considered area (and not major) sources of HAPs.

General Conformity

We received comments regarding the need to perform a General Conformity applicability analysis for construction emissions associated with the Project, including those emissions occurring within the New Jersey-New York-Long Island non-attainment area for ozone.

NJDEP requested clarification about whether the construction emission estimates for CS 325 and 327 included estimates of emissions for concrete deliveries within the Delivery Truck Vehicle emissions category. Tennessee confirmed that concrete deliveries have been included in this emissions category.

NJDEP requested clarification for apparent discrepancies between construction emission estimates provided within appendix 9A of the application and table 9.1-12 and asked that the General Conformity applicability analysis reflect the 50 tpy de minimis thresholds for NOx and VOC for "serious" nonattainment area classifications. Tennessee filed corrected emission estimates within revised appendix 9A and table 9.1-12, as shown in the totals provided in table 11 below. The totals demonstrate that the General Conformity applicability thresholds of 50 tpy NOx and 50 tpy VOC would not be exceeded for the portions of the Project within the New Jersey-New York-Connecticut serious nonattainment area for these respective pollutants.

According to Section 176(c)(1) of the CAA (40 CFR 51.853), a federal agency cannot approve or support an activity that does not conform to an approved State Implementation Plan. Therefore, a conformity analysis to determine whether a project would conform to an approved State Implementation Plan is required when a federal action would generate emissions exceeding conformity threshold levels of pollutants for which an air basin is designated as nonattainment or maintenance. A conformity applicability determination requires that direct and indirect emissions of nonattainment or maintenance pollutants (or precursors) resulting from the federal action, and not covered by an air quality permit, be compared with general conformity applicability emissions thresholds. If the thresholds are exceeded, general conformity applies and a conformity determination is required.

Estimated construction emissions for each of the modified CS 321 and CS 325 and new CS 327 within Susquehanna County, Pennsylvania; Sussex County, New Jersey; and Passaic County, New Jersey; respectively, as summarized in table 11, fall under all applicable general conformity thresholds for which a General Conformity Determination would be required. These include the 100 tpy NO_x and 50 tpy VOC thresholds for moderate ozone nonattainment, 50 tpy NO_x and 50 tpy VOC for serious ozone nonattainment, and the 100 tpy $PM_{2.5}$ and SO_2 thresholds for $PM_{2.5}$ maintenance classifications. Therefore, the Project is not subject to General Conformity requirements.

Mandatory Greenhouse Gas Reporting Rule

The EPA's Mandatory Reporting of Greenhouse Gases Rule requires reporting from applicable sources of GHG emissions if they emit greater than or equal to 25,000 metric tons of GHG (as CO_2e) in 1 year. The Mandatory Reporting Rule does not require emission control devices and is strictly a reporting requirement for stationary sources based on actual emissions. Although the rule does not apply to construction emissions, we have provided GHG construction emission estimates, as CO_2e, for accounting and disclosure purposes in table 11. Operational GHG emission estimates for the Project are presented, as CO_2e, in tables 12, 13, and 14. Based on the emission estimates presented, actual GHG emissions from operation of each of the modified CS 321 and CS 325 could

exceed the 25,000 tpy reporting threshold, and reporting requirements for the Mandatory Reporting Rule would therefore be applicable to the Project.

Methane Challenge Program

In August 2016, the EPA officially approved the One Future Commitment Option under the Natural Gas STAR Methane Challenge Program. Tennessee's parent company, Kinder Morgan, Inc., is a member of EPA's Gas STAR program, and is a charter member of the new Methane Challenge Program and the new One Future Coalition. Tennessee's methane emissions information is submitted annually to the One Future Coalition and reported for the Methane Challenge Program. As part of the Natural Gas STAR program, Tennessee reports annual pipeline and aboveground facility methane releases. Through EPA's program, Tennessee conducts leak surveys at all of its facilities as needed, and would do the same for the Project's facilities. As part of its One Future commitments, Tennessee would implement certain recommended technologies on Project sources to reduce fugitive releases, including reducing pressures prior to venting piping, utilizing electric start in place of startup gas for the proposed turbines, supplying the new centrifugal compressors with a dry seal system rather than a wet seal system, equipping the new centrifugal compressors with pressurized hold technology, and installing new pneumatic devices that are either low-bleed or controlled by air instead of natural gas.

8.3 State Air Quality Regulations

In addition to federal standards, the NJDEP and PADEP establish additional standards for general operational requirements, particulate matter and opacity, fuel limitations, CO, NO_x, and Reasonably Available Control Technology requirements. CS 321 and CS 325 currently operate under Title V Operating Permits issued by the PADEP and NJDEP, respectively. Tennessee submitted its state air permit applications for the proposed modified CS 325 and CS 321 to the NJDEP and PADEP on June 29 and June 30, 2020, respectively.[12] As indicated in table A-1 within appendix A, Tennessee anticipates approval of its PADEP application for CS 321 by June 2021, and approval of its NJDEP application for CS 325 by September 2021. On October 29, 2020, the NJDEP issued a General Permit for the emergency generator and pipeline liquids storage tank at CS 327.[13]

8.4 Construction Emissions Impacts and Mitigation

Project construction would result in temporary, localized emissions that would last the duration of construction activities (estimated at nine months). Exhaust emissions would be generated by the use of heavy equipment and trucks powered by diesel or

[12] Available on FERC eLibrary under accession number 20200630-5546.
[13] Available on FERC eLibrary under accession number 20201201-5377.

gasoline engines. Exhaust emissions would also be generated by delivery vehicles and construction workers commuting to and from work areas.

Construction activities would also result in the temporary generation of fugitive dust (large particles as well as PM_{10} and $PM_{2.5}$) due to land clearing and grading, ground excavation, and driving on unpaved roads. The amount of dust generated would be a function of construction activity, soil type, soil moisture content, wind speed, precipitation, vehicle traffic and types, and roadway characteristics. Emissions would be greater during dry periods and in areas of fine-textured soils subject to surface activity.

Construction emission estimates are based on the fuel type and anticipated frequency, duration, capacity, and levels of use of various types of construction equipment. Construction emissions were estimated using EPA MOVES version 2014b off-road emission factors (EPA, 2020f), EPA's AP-42 emission factors (EPA, 2020g), and GWP factors found in 40 CFR 98 (EPA, 2020e).

Table 11 provides the total Project construction emissions, including exhaust emissions and fugitive dust from on-road and off-road construction equipment and vehicles, exhaust emissions from construction worker vehicles for commuting, and vehicles used to deliver equipment/materials to each of the construction sites.

In order to minimize fugitive dust emissions at Project construction sites, Tennessee would apply water to construction work areas as needed. To minimize PM and SO_2 emissions from construction equipment, Tennessee would use ultra-low sulfur diesel fuel for all non-road diesel vehicles, and for Project construction at CS 325 and 327, would adhere to the three-minute idling limit pursuant to New Jersey Administrative Code 7:27-14 and 7:27-15 for all on-road and non-road construction equipment.

The above measures and requirements that Tennessee would employ during Project construction and operation would ensure that impacts of fugitive dust would be reduced. Due to the distance between Project construction sites and the nearest residences, we anticipate that dust impacts on these residences, combined with the above-proposed mitigation, would not be significant.

Table 11 Construction Emissions (tons per construction duration) a/								
Activity	**NO_x**	**CO**	**VOC**	**PM_{10}**	**$PM_{2.5}$**	**SO_2**	**Total HAP**	**CO_2e**
Modifications to Existing CS 321 (Susquehanna County, Pennsylvania)								
Construction equipment (off-road)	10.15	4.67	1.04	0.75	0.74	0.04	0.42	5,721
Worker and on-road construction equipment commuting	3.48	2.20	0.16	0.09	0.08	0.02	0.03	2,155
Fugitive dust from roadways and construction sites	-	-	-	8.98	2.45	-	-	-
Subtotal	13.64	6.87	1.20	9.82	3.26	0.06	0.45	7,876
Modifications to Existing CS 325 (Sussex County, New Jersey)								
Construction equipment (off-road)	10.15	4.67	1.04	0.75	0.74	0.04	0.42	5,721
Worker and on-road construction equipment commuting	3.48	2.20	0.16	0.09	0.08	0.02	0.03	2,155
Fugitive dust from roadways and construction sites	-	-	-	8.98	2.45	-	-	-
Subtotal	13.64	6.87	1.20	9.82	3.26	0.06	0.45	7,876
Construction of New CS 327 (Passaic County, New Jersey)								
Construction equipment (off-road)	10.15	4.67	1.04	0.76	0.74	0.04	0.42	5,721
Worker and on-road construction equipment commuting	4.19	2.76	0.19	0.10	0.10	0.02	0.03	2,609
Fugitive dust from roadways and construction sites	-	-	-	9.71	2.62	-	-	-
Subtotal	14.35	7.43	1.23	10.57	3.46	0.06	0.45	8,330
Total Project	**41.62**	**21.17**	**3.63**	**30.21**	**9.98**	**0.18**	**1.35**	**24,082**
[a] Sum of columns may not add to total due to rounding.								

In general, emissions from Project construction would occur over the duration of construction activity and would be emitted at different times throughout the Project areas. Construction emissions would be relatively minor and would result in short-term, localized impacts in the immediate vicinity of construction work areas. With the mitigation measures proposed by Tennessee, we conclude that air quality impacts from construction would be temporary and would not result in a significant impact on local or regional air quality.

8.5 Operational Emissions Impacts and Mitigation

The Project would generate air emissions almost entirely from operation of the modified CS 321 and CS 325. Both of these stations, as well as the new CS 327, would also result in fugitive emissions from minor leaks associated with piping components and valves.

Tables 12, 13, and 14 provide estimates of the potential annual emissions at the proposed modified CS 321 and CS 325 and new CS 327, respectively. These estimated emissions are based on manufacturers' data, AP-42 emission factor data (EPA, 2020g), GHG emission methodology found in 40 CFR 98 (EPA, 2020e), and assumptions that each station operates at full capacity for an entire year (i.e., 8,760 hours per year), with the exception of the emergency generators, which would be permitted to operate 100 hours per year.

Table 12
Potential Operational Emissions for Modified CS 321
(tons per year) [a]

Emission Source	NO_x	CO	VOC	PM_{10}	$PM_{2.5}$	SO_2	Total HAP	CO_2e
Modified CS 321 Project Sources								
Solar Taurus 70 turbine	13.66	9.83	4.45	2.54	2.54	1.31	1.23	45,152
fugitive emissions	-	-	0.03	-	-	-	0.01	419
venting releases	-	-	0.15	-	-	-	0.04	1,953
hot water boiler	0.48	1.11	0.12	0.15	0.15	0.01	0.04	2,359
emergency generator	0.12	0.25	0.09	<0.01	<0.01	<0.01	0.03	52
Subtotal Project sources	**13.66**	**10.95**	**4.83**	**2.67**	**2.67**	**0.97**	**1.35**	**49,735**
Emissions from existing Station equipment	78.5	108.1	33.5	6.64	6.64	3.69	1.6	116,540
removal of existing emergency generator	-1.32	-0.24	-0.01	-0.02	-0.02	-0.35	-<0.01	-200
Total for modified Station	**92.18**	**119.1**	**38.44**	**9.32**	**9.32**	**4.65**	**2.95**	**166,276**

[a] Sum of columns may not add to total due to rounding.

Table 13 Potential Operational Emissions for Modified CS 325 (tons per year) [a]								
Emission Source	**NO_x**	**CO**	**VOC**	**PM_{10}**	**$PM_{2.5}$**	**SO_2**	**Total HAP**	**CO_2e**
Modified CS 325								
Solar Taurus 130 turbine	23.73	11.58	6.04	4.58	4.58	2.36	2.22	81,310
fugitive emissions	-	-	0.05	-	-	-	0.01	649
venting releases	-	-	0.19	-	-	-	0.05	2,468
hot water boiler	0.48	1.11	0.12	0.15	0.15	0.01	0.04	2,359
emergency generator	0.32	0.65	0.16	0.01	0.01	<0.01	0.04	67
Subtotal Project sources	**24.44**	**13.15**	**6.51**	**4.74**	**4.74**	**2.37**	**2.35**	**86,831**
Emissions from existing Station equipment	39.83	41.00	22.46	4.67	4.67	5.25	2.26	82,723
removal of existing emergency generator	-0.09	-0.19	-0.05	-<0.01	-<0.01	-<0.01	-0.01	-22
Total for modified Station	**64.17**	**53.97**	**28.93**	**9.40**	**9.40**	**7.62**	**4.60**	**169,532**
[a] Sum of columns may not add to total due to rounding.								

Table 14 Potential Operational Emissions for CS 327 (tons per year) [a]								
Emission Source	**NO_x**	**CO**	**VOC**	**PM_{10}**	**$PM_{2.5}$**	**SO_2**	**Total HAP**	**CO_2e**
New CS 327								
emergency generator	0.17	0.15	0.04	< 0.01	< 0.01	< 0.01	0.03	36
pipeline liquids tank and truck loading	--	--	0.11	--	--	--	--	--
fugitive releases	--	--	0.04	--	--	--	0.01	513
venting releases			0.25				0.06	3,181
Total for Station	**0.17**	**0.15**	**0.44**	**< 0.01**	**< 0.01**	**< 0.01**	**0.1**	**3,730**
[a] Sum of columns may not add to total due to rounding.								

Compressor unit blowdowns (gas venting) can occur during initial construction and testing, operational startup and shutdown, maintenance activities, and during emergency purposes. The emission estimates due to blowdown events attributed to the proposed new turbines at CS 321 and CS 325 and new CS 327 are provided in tables 12, 13, and 14 above. During normal operations of the modified station, blowdowns resulting from compressor startup/shutdown and during maintenance activities would be infrequent.

We received comments about the potential of emissions from CS 327 to result in air pollution-related deposition into the nearby Wanaque Reservoir. Based on the very minor potential emission rates reported in table 14 above, we expect that emissions from operation of CS 327 would result in negligible air pollution-related deposition into the reservoir.

Fugitive emissions are minor leaks that would occur at valves, seals, and other piping components, and from operation and maintenance activities at the modified CS 321 and CS 325 and new CS 327. The noise impact of blowdown events at nearby residences and other areas identified as being sensitive to noise is discussed in section B.9.4, below.

Air Quality Modeling

Tennessee completed air quality dispersion models to determine the impacts of emissions from the proposed modified CS 321 and CS 325 on regional air quality. The analyses were conducted using the EPA AERMOD model version 19191 and methodology outlined in EPA guidance, and using meteorological datasets obtained from the NJDEP and PADEP. The analyses assumed that the modified stations would be running at full capacity (i.e., 8,760 hours per year at maximum emission rates). The

models estimate the maximum predicted concentrations of criteria pollutants emitted from the compressor stations using conservative assumptions. Background concentrations from the nearest air monitors were then added to the maximum predicted concentrations from the model and the total was compared to the NAAQS. The model results are provided in tables 15 and 16 below. We note that the potential emission rates of criteria pollutants from proposed CS 327 summarized in table 14 above each fall well under one tpy. Therefore, emissions from CS 327 have no potential to exceed NAAQS at any points outside the station's fenceline boundary, and modeling was deemed unnecessary to determine NAAQS compliance for this station.

Table 15
Predicted Air Quality Impacts of the Modified CS 321 (µg/m^3)

Pollutant	Averaging Period	Existing Ambient Background Concentration [a]	Maximum Modeled Concentration	Combined Background and Maximum Modeled	NAAQS
NO_2 [b]	1-hour	80.21	50.47	130.68	188
	annual	18.53	1.14	19.67	100
CO	1-hour	1,488.75	101.85	1,591	40,000
	8-hour	1,145.19	53.90	1,199	9,000
PM_{10}	24-Hour	32.00	1.71	33.71	150
$PM_{2.5}$	24-hour	20.13	0.80	20.93	35
	Annual	8.48	0.08	8.56	12
SO_2	1-Hour	9.58	3.38	12.96	196.5
	3-hour	15.68	2.38	18.06	1,300

µg/m^3 = micrograms per cubic meter
[a] Background concentrations for PM_{10} and SO_2 obtained from monitor Site ID 42-079-1101; for $PM_{2.5}$ from monitor Site ID 24-041-0007; and for NO_2 and CO from monitor Site ID 42-069-2006.
[b] NO_2 is converted from total NO_x by multiplying the modeled emission rate by 0.5 in accordance with EPA's Ambient Ratio Method 2.

Table 16
Predicted Air Quality Impacts of the Modified CS 325 (μg/m³)

Pollutant	Averaging Period	Existing Ambient Background Concentration [a]	Maximum Modeled Concentration	Combined Background and Maximum Modeled	NAAQS
NO_2 [b]	1-hour	83.35	16.48	99.83	188
	annual	21.20	0.24	21.44	100
CO	1-hour	1,488.75	18.98	1,507.73	40,000
	8-hour	1,145.19	4.72	1,149.91	9,000
PM_{10}	24-hour	32	0.24	32.24	150
$PM_{2.5}$	24-Hour	20.13	0.20	20.33	35
	Annual	8.48	0.03	8.51	12
SO_2	1-Hour	15.94	2.57	18.51	196.5
	3-hour	13.07	1.33	14.40	1,300

μg/m³ = micrograms per cubic meter
[a] Background concentrations for PM_{10} were obtained from monitor Site ID 42-079-1101; for $PM_{2.5}$, NO_2, and SO_2 from monitor Site ID 24-041-0007; and for CO from monitor Site ID 42-069-2006.
[b] NO_2 is converted from total NO_x by multiplying the modeled emission rate by 0.5 in accordance with EPA's Ambient Ratio Method 2.

The results in tables 15 and 16 above indicate that the combined total of existing background and maximum modeled concentrations are less than the applicable NAAQS for all pollutants for CS 321 and CS 325. Therefore, the Project would not cause or significantly contribute to a degradation of ambient air quality. The Project would result in continued compliance with the NAAQS, which are established to be protective of human health, including sensitive populations such as children, the elderly, and asthmatics.

9. Noise

Noise is generally defined as sound with intensity greater than the ambient or background sound pressure level. Construction and operation of the Project would affect overall noise levels in the Project areas.

The magnitude and frequency of environmental noise may vary considerably over the course of the day, throughout the week, and across seasons, in part due to changing weather conditions and the effects of seasonal vegetation cover. Two measures that relate the time-varying quality of environmental noise to its known effect on people are the 24-hour equivalent sound level (L_{eq}) and day-night sound level (L_{dn}). The L_{eq} is an A-weighted sound level containing the same energy as the instantaneous sound levels measured over a specific time period. Noise levels are perceived differently, depending on length of exposure and time of day. The L_{dn} takes into account the duration and time the noise is encountered. Specifically, the L_{dn} is the L_{eq} plus a 10 decibel on the A-

weighted scale (dBA) penalty added to account for people's greater sensitivity to sound levels during late evening and early morning hours (between the hours of 10:00 pm and 7:00 am). The A-weighted scale is used to assess noise impacts because human hearing is less sensitive to low and high frequencies than mid-range frequencies.

The human ear's threshold of perception for noise change is considered to be 3 dBA; 6 dBA is clearly noticeable to the human ear, and 10 dBA is perceived as a doubling of noise (Bies and Hansen, 1988).

9.1 Federal Noise Regulations

In 1974, the EPA published *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* (EPA, 1974). This document provides information for state and local governments to use in developing their own ambient noise standards. The EPA has indicated that an L_{dn} of 55 dBA protects the public from indoor and outdoor activity interference. We have adopted this criterion and use it to evaluate the potential project-related noise impacts at noise-sensitive areas (NSA). NSAs are defined as homes, schools, churches, or any location where people reside or gather. FERC requires that the noise attributable to any new or modified compressor station during full load operation not exceed an L_{dn} of 55 dBA at any NSAs. Due to the 10-dB nighttime penalty added prior to the logarithmic calculation of the L_{dn}, for a facility to meet the 55 dBA L_{dn} limit, it must be designed such that actual constant noise levels on a 24-hour basis do not exceed 48.6 dBA L_{eq} at any NSA.

Existing CS 321 is in Clifford Township in Susquehanna County, Pennsylvania. Article V, Section 100-43 of the Clifford Township, Pennsylvania 2014 Subdivision and Land Development ordinance restricts the sound level contribution from natural gas compressor stations to 50 dBA L_{eq} at 25 feet outside of the compressor station property line. No additional noise regulations were identified for the Commonwealth of Pennsylvania or Susquehanna County.

Existing CS 325 and the proposed CS 327 site are in the state of New Jersey. The State of New Jersey's Noise Control Act, New Jersey Statutes Annotated 13:1G-1 et seq. and implementing regulations at NJAC 7:2-1.1 et seq.) limit the total A-weighted sound level from industrial, commercial, public service, or community service facilities. See NJAC 7:29-1.2 ("…when measured at any residential property line of any affected person..."). Also included in the regulations are sound level limits for each octave band. Table 17 shows the New Jersey limits for nighttime and daytime hours. The sound level must simultaneously meet all octave band sound level limits and the total A-weighted sound level limit.

Table 17 New Jersey Administrative Code – Octave Band and dBA limits for Industrial, Commercial, Public Service, or Community Service Facilities that border Residential Property										
	Linear Sound Level (dB) Limits by Octave Band Frequency (Hz)									
	31.5	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**	**L_{eq}, dBA**
Night (10 pm – 7 am)	86	71	61	53	48	45	42	40	38	**50**
Day (7 am – 10 pm)	96	82	74	67	63	60	57	55	53	**65**

Existing CS 325 is in Wantage Township in Sussex County, New Jersey. No additional noise regulations were identified for either Wantage Township or Sussex County.

The proposed CS 327 site is in the Township of West Milford in Passaic County, New Jersey. Noise is regulated under Chapter 226 of the Township of West Milford ordinances with sound level limits that are equivalent to and based upon the sound level limits in the New Jersey Noise Control Act discussed above. Therefore, compliance with the New Jersey Noise Control Act would result in compliance with the West Milford ordinance for the operation of the station. The ordinance also has requirements for construction and demolition activities under Chapter 226-6.C (3), which require construction and demolition activity, excluding emergency work, not be performed between the hours of 6:00 pm and 7:00 am on weekdays, or between the hours of 6:00 pm and 9:00 am on weekends and federal holidays, unless such activities can meet the limits set forth in table 17 above. According to the township ordinances, all motorized equipment used in construction and demolition activity must be operated with a muffler. At all other times, the limits set forth in table 17 do not apply to construction and demolition activities. No additional noise regulations were identified for Passaic County.

9.2 Ambient Noise Conditions

CS 321 is an existing compressor station off 2069 Road in Susquehanna County, Pennsylvania. The area surrounding CS 321 is hilly and consists primarily of dense forests and agricultural fields. CS 325 is an existing station located off Deckertown Turnpike in Sussex County, New Jersey. The area surrounding CS 325 is hilly and consists primarily of wooded areas and agricultural fields. The proposed site for CS 327, consisting entirely of industrial and open land use classifications, is located off Burnt Meadows Road near West Milford, Passaic County, New Jersey. The area surrounding the site is hilly and consists primarily of dense forests and some commercial businesses.

In January 2020, Tennessee completed ambient sound surveys to measure the existing sound levels during the daytime and nighttime at the nearest NSAs to existing CS 321 and CS 325 and the proposed CS 327 site. The results of the ambient sound surveys are provided in tables 18, 19, and 20, below.

9.3 Construction Noise Impacts and Mitigation

Noise would be generated during construction of the Project. Construction activities in any one area could last from several weeks to several months on an intermittent basis. While individuals in the immediate vicinity of the construction activities would experience an increase in noise, this effect would be temporary and local.

According to Tennessee's analysis, assuming daytime only (7:00 am to 7:00 pm) construction, noise from Project construction at CS 321 could contribute a daytime L_{eq} of between 57.5 L_{eq} and 60 L_{eq} for NSAs between 875 and 1,550 feet of CS 321, respectively, resulting in a temporary increase over ambient daytime noise of between 0.4 and 7.5 dB. Noise from Project construction at CS 325 could contribute a daytime L_{eq} of between 44.9 L_{eq} and 61 L_{eq} for NSAs between 1,000 and 2,375 feet of CS 325, respectively, resulting in a temporary increase over ambient noise of between 0.3 and 12.3 dB. Tennessee's analysis also found that noise from Project construction at the CS 327 site could contribute between a daytime L_{eq} of between 41.3 L_{eq} and 61.3 L_{eq} for NSAs between 950 and 1,980 feet of CS 327, respectively, resulting in an increase over ambient noise of between 0.2 and 3.7 dB.

Tennessee states that although construction at all Project sites would normally take place during daytime hours, weather conditions, site conditions, specialized construction techniques, emergency, or other atypical circumstances may necessitate nighttime work or extended work on Sundays, which could result in additional noise impacts on NSAs.

To minimize Project construction impacts on nearby NSAs, Tennessee would limit noise-generating activities to daytime hours to the extent possible. Tennessee states that although most construction at Project sites would normally take place during daytime hours, weather conditions, site conditions, specialized construction techniques, emergency, or other atypical circumstances may necessitate nighttime work or extended work on Sundays, which could result in additional noise impacts on NSAs. Construction activities that may be performed after 7:00 am or prior to 7:00 a.m. at each construction site include: hydrostatic testing; pipe drying; concrete foundation work, pipe fabrication and welding, civil site work; excavations; trench dewatering; and electrical conduit, cable tray, and wire pulling.

Due to the distance of construction sites from the nearest NSAs, the temporary nature of construction activities, and Tennessee's plan to limit its noise-producing construction activities to daytime hours to the extent feasible, we conclude that noise from Project construction would not result in significant noise impacts on NSAs.

The Long Pond Ironworks State Park surrounds the CS 327 site. The Highlands Trail runs in a north-south direction to the east of the CS 327 site. The Highlands Trail is more distant from the site of new CS 327 than the four closest NSAs; therefore, while sound levels due to construction of new CS 327 may be temporarily audible at some points along the Highlands Trail during construction, these levels would also be less than the predicted levels at the four closest NSAs, as described above. The anticipated temporary increase in sound level due to construction activities at CS 327 would result in an increase of less than 5 dB over ambient at all locations along the Highlands Trail.

9.4 Operation Noise Impacts and Mitigation

We received comments expressing concerns about the potential noise impacts from modified CS 321 and CS 325 and new CS 327 on nearby residences. The proposed equipment at the modified CS 321, and CS 325 would add to noise generated from the existing equipment operated at the stations on a continuous basis (i.e., up to 24 hours per day). The electric motor-driven compressor as well as the other equipment at proposed CS 327 would also generate noise on a continuous basis. The noise impact associated with the modified stations would attenuate with distance.

The results of the ambient sound surveys were combined with the predicted noise impacts from the proposed compressor station equipment at each of proposed modified CS 321 and CS 325 and new CS 327 to determine the operational noise impacts at the NSAs. Tennessee would incorporate noise control treatments for each station, further detailed in section 6.0 of Tennessee's Pre-Construction Sound Level Study for each of CS 321 and CS 325 and in section 5.0 of Tennessee's Pre-Construction Sound Level Study for CS 327 for the following noise-producing equipment and building materials:

- compressor building walls and roof;
- compressor building ventilation;
- compressor building doors;
- turbine exhausts (CS 321 and CS 325);
- gas aftercooler fans (CS 327);
- electric motor blower and variable frequency drive cooler (CS 327);
- exhaust duct and shell noise;
- turbine intake;
- station piping; and
- filter separators.

The operational noise analyses in tables 18, 19, and 20 estimate that the operation of the modified CS 321 and CS 325 and new CS 327 would likely not contribute a perceptible increase in existing noise levels at the closest NSAs. As stated above, the Highlands Trail within Long Pond Ironworks State Park is more distant than the four closest NSAs to CS 327; therefore, we expect that the increase in ambient noise due to

the operation of the station at all locations along the Highlands Trail would also not be perceptible. In addition, Tennessee's analysis estimates that CS 325 would contribute an L_{dn} of 50 dBA at the nearest property line, within levels acceptable to the New Jersey noise ordinance requirements described above. Tennessee commits to employing all recommended noise control treatments specified in the above-mentioned pre-construction sound level studies and having dynamic insertion losses as specified within its application tables 9.2-6, 9.2-9, and 9.2-13.[14]

We received comments expressing concerns about the potential noise impacts from blowdowns at new CS 327. Blowdown events generate noise at compressor stations and occur when pressure in the compressor casing, piping, or the entire station must be released in a controlled manner. Blowdown events cause a temporary increase in sound levels that typically last for about 1 to 5 minutes. Tennessee's proposed station design includes a blowdown silencer on the new turbine compressor units at CS 321 and CS 325, and on the electric motor-driven compressor unit at CS 327 in order to meet an A-weighted sound level of 75 dBA at 50 feet. This mitigated blowdown sound level is predicted to result in a noise level of approximately 47, 48.8, and 34.6 dBA L_{eq} at the nearest NSAs from each of these stations, respectively.

Table 18
Noise analysis for the operation of the modified CS 321

NSA	Distance (feet) and Direction from Station	Ambient Back-ground L_{dn} Noise Levels (dBA) [a]	Full Load L_{dn} Contrib-ution from Existing Station (dBA) [b]	Predicted L_{dn} Attributable to Project Modifications (dBA)	Predicted L_{dn} Contrib-ution from modified Station (dBA)	Total L_{dn} Noise Level (dBA)	Predicted Change in L_{dn} from Existing Ambient (dB)
1	1,150 E	69.0	41.7	43.9	45.9	69.0	0.0
2	875 SE	69.0	47.9	46.0	50.1	69.1	0.1
3	1,025 SE	69.0	47.0	44.8	49.0	69.0	0.0
4	950 SW	54.7	43.1	43.6	46.4	55.3	0.6
5	1,250 NW	54.8	42.2	43.2	45.7	55.3	0.5
6	1,550 NW	53.2	45.5	44.5	48.0	54.4	1.2

[a] Noise sources present during the survey included traffic along Highway 374 (NSAs 1, 2, and 3), aircraft, birds/chickens, and local traffic (NSAs 4, 5, and 6).

[14] Available on FERC eLibrary under accession number 20200630-5546, in the tables filed in Resource Report 9.

Table 19 Noise Analysis for the operation of the modified CS 325							
NSA	Distance (feet) and Direction from Station	Ambient Back-ground L_{dn} Noise Levels (dBA) [a]	Full Load L_{dn} Contrib-ution from Existing Station (dBA) [b]	Predicted L_{dn} Attributable to Project Modifications (dBA)	Predicted L_{dn} Contrib-ution from modified Station (dBA)	Total L_{dn} Noise Level (dBA)	Predicted Change in L_{dn} from Existing Ambient (dB)
1	1,000 WNW	56.9	49.1	43.5	50.2	57.1	0.2
2	2,375 SW	47.7	43.6	36.1	44.3	48.0	0.3
3	1,000 SE	52.7	52.7	48.2	54.0	54.0	1.3
4	2,300 N	56.7	46.2	30.4	46.3	56.7	0.0
[a] Noise sources present during the survey included local traffic, birds, running water, and wind.							

Table 20 Noise Analysis for CS 327					
NSA	Distance (feet) and Direction from Station	Ambient Background L_{dn} Noise Level (dBA)	Predicted L_{dn} Noise Level Contribution from Station (dBA)	Predicted Total L_{dn} Noise Level (dBA)	Predicted Change in L_{dn} from Existing Ambient (dB)
1	1,280 WSW	57.6	46.3	57.9	0.3
2	950 NW	64.7	50.2	64.9	0.2
3	1,060 NNW	66.4	47.7	66.5	0.1
4	1,980 SW	57.6	32.3	57.6	0.0
[a] Noise sources present during the survey were primarily attributed to running water (nearby creek) and local traffic.					

While the analyses summarized in tables 18, 19, and 20 predict that noise levels attributable to the modified CS 321 and CS 325 and new CS 327 would be below our 55 dBA L_{dn} requirement at the nearest NSAs, to verify compliance with the FERC's noise standards, **we recommend that**:

- **Tennessee should file with the Secretary of the Commission (Secretary) noise surveys for the operation of the modified Compressor Stations 321 and 325 and new Compressor Station 327 <u>no later than 60 days</u> after placing each respective station into service. If a full power load condition noise survey is**

not possible, Tennessee should file an interim survey at the maximum possible power load <u>within 60 days</u> of placing each station into service and file the full power load survey <u>within 6 months</u>. If the noise attributable to operation of all equipment at any station under interim or full power load conditions exceeds an L_{dn} of 55 dBA at any nearby NSA, Tennessee should:

a. file a report with the Secretary, for review and written approval by the Director of the Office of Energy Projects (OEP), or the Director's designee, on what changes are needed;

b. install additional noise controls to meet that level <u>within 1 year</u> of the in-service date; and

c. confirm compliance with this requirement by filing a second full power load noise survey with the Secretary <u>no later than 60 days</u> after it installs the additional noise controls.

While existing noise levels would be affected by the operation of the modified CS 321 and CS 325 and new CS 327 within the vicinity of each station, based on our analyses, Tennessee's proposed noise mitigation measures, and our recommendation stated above, we conclude that the Project would not result in significant noise impacts on any nearby NSAs.

10. Reliability and Safety

The pressurization of natural gas at a compressor station involves some incremental risk to the public due to the potential for accidental release of natural gas. The greatest hazard is a fire or explosion following a major pipeline rupture.

Methane, the primary component of natural gas, is colorless, odorless, and tasteless. It is not toxic, but is classified as a simple asphyxiate, possessing a slight inhalation hazard. If breathed in high concentration, oxygen deficiency can result in serious injury or death. Methane has an auto-ignition temperature of 1,000°F and is flammable at concentrations between 5.0 and 15.0 percent in air. An unconfined mixture of methane and air is not explosive; however, it may ignite and burn if there is an ignition source. A flammable concentration within an enclosed space in the presence of an ignition source can explode. It is buoyant at atmospheric temperatures and disperses rapidly in air.

<u>Safety Standards</u>

We received comments raising concerns about the Project's potential to result in increased stress on Tennessee's existing 300 Line pipeline and related safety issues.

PHMSA is mandated to prescribe minimum safety standards to protect against risks posed by natural gas facilities under Title 49 of the U.S. Code, Chapter 601. The

PHMSA administers the USDOT's national regulatory program to ensure the safe transportation of natural gas and other hazardous materials by pipeline. It develops safety regulations and other approaches to risk management that ensure safety in the design, construction, testing, operation, maintenance, and emergency response of natural gas facilities. Many of the regulations are written as performance standards, which set the level of safety to be attained and allow the operator to use various technologies to achieve safety. PHMSA ensures that people and the environment are protected from the risk of incidents. This work is shared with state agency partners and others at the federal, state, and local levels.

Section 5(a) of the Natural Gas Pipeline Safety Act provides for a state agency to assume all aspects of the safety program for intrastate facilities by adoption and enforcement of federal standards. A state may also act as PHMSA's agent to inspect interstate facilities within its boundaries; however, the PHMSA is responsible for enforcement actions. New Jersey and Pennsylvania are authorized under Section 5(a) to assume all aspects of the safety program for intrastate, but not interstate facilities (PHMSA 2020).

The PHMSA pipeline standards are published in 49 CFR 190 through 199. Part 192 specifically addresses natural gas pipeline safety issues. Under a MOU with FERC on Natural Gas Transportation Facilities, dated January 15, 1993, the PHMSA has the exclusive authority to promulgate federal safety standards in the transportation of natural gas. Section 157.12(a)(9)(vi) of FERC's regulations require that an applicant certify that it would design, install, inspect, test, construct, operate, replace, and maintain the facility for which a Certificate is requested in accordance with federal safety standards and plans for maintenance and inspection. Alternatively, an applicant must certify that it has been granted a waiver of the requirements of the safety standards by the PHMSA in accordance with Section 3(e) of the Natural Gas Pipeline Safety Act. FERC accepts this certification and does not impose additional safety standards.

If FERC becomes aware of an existing or potential safety problem, there is a provision within the MOU to promptly alert the PHMSA. The MOU also provides for referring complaints and inquiries made by state and local governments and the general public involving safety matters related to pipelines under FERC's jurisdiction. FERC also participates as a member of the PHMSA's Technical Pipeline Safety Standards Committee, which determines if proposed safety regulations are reasonable, feasible, and practicable.

Station Design

The piping and aboveground facilities associated with the Project would be designed, constructed, operated, and maintained in accordance with the PHMSA *Minimum Federal Safety Standards* in 49 CFR 192. The regulations are intended to ensure adequate protection for the public and to prevent natural gas facility accidents and failures. The PHMSA specifies material selection and qualification; minimum design

requirements; and protection from internal, external, and atmospheric corrosion. Part 192 of 49 CFR establishes safety guidelines for the design and construction of compressor stations in addition to pipeline safety standards. Sections 192.163 – 192.173 of 49 CFR specifically addresses design criteria for compressor stations, including specific design requirements for: location, building design, emergency shut-down, pressure control, ventilation, and alarms. In addition, first aid, and safety equipment would be maintained in accordance with Occupational Safety and Health Administration regulations in 29 CFR 1910. The emergency shutdown systems at modified CS 321 and CS 325 and new Compressor Station 327, further discussed below, would comply with PHMSA regulations found in 49 CFR 192.167 and with additional safety systems addressed in sections 192.169 and 192.171. Part 192.163 requires the location of each main compressor building of a compressor station be on a property under the control of the operator. The station must also be far enough away from adjacent property, not under control of the operator, to minimize the possibility of fire spreading to the compressor building from structures on adjacent properties. Part 192.163 also requires each building on a compressor station site be made of specific building materials and to have at least two separate and unobstructed exits. The station must be in an enclosed fenced area and must have at least two gates to provide a safe exit during an emergency.

While the Project is only proposing changes in compression, it would have an effect on the pipeline system connected to the modified compressor stations. The existing Tennessee system is already designed to safely handle the additional gas volumes that would be transported through the system by the proposed Project, with no proposed increase in the MAOP.

Project Operations

Parts 192.731 through 192.736 of 49 CFR establish safety guidelines for inspection, testing, and monitoring at compressor stations. Tennessee would inspect the fire detection, gas detection, and emergency shutdown systems quarterly and valves would be inspected annually. Inspections would ensure that the facilities and pipeline systems are in good mechanical condition, set to control or relieve at the correct pressure consistent with the pressure limits in Part 192.201(a), and are properly installed and protected from dirt, liquids, or other conditions that might prevent proper operation.

Part 192.163 of 49 CFR requires that each compressor station have an emergency shutdown system that meets several specifications, including:

- flame detection that uses ultraviolet sensors;
- gas detection for detecting low concentrations of natural gas;

- emergency shutdowns to isolate the gas piping, stop equipment, and safely vent station gas;
- individual unit shutdown systems in case of mechanical or electrical failure of a compressor unit system or component;
- automated control systems to maintain safe MAOPs (including over-pressure protection systems);
- automated emergency shut down systems to evacuate gas from the system at a safe location;
- compressor unit enclosure fire suppression systems; and
- hazardous gas and fire detection alarm systems.

Existing CS 321 and CS 325 are currently linked (and new CS 327 would be linked) to a central control system through a Supervisory Control and Data Acquisition system that monitors Tennessee's system 24 hours per day, 365 days per year. If operating conditions fall outside predetermined ranges, alarms would be activated at Tennessee's gas control center in Houston, Texas to enable timely diagnosis and mitigation of the alarm condition.

USDOT regulations (49 CFR Part 192) specify that compressor stations must have an emergency shutdown system that can be manually operated from at least two points. In addition to manual shutdown points, existing CS 321 and CS 325 currently are equipped, and new CS 327 will be equipped, with a full range of automatic emergency detection and shutdown systems, including fire and hazardous gas detection alarm systems. These safety and emergency systems would continue to be monitored at CS 321 and 325, and would be monitored at proposed CS 327, on a 24-hour basis by Tennessee's Supervisory Control and Data Acquisition system and local control systems.

Tennessee's gas control center is capable of reacting immediately to an emergency pipeline condition by remotely opening or closing valves to shut down or activate necessary pipeline facilities to control the event. In addition, Tennessee field personnel are available to respond to emergency events on its pipeline system at any time of day.

If an emergency situation requires the depressurization of any piping to and within a compressor station, venting of the gas would take less than ten minutes. In accordance with USDOT regulations (49 CFR 192.615 and 192.617), potential hazards would be minimized by emergency shutdown and pressure restriction on necessary pipeline sections. Following any such shutdown or pressure restriction, service outage would be safely restored.

Emergencies

The PHMSA prescribes the minimum standards for operating and maintaining pipeline and aboveground natural gas facilities, including the requirement to establish a written plan governing these activities. Each operator is required under 49 CFR 192.615 to establish an emergency plan that includes procedures to minimize the hazards of a natural gas emergency. Tennessee would integrate the new facilities into its existing facility Emergency Response Plan for the corresponding compressor station, in accordance with the regulation, which requires that a plan be prepared prior to commencing operations. Tennessee would make the plan available to emergency responders. Key elements of the plan include procedures for:

- receiving, identifying, and classifying emergency events, gas leakage, fires, explosions, and natural disasters;
- establishing and maintaining communications with local fire, police, and public officials, and coordinating emergency response;
- emergency system shutdown and safe restoration of service;
- making personnel, equipment, tools, and materials available at the scene of an emergency; and
- protecting people first and then property and making them safe from actual or potential hazards.

The PHMSA requires that each operator establish and maintain liaison with appropriate fire, police, and public officials to learn the resources and responsibilities of each organization that may respond to a natural gas pipeline or facility emergency, and to coordinate mutual assistance. Tennessee must also establish a continuing education program to enable customers, the public, government officials, and those engaged in excavation activities to recognize a gas emergency and report it to the appropriate public officials. Tennessee would provide the appropriate training to local emergency service personnel before the Project is placed in service.

With Tennessee's continued compliance with PHMSA safety standards, operation, and maintenance requirements, the Project would be constructed and operated safely.

11. Cumulative Impacts

In accordance with NEPA and with FERC policy, we identified other actions in the vicinity of the Project facilities and evaluated the potential for a cumulative impact on the environment. As defined by the CEQ, a cumulative effect is the impact on the environment that results from the incremental impact of the action when added to other

past, present, and reasonably foreseeable future actions regardless of the agency or party undertaking such other actions. Cumulative impacts can result from individually minor, but collectively significant actions, taking place over time. The CEQ guidance states that an adequate cumulative effects analysis may be conducted by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions (CEQ, 1997). In this analysis, we consider the impacts of past projects within defined geographic scopes as part of the affected environment (environmental baseline) which were described and evaluated in the preceding environmental analysis. However, present effects of past actions that are relevant and useful are also considered. Table 21 summarizes the resource-specific geographic scopes that were considered in this analysis.

We have evaluated the cumulative impacts of the proposed Project consistent with other recent assessments issued by the Commission and in accordance with recommended CEQ and EPA methodologies (CEQ, 1997; EPA, 1999). To avoid unnecessary discussions of insignificant impacts, an action must first meet the following three criteria to be included in the cumulative analysis:

- affects a resource also potentially affected by the Project;
- causes this impact within all, or part of, the Project area defined by the resource-specific geographic scope; and
- causes this impact within all, or part of, the time span of the proposed Project's estimated impacts.

As described in our analysis above within section B of this EA, constructing and operating the Project would temporarily and permanently affect the environment. The Project would affect to some extent floodplains, geology, soils, vegetation, wildlife, some land uses, visual resources, socioeconomics, air quality, and noise. However, throughout this EA, with the exception of operational air and noise impacts, we determined that the Project would have only minimal or temporary impacts on these resources. We also concluded that nearly all of the Project-related impacts would be contained within or adjacent to the temporary construction workspaces.

No NRHP-eligible cultural resources were identified in the areas affected by the Project; therefore, the Project would have no impact on cultural resources, and would therefore not contribute to cumulative impacts on these resources. In addition, no projects were identified within 1 mile of the Project workspaces that could result in potential impacts on land use. Therefore, cultural resources and land use are not considered further for purposes of evaluating cumulative impacts.

Table 21 below summarizes the resource-specific geographic boundaries that were considered in this analysis, and the justification for each. Actions outside of these boundaries are generally not evaluated because their potential to contribute to cumulative impacts diminishes with increasing distance from the Project.

Table 21 Cumulative Impact Resource-Specific Geographic Scopes potentially applicable to the Project	
Resource	**Cumulative Impact Geographic Scope**
Geological Resources and Soils	For geological resources and soils, potential impacts include the area of disturbance of the Projects (i.e., the construction workspaces) overlapping or immediately abutting the workspaces of other actions.
Surface Water Resources and Wetlands	Impacts on water resources and wetlands are traditionally assessed on a watershed level, defined by the HUC watershed boundary, to assess potential overlapping impacts from sedimentation, turbidity, and general water quality impacts.
Vegetation, Wildlife, and Special Status Species	The watershed level provides a natural boundary and a geographic proxy to accommodate general wildlife habitat and ecological characteristics in the Project area; therefore, impacts of other actions on vegetation, wildlife, and special status species are evaluated in combination with the Project within each defined HUC watershed boundary. The CS 321 portion of the Project is within the Lower East Branch Tunkhannock Creek (HUC 020501061002) watershed. The CS 325 portion of the Project is located within the Papakating Creek (HUC 020200070102) watershed. The CS 327 portion of the Project is located within the Upper Wanaque River Creek (HUC 020301030101) watershed.
Visual Resources	Visual impacts of other actions in combination with the Project are evaluated within a 1-mile radius from Project work areas.
Socioeconomics	Impacts on socioeconomic conditions typically include entire counties, as demographic statistics are generally assessed on a county basis. Therefore, socioeconomic impacts of the Project in combination with other projects are evaluated within the boundary of Susquehanna County, PA and Sussex and Passaic Counties, NJ.
Air Quality	Construction impacts include other actions within 0.25 mile of Project workspaces. We typically base operational impacts on a 50-kilometer radius from the emitting source (in this case, the proposed modified CS 321 and CS 325). Operation of new CS 327 is not evaluated for cumulative impacts on air quality because its operational emissions are very minor due to its electric motor-driven compressors that contribute negligibly to ambient air concentrations within the geographic scope.
Noise	Construction impacts include other actions within 0.25 mile from the proposed Project's noise-producing equipment work. Operation impacts include other actions that would contribute a noise impact on any NSA within a 1-mile radius of the modified CS 321 and CS 325 and new CS 327.

11.1 Other Actions identified within the Geographic Scope

Tables 22 and 23 below summarize recent past, current, and reasonably foreseeable actions and affected resources potentially falling within one or more geographic scopes identified in table 21.

Tennessee obtained the information about present and future planned actions summarized in tables 22 and 23 by consulting its project records for Pennsylvania and New Jersey counties, federal, state, and local agency and municipality websites, FERC eLibrary, and local newspapers. We did not identify any additional projects falling within the resource-specific geographic scopes summarized in table 21.

Based on the geographic scopes outlined in table 21 above, we identified actions for consideration in our cumulative impact assessment. Table 22 includes actions involving potential impacts on all resources except operational air quality; table 23 includes actions within the geographic scope specific to operational air quality impacts.

Table 22
Present and Reasonably Foreseeable Actions Considered for Cumulative Impacts within the Geographic Scope of the Project [a]

Project/Sponsor (Status)	Approx. Distance/ Direction from Project	Project Description	Location	Expected Construction Timeframe	Potential Contribution to Cumulative Impacts
Clifford Quarry and Blacktop Plant / Clifford Aggregates and Hot Mix Asphalt, New Enterprise Stone and Lime Co., Inc.	Same HUC-12 watershed as CS 321 (020501061 002)	quarrying, aggregate, sand and gravel, and hot mix asphalt operations	Lenox Township, Susquehanna County PA	ongoing	surface water, wetlands, vegetation, wildlife
bridge preservation projects	Same HUC-12 watershed as CS 321 (020501061 002)	bridge preservation construction activities	State Route 2035, Lenox Township, Susquehanna Co; State Route 407, Lenox Township, Susquehanna County PA	under construction as of November 2020	surface water, wetlands, vegetation, wildlife, socioeconomics
non-jurisdictional power lines and fiber optic lines	adjacent / within CS 327 workspaces and extending within a construction right-of-way to a point 2,740 feet south	underground electric and fiber optic line construction as described in section A.8	Passaic County NJ	fall 2022	geology, soils, groundwater, construction-related air quality, noise, surface water, vegetation, wildlife, socioeconomics
cooling equipment project	within the fenced area of CS 321	addition of cooling equipment to existing CS 321 facility	Susquehanna County PA	2021 (anticipated)	geology, soils, groundwater, construction-related air quality and noise, operational noise, surface water, vegetation, wildlife, socioeconomics

a: Projects that could contribute to cumulative operational air impacts are listed in table 23.

11.2 Potential Cumulative Impacts of the Proposed Project

The actions considered in our cumulative impact analysis identified in section B.11.1 may vary from the proposed Project in nature, magnitude, and duration. These actions are included based on the likelihood of their impacts coinciding with the Project's impacts, which means that these other actions have current or ongoing impacts or are "reasonably foreseeable." The actions we considered are those that could affect similar resources within the same geographic scope defined in table 21, and during the same timeframe as the Project. The anticipated cumulative impacts of the Project and these other actions are discussed below.

The bridge preservation projects within Susquehanna County, Pennsylvania identified in table 22 above are under construction as of November 2020. We expect these projects to conclude prior to the Project's construction timeframe. The two bridge preservation projects and ongoing quarrying, aggregate, sand and gravel, and hot mix asphalt operations fall within the HUC-12 watershed shared with CS 321. With the exception of the cooling project within the CS 321 fenceline boundary, no projects have been identified that would be constructed or operated within 0.25 mile of either of the modified CS 321 or 325. As described in section A.8, a non-jurisdictional power line construction project would abut the construction workspaces for CS 327, and could contribute to cumulative impacts as summarized in table 22.

The projects associated with Archbald Power Station, CPV Valley Energy Center, Lockheed Martin Corporation, Mactac Inc., Polarized Meats Co., Inc., Procter and Gamble Paper Products, Sandvik Materials Technology, and Williams Field Services Company, identified in table 23 below, fall within the geographic scope for cumulative air quality impacts for modified CS 321 and 325, and are discussed further below.

Geology and Soils

As Project impacts on geology and soils would be highly localized and limited primarily to the Project footprint during the period of active construction, cumulative impacts on geology and soils would only occur if other geographically overlapping projects were constructed at the same time (and place) as the Project, and the exposure of soils to erosion and sedimentation occurs. None of the other projects/actions occurring within the temporal scope of the Project would occur within the geographic scope for the Project except for the non-jurisdictional power line/fiber optic line project (CS 327). We believe that limited footprint and the measures Tennessee would adopt to minimize impacts on soils would prevent any significant cumulative impacts on geology and soils from the Project in consideration with other projects.

Groundwater

Construction of the Project could result in minor, temporary impacts on groundwater infiltration due to tree, herbaceous vegetation, or scrub-shrub vegetation

clearing. There is a chance that construction associated from the Project in combination with construction associated with the projects identified in table 22 could result in temporary cumulative impacts within the aquifers if construction activities occur concurrently or within several days of one another. Projects that could have cumulative impacts on groundwater occurring within the same HUC-12 watersheds and similar temporal scope include the non-jurisdictional power line/fiber optic line project (CS 327). If temporary impacts occur, it would likely be limited to short-term turbidity visible in groundwater, reduced infiltration, or potential temporary depletions due to hydrostatic test water withdrawals. We also anticipate that Tennessee's SPRP would prevent or minimize the opportunity for and necessitate immediate control and clean-up of spills of fuels, lubricants, or other hazardous material, and would therefore minimize the opportunity for cumulative impacts that could result if other projects were to also result in spills. For these reasons, we conclude that any cumulative impact on groundwater from the Project would be negligible.

Wetlands and Waterbodies

As no waterbodies are directly impacted by the Project, Tennessee would comply with our Plan and Procedures and its SPRP, and would minimize work in state-regulated waterbody buffer areas, we do not anticipate any significant cumulative impacts on surface waters. CS 325 and 327 are adjacent to waterbodies, and temporary indirect impacts from erosion of project-disturbed areas into waterbodies could occur if erosion control devices are overwhelmed or incorrectly installed; however, we only identified the new power and communication lines within the HUC-12 watershed that would be constructed at the same time. We anticipate that construction of these facilities would also comply with federal and state erosion control requirements which would minimize erosion and sedimentation to that could occur to offsite waterbodies. Based on Tennessee's implementation of the FERC Plan and Procedures, we anticipate that any indirect cumulative impacts on waterbodies would be minor.

Hydrostatic testing of the Project would require the use of approximately 375,200 gallons of water, which would be obtained from existing on-site wells (or a new on-site well in the case of CS 327), commercial water sources, or municipal water sources and would be discharged at an approved disposal facility. Therefore, no cumulative impacts from hydrostatic testing are anticipated, as surface waters would not be used as a direct source or a discharge location for test water.

Only CS 321 would have direct impacts on wetlands, therefore, our analysis focuses on the cumulative impacts possible from the temporary disturbance of the 0.012 acre of PEM wetland, which is within the construction boundaries of CS 321. No other projects from table 22 would directly impact the same wetland. Projects that could have cumulative impacts on wetlands occurring within the HUC-12 watershed include Clifford Quarry and Blacktop Plant; Bridge Preservation on State Route 2035 over Tributary of Tunkhannock Creek in Lenox Township, Susquehanna County; and Bridge Preservation

on State Route 407 (Philla Great Bend Pike) over East Branch Tunkhannock Creek in Lenox Township, Susquehanna County. Cumulative impacts on wetlands from projects and actions identified in table 22 would dissipate the farther they occur from the Project. We were unable to find quantitative data for the extent of impacts on wetlands from the other projects; however, if they do result in permanent impacts, it would not be cumulatively permanent with the Project, as only temporary impacts are anticipated to the wetland with construction at CS 321, which would return to original function soon after construction. Therefore, any cumulative impacts that could occur in conjunction with the Project would only be temporary in nature.

CS 327 is adjacent to wetlands, and temporary indirect impacts from erosion of project-disturbed areas into wetlands could occur if erosion control devices are overwhelmed or incorrectly installed; however, we only identified the new power and communication lines within the HUC-12 watershed that would be constructed at the same time. We anticipate that construction of the facilities would also comply with federal and state erosion control requirements which would minimize erosion and sedimentation to that could occur to offsite wetlands. Based on Tennessee's implementation of the FERC Plan and Procedures, we anticipate that any indirect cumulative impacts on wetlands adjacent to CS 327 would be minor.

Fisheries, Vegetation, Wildlife

As described above, any cumulative impacts on surface waters resulting from the Project when considered with other projects in the geographic scope, would likely be temporary and minor. Indirect impacts, such as sedimentation and turbidity, could occur on the aquatic environment of nearby surface waters from increased stormwater runoff as a result of the additive increase in impervious surfaces. However, as with most projects, Tennessee would be required by federal and state permits to ensure stormwater runoff does not result in impacts on surrounding waterbodies and implement measures to prevent sediment from leaving the construction area. Therefore, we conclude that any cumulative impacts on fisheries and aquatic species would not likely be significant.

There are three known reasonably foreseeable or ongoing projects that are in one of the HUC-12 watersheds (Lower East Branch Tunkhannock Creek) that the Project occurs in, identified in table 21 above. Although we do not have exact data on vegetation and habitat impacts for the other projects, these projects would also likely be required to restore areas of temporary impact to pre-construction condition. The non-jurisdictional power line/fiber optic line project could result in cumulative impacts on vegetation and wildlife within the Upper Wanaque River Creek HUC-12 watershed where CS 327 would be constructed. However, any cumulative impacts would be localized and minor. In general, long-term cumulative impacts on upland herbaceous/scrub-shrub areas are less likely as most vegetation cover would regenerate within 1 to 3 years. Forest habitat takes longer to regenerate, and therefore cumulative impacts from removal of forest across a watershed could be discernable. There could be a cumulative impact due to the additive

forest loss and permanent conversion of specific habitat types to developed land that may result from these projects. The Project would result in clearing of 2.9 acres of forest habitat and permanent conversion of already disturbed habitat (4.4 acres of forest and herbaceous/scrub) to areas maintained for operation of the Project.

In general, cumulative impacts on vegetation and habitat resulting from nearby projects considered along with the Project are expected to be minor, considering the limited area affected within the geographic scope, as compared to the large amount of similar vegetation and habitat remaining in the Lower East Branch Tunkhannock Creek watershed (which totals 26,222 acres of land), the Papakating Creek watershed (which totals 38,934 acres of land), and the Upper Wanaque River Creek watershed (which totals 26,338acres of land). The Project would restore areas of temporary impact in accordance with the FERC Plan and minimize the potential introduction of noxious and invasive species through Tennessee's Weed Plan. For these reasons and based on the available data in our analysis, we conclude that the cumulative effect on vegetation and habitat would not be significant.

Other than cumulative habitat loss, common wildlife and sensitive species could experience cumulative impacts from projects that occur in the same area at the same time as a result of increased noise, lighting, road traffic, and general human activity. In general, most of the wildlife inhabiting the affected watershed are human commensal species or individuals that have otherwise become acclimated to industrial and human activity. Given this reasoning and the large amount of wildlife habitat that would remain undisturbed within the geographic scope, we conclude that any resulting cumulative impacts on wildlife or any sensitive and/or protected species from the combined projects occurring in the common HUC-12 watershed would not be significant.

Socioeconomics

Construction activities at CS 321 would occur during the same time period as the addition of cooling equipment to CS 321 and may have a cumulative impact on local employment. The cooling equipment installation would require the same skilled labor as the compressor station expansion. If the cooling equipment installation is not performed by the Project cooling equipment subcontractor, additional workers from the local labor market may be employed to perform this work. This would result in a minor, positive cumulative impact on local employment.

At CS 327, Project construction would occur at the same time the non-jurisdictional power and communication lines would be extended to the site. We anticipate that the construction personnel installing the power and communications lines would be based in the Project area, and that there would be no significant cumulative impact on local employment.

Air Quality and Noise Impacts from Construction (CS 321 and CS 327)

The non-jurisdictional power line/fiber optic line project identified in table 22 could occur during a timeframe that overlaps with Project construction activities at CS 327, and therefore could cumulatively add to construction-related air and noise emissions within the geographic scope. However, the Project's contribution to cumulative impacts combined with construction air and noise emissions from the non-jurisdictional activities would be temporary and minor. The cooling equipment project is expected to take place prior to commencement of construction of the Project, and therefore is not expected to result in any cumulative air quality or noise impacts when combined with Project construction at CS 321.

Air Quality Impacts from Potential Operational Emissions (CS 321 and CS 325)

We received comments regarding the need for cumulative air modeling, including modeling to account for emissions from metering stations in West Milford and Bergen County, the Minisink Compressor Station and CPV Valley Energy Center in Orange County, New York, and any leaks from valves, pig launchers and receivers.

Several existing, planned, proposed, or reasonably foreseeable operational sources, summarized in table 23, were identified within the 50-kilometer geographic scope for operational impacts, which when combined with the Project's sources of operational air emissions, would cumulatively add to existing ambient background concentrations of criteria pollutants, VOCs, and HAPs. However, we identified no proposed projects in close proximity (within a few miles of) either of the proposed modified CS 321 and CS 325 having the potential to result in elevated ambient concentrations when combined with potential emissions from each of the modified stations. CPV Valley Energy Center, operational since 2018, is approximately 15 miles northeast of CS 325, and a greater distance away from CS 321, and therefore has negligible potential to result in any localized cumulative air impact when combined with emissions from either proposed modified CS 321 or CS 325. Operational emissions from other existing regional sources including the Minisink Compressor Station are fully captured within the ambient background concentrations identified in the modeling summaries presented in tables 15 and 16 for CS 321 and CS 325, respectively. Emissions from metering stations, valves, and pig launchers and receivers are typically limited to natural gas, composed chiefly of methane, which is not a NAAQS criteria pollutant. Therefore, we expect that the Project's emissions from CS 321 and CS 325 combined with background concentrations would remain below the NAAQS.

As noted in section B.8.5, CS 327 itself would be a minor source of NAAQS pollutants and other air pollutants, each of which fall well under one tpy. Therefore, the operation of CS 327 has negligible potential to contribute to cumulative air impacts when combined with any other emission sources, including metering stations in West Milford and Bergen County.

Table 23
Present and Reasonably Foreseeable Actions Potentially Impacting Operational Air Quality Considered for Cumulative Impacts within the Geographic Scope of the Project (CS 321 and CS 325) [a]

Project/Sponsor (Status)	Approx. Distance/Direction from Project	Project Description	Location	Expected Construction Timeframe
Clifford Quarry and Blacktop Plant / Cifford Aggregates and Hot Mix Asphalt, New Enterprise Stone and Lime Co., Inc.	Same Hydrological Unit Code-12 watershed as CS 321 (020501061002)	quarrying, aggregate, sand and gravel, and hot mix asphalt operations	Lenox Township, Susquehanna County, PA	ongoing
bridge preservation projects	Same Hydrological Unit Code-12 watershed as CS 321 (020501061002)	bridge preservation construction activities	Lenox Township, Susquehanna County, PA	planned (open for bid April 2020)
Archbald Power Station	15 mi (24 km) SSE of CS 321	like-kind turbine core replacement	Archbald, Lackawanna County, PA	notice of intent to approve plan issued January 2020
CPV Valley Energy Center	15 mi (25 km) NE of CS 325	construct and operate new 680 megawatt natural gas-fired electric generating facility	Wawayanda, Orange County, NY	operational since September 2018
Lockheed Martin Corporation	15 mi (24 km) SSE of CS 321	existing minor source facility	Archbald, Lackawanna County, PA	NA
Mactac, Inc.	21 mi (34 km) SSW of CS 321	modify existing adhesive coating line	Scranton, Lackawanna County, PA	notice of intent to approve plan issued March 2020
Picatinny Arsenal Explosive Ordnance Disposal Technology Facility	22 mi (35 km) S of CS 325	construct and operate new facility	Morris County, NJ	construction commenced March 2020
Polarized Meats Co., Inc.	21 mi (34 km) S of CS 321	operate two cooking lines and two charmaker lines at food manufacturing facility	Dunmore, Lackawanna County, PA	notice of intent to approve plan issued February 2020
Procter and Gamble Paper Products	26 mi (42 km) SW of CS 321	amend existing Title V Operating Permit for existing facility; no new sources	Mehoopany, Wyoming County, PA	NA
Sandvik Materials Technology	13 mi (21 km) SSW of CS 321	replace cyclonic separator and induced draft fan	Clarks Summit, Lackawanna County, PA	notice of intent to approve plan issued March 2020
Williams Field Services Company	13 mi (21 km) WSW of CS 321	construct and operate two reboilers, four compressor engines, and two dehydration units	Springville Township, Susquehanna County, PA	notice of intent to approve plan issued February 2020
Williams Field Services Company	21 mi (33 km) SW of CS 321	construct and operate three compressor engines, two compressor turbines, and two generators	Tunkhannock, Wyoming County, PA	notice of intent to approve plan issued February 2020

[a] Operation of new CS 327 is not evaluated for cumulative impacts on air quality because its operational emissions would be very minor and contribute negligibly to emissions within the airshed.

Noise Impacts from Operation (CS 321)

Noise from operation of the cooling equipment project's operation would cumulatively add to operational noise levels at CS 321. To estimate these impacts, Tennessee completed a cumulative noise analysis for the combined operation of the modified CS 321 including proposed Project sources and the proposed cooling equipment project at full load. Results of this analysis are presented in table 24, below.

Table 24
CS 321 and gas cooling project Operation - Cumulative Noise Impact at NSAs

NSA	Existing Ambient L_{dn} (dBA)	Existing L_{dn} at full load (dBA)	L_{dn} contribution of CS 321 at full load after Project mods only (dBA)	L_{dn} contribution of CS 321 at full load after Project and cooling project mods (dBA)	L_{dn} change after cooling project mods (dBA)	Total L_{dn} after Project and cooling project mods (dBA)	Increase over ambient after Project and cooling project mods (dBA)
1	69	41.7	45.9	46.5	+0.6	69.0	0.0
2	69	47.9	50.1	50.2	+0.1	69.1	0.1
3	69	47.0	49.0	49.1	+0.1	69.0	0.0
4	54.7	43.1	46.4	46.0	-0.4 [a]	55.3	0.6
5	54.8	42.2	45.7	46.3	+0.6	55.4	0.6
6	53.2	45.5	48.0	48.4	+0.4	54.4	1.2

[a] Decrease in predicted noise contribution at NSA 4 likely attributable to presence of aboveground structures associated with the proposed cooling equipment project, which would effectively act as a partial noise barrier for existing and Project equipment at CS 321, and result in a net reduction in noise impact at this NSA.

The analysis summarized in table 24 indicates that the predicted cumulative noise impact, in the form of the net change in the noise contribution at nearby NSAs of CS 321 including Project sources only and the noise contribution of the station including Project and cooling equipment project (the third column from right in the table), would not be detectable to the human ear at nearby NSAs. In addition, the total noise contribution would remain below an L_{dn} of 55 dBA at nearby NSAs (the fourth column from right in the table). The total increase in noise from the station as modified by the Project and cooling project over existing ambient noise (rightmost column in the table) would also not be detectable by the human ear at nearby NSAs. We conclude that cumulative noise impacts of the Project and the cooling equipment project at nearby NSAs would be minimal.

Climate Change

We received comments from non-governmental organizations and individuals expressing concern about the Project's contribution to global climate change. Climate change is the variation in climate (including temperature, precipitation, humidity, wind, and other meteorological variables) over time, whether due to natural variability, human activities, or a combination of both, and cannot be characterized by an individual event or anomalous weather pattern. For example, a severe drought or abnormally hot summer in

a particular region is not a certain indication of climate change. However, a series of severe droughts or hot summers that statistically alter the trend in average precipitation or temperature over decades may indicate climate change. Recent research has begun to attribute certain extreme weather events to climate change (U.S. Global Change Research Program [USGCRP], 2018).

The leading U.S. scientific body on climate change is the USGCRP, composed of representatives from 13 federal departments and agencies.[15] The Global Change Research Act of 1990 requires the USGCRP to submit a report to the President and Congress no less than every four years that "1) integrates, evaluates, and interprets the findings of the USGCRP; 2) analyzes the effects of global change on the natural environment, agriculture, energy production and use, land and water resources, transportation, human health and welfare, human social systems, and biological diversity; and 3) analyzes current trends in global change, both human-induced and natural, and projects major trends for the subsequent 25 to 100 years." These reports describe the state of the science relating to climate change and the effects of climate change on different regions of the United States and on various societal and environmental sectors, such as water resources, agriculture, energy use, and human health.

In 2017 and 2018, the USGCRP issued its *Climate Science Special Report: Fourth National Climate Assessment*, Volumes I and II (Fourth Assessment Report) (USGCRP, 2017; and USGCRP, 2018, respectively). The Fourth Assessment Report states that climate change has resulted in a wide range of impacts across every region of the country. Those impacts extend beyond atmospheric climate change alone and include changes to water resources, transportation, agriculture, ecosystems, and human health. The U.S. and the world are warming; global sea level is rising and acidifying; and certain weather events are becoming more frequent and more severe. These changes are driven by accumulation of GHG in the atmosphere through combustion of fossil fuels (coal, petroleum, and natural gas), combined with agriculture, clearing of forests, and other natural sources. These impacts have accelerated throughout the end of the 20th and into the 21st century (USGCRP, 2018).

GHGs were identified by the EPA as pollutants in the context of climate change. GHG emissions do not result in proportional local impacts; it is the combined concentration in the atmosphere that affects the global climate. These are fundamentally global impacts that feedback to local and regional climate change impacts. Thus, the geographic scope for cumulative analysis of GHG emissions is global rather than local or regional. For example, a project 1 mile away emitting 1 ton of GHGs would contribute to

[15] The USGCRP member agencies are: Department of Agriculture, Department of Commerce, Department of Defense, Department of Energy, Department of Health and Human Services, Department of the Interior, Department of State, Department of Transportation, Environmental Protection Agency, National Aeronautics and Space Administration, National Science Foundation, Smithsonian Institution, and U.S. Agency for International Development.

climate change in a similar manner as a project 2,000 miles distant also emitting 1 ton of GHGs.

Climate change is a global phenomenon; however, for this analysis, we will focus on the existing and potential cumulative climate change impacts in the Project area. The USGCRP's Fourth Assessment Report notes the following observations of environmental impacts are attributed to climate change in the Northeast region (USGCRP, 2017; USGCRP, 2018):

- increases in annual average temperatures across the Northeast range from less than 1 °F (0.6 °C) in West Virginia to about 3 °F (1.7 °C) or more in New England since 1901;
- from 1958 to 2016, the northeast experienced a 55 percent increase in the amount of precipitation falling in heavy events (the greatest increase in the nation) and 5 to 20 percent increase in average winter precipitation; and
- warming during the winter–spring transition has led to earlier snowmelt-related runoff in areas of the Northeast with substantial snowpack; and
- ocean and coastal ecosystems are being affected by large changes in a variety of climate-related environmental conditions.

The USGCRP's Fourth Assessment Report notes the following projections of climate change impacts in the Project region (Northeast United States) with a high or very high level of confidence[16] (USGCRP, 2018):

- precipitation in the Northeast is projected to be about 1 inch greater for December through April by end of century (2070–2100) under the higher scenario;
- temperatures are projected to increase by 5.1°F by the 2090s under the worst case scenario (continually increasing emissions) and would increase by 4.0°F if emissions were decreased;
- by the middle of the century, the freeze-free period across much of the Northeast is expected to lengthen by as much as two weeks under the lower scenario and by two to three weeks under the higher scenario. By the end of the century, the

[16] The report authors assessed current scientific understanding of climate change based on available scientific literature. Each "Key Finding" listed in the report is accompanied by a confidence statement indicating the consistency of evidence or the consistency of model projections. A high level of confidence results from "moderate evidence (several sources, some consistency, methods vary and/or documentation limited, etc.), medium consensus." A *very* high level of confidence results from "strong evidence (established theory, multiple sources, consistent results, well documented and accepted methods, etc.), high consensus." https://science2017.globalchange.gov/chapter/front-matter-guide/

freeze-free period is expected to increase by at least three weeks over most of the region;

- higher than average sea level rise along the Northeastern coast will occur due to land subsidence; and
- much of the infrastructure in the Northeast, including drainage and sewer systems, flood and storm protection assets, transportation systems, and power supply, is nearing the end of its planned life expectancy; climate-related disruptions will only exacerbate existing issues with aging infrastructure.

It should be noted that while the impacts described above taken individually may be manageable for certain communities, the impacts of compound extreme events (such as simultaneous heat and drought, wildfires associated with hot and dry conditions, or flooding associated with high precipitation on top of saturated soils) can be greater than the sum of the parts (USGCRP, 2018).

The GHG emissions associated with construction and operation of the Project were identified and quantified in section B.7 of the EA. Construction and operation of the Project would increase the atmospheric concentration of GHGs in combination with past, current, and future emissions from all other sources globally and contribute incrementally to future climate change impacts. In order to assess impacts on climate change associated with the Project, Commission staff considered whether it could identify discrete physical impacts resulting from the Project's GHG emissions or compare the Project's GHG emissions to established targets designed to combat climate change.

To date, Commission staff has not identified a methodology to attribute discrete, quantifiable, physical effects on the environment resulting from the Project's incremental contribution to GHGs. We have looked at atmospheric modeling used by the EPA, National Aeronautics and Space Administration, the Intergovernmental Panel on Climate Change, and others, and we found that these models are not reasonable for project-level analysis for a number of reasons. For example, these global models are not suited to determine the incremental impact of individual projects, due to both scale and overwhelming complexity. We also reviewed simpler models and mathematical techniques to determine global physical effects caused by GHG emissions, such as increases in global atmospheric CO_2 concentrations, atmospheric forcing, or ocean CO_2 absorption. We could not identify a reliable, less complex model for this task and thus staff could not determine specific localized or regional physical impacts from GHG emissions from the Project. Without the ability to determine discrete resource impacts, Commission staff are unable to assess the Project's contribution to climate change through any objective analysis of physical impact.

Additionally, we have not been able to find any GHG emission reduction goals established at the federal level that we can use as comparative criteria for project level emissions.[17] We note that there have been a series of recent administrative changes and we continue to evaluate their impact on our review process. For example, on January 20, 2021, President Biden issued the *Executive Order on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis* (EO 13990) and on January 27, 2021, the *Executive Order on Tackling the Climate Crisis at Home and Abroad* (EO 14008). Amongst other objectives, the Executive Orders call for a net-zero emission economy and a carbon-free electricity sector. In addition, on January 20, 2021, President Biden announced that the U.S. will rejoin the Paris Climate Agreement (Agreement), enabling the U.S. to be a party to the Agreement on February 19, 2021. The Agreement is a binding international agreement to reduce GHG emissions and impacts on climate change that was signed by 196 parties on December 12, 2015 and entered into force on November 4, 2016. The Agreement aims to limit global warming to well below 2 degrees Celsius, and preferably to 1.5 degrees Celsius, compared to pre-industrial levels.[18] Prior to the U.S. withdrawal from the Agreement in November 2020, the U.S. initially proposed a 26 to 28 percent domestic reduction in GHG by 2025 compared to 2005.[19] It is not yet clear if the U.S. would retain or modify these goals upon rejoining the Agreement.

The State of Pennsylvania, within which Compressor Station 321's operational emissions would occur, enacted targets in 2019 for reducing emissions to 26 percent below 2005 levels by 2025 and 80 percent below 2005 levels by 2050.[20] In addition, the state of New Jersey, within which CS 325's operational emissions would occur, enacted targets in 2007 for reducing emissions to 1990 levels by 2020 and 80 percent below 2006 levels by 2050.

As indicated in table 12 within section B.8.5 above, direct GHG emissions from the operation of the Project equipment at Compressor Station 321 would result in an annual increase in CO_2e emissions of about 42,735 tons (38,850 metric tons).[21] This would represent 0.02 percent and 0.07 percent of Pennsylvania's 2025 and 2050 GHG reduction goals, respectively. Similarly, GHG emissions from operation of the Project equipment at Compressor Station 325, summarized in table 13 within section B.8.5

[17] The national emissions reduction targets expressed in the EPA's Clean Power Plan were repealed, *Greenhouse Gas Emissions From Existing Electric Utility Generating Units; Revisions to Emissions Guidelines Implementing Regulations*, 84 Fed. Reg. 32,250, 32,522-32, 532 (July 8, 2019), and the targets in the Paris Climate Accord were withdrawn (November 2020).

[18] Additional information is available at https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement

[19] https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/United%20States%20of%20America%20First/U.S.A.%20First%20NDC%20Submission.pdf

[20] We reviewed the U.S. State Greenhouse Emission Targets site for individual state requirements at: https://www.c2es.org/document/greenhouse-gas-emissions-targets/

[21] A metric ton is approximately equal to 1.1 ton.

above, would result in an annual increase in CO_2e emissions of about 86,831 tons (78,937 metric tons). This would represent 0.07 percent and 0.36 percent of New Jersey's 2020 and 2050 GHG reduction goals, respectively.[22]

[22] Based on data found at https://www.eia.gov/environment/emissions/state/.

C. ALTERNATIVES

In accordance with NEPA and Commission policy, we evaluated alternatives to the Project to determine whether they would be reasonable and environmentally preferable to the proposed action. These alternatives included the no-action alternative, system alternatives, and site alternatives.

The evaluation criteria used for developing and reviewing alternatives were:

- ability to meet the Project's stated objective;
- technical and economic feasibility and practicality; and
- significant environmental advantage over the proposed action.

Through environmental comparison and application of our professional judgment, each alternative is considered to a point where it becomes clear if the alternative could or could not meet the three evaluation criteria. To ensure a consistent environmental comparison and to normalize the comparison factors, we generally use desktop sources of information (e.g., publicly available data, geographic information system data, aerial imagery) and assume the same general workspace requirements.

We reviewed alternatives against the evaluation criteria in the sequence presented above. The first consideration for including an alternative in our analysis is whether or not it could satisfy the stated purpose of the Project. An alternative that cannot achieve the purpose for the Project cannot be considered as an acceptable replacement for the Project. The second evaluation criteria is feasibility and practicality. Many alternatives are technically and economically feasible. Technically practical alternatives, with exceptions, would generally require the use of common construction methods. An alternative that would require the use of a new, unique, or experimental construction method may not be technically practical because the required technology is not available or is unproven. Economically practical alternatives would result in an action that generally maintains the price competitive nature of the proposed action. Generally, we do not consider the cost of an alternative as a critical factor unless the added cost to design, permit, and construct the alternative would render the project economically impractical.

Alternatives that would not meet the Project's objective or were not feasible were not brought forward to the next level of review (i.e., the third evaluation criterion). Determining if an alternative provides a significant environmental advantage requires a comparison of the impacts on each resource as well as an analysis of impacts on resources that are not common to the alternatives being considered. The determination must then balance the overall impacts and all other relevant considerations. In comparing the impact between resources, we also considered the degree of impact anticipated on each resource. Ultimately, an alternative that results in equal or minor advantages in

terms of environmental impact would not compel us to shift the impacts to another location, potentially affecting a new set of landowners.

1. No-Action Alternative

We received comments questioning whether the availability of alternate energy sources, including wind, solar, and geothermal power technologies, could take the place of or otherwise eliminate the need for the Project. This comment is addressed by assessing the no-action alternative. Under the no-action alternative, Tennessee would not modify the existing CS 321 and CS 325, or construct new CS 327, and none of the impacts associated with the Project would occur. However, the Project objectives would not be met. Tennessee would not be able to meet the Project's stated need in section A.2, including creating an incremental firm transportation capacity of 115 million cubic feet of natural gas per day to meet Consolidated Edison's specified market need for its region, and ensure that Consolidated Edison's residential, commercial, and industrial heating and cooling needs are met in periods of peak demand.

Although a Commission decision to deny the proposed action would avoid the environmental impacts addressed in this EA, other projects could be constructed to supply the natural gas offered by Tennessee. Such alternative projects could require the construction of additional and/or new facilities in the same or other locations to meet the Project objectives. These alternatives would result in their own set of specific environmental impacts that could be greater than or equal to those associated with the current proposal, and would transfer impacts from one location to another. Therefore, we have dismissed this alternative as a reasonable alternative to meet the Project objectives. For these reasons we are not recommending the no-action alternative.

2. System Alternatives

System alternatives are alternatives to the proposed action that would make use of Tennessee's (or other companies') existing, modified, or proposed pipeline systems to meet the stated objective of the Project. System alternatives, such as constructing a loop line,[23] could make it unnecessary to construct all or part of the Project.

Although several existing natural gas transmission systems are in the vicinity of the East 300 pipeline that could theoretically provide the additional incremental capacity that the Project proposes, each of these systems would require modifications likely involving equal or greater environmental impact.[24]

We also considered the alternative of increasing compression at Tennessee's existing compressor stations along Line 300 (above and beyond that being proposed for this Project) in lieu of constructing the new CS 327. According to information provided

[23] A pipeline loop is a segment of pipe constructed parallel to an existing pipeline to increase capacity.
[24] Based on an overview of maps where such facilities are located and the amount of pipeline that would need to be constructed to reach the delivery points necessary to meet the Project objective.

by Tennessee, modifying its existing 300 Line system by adding compression to CS 325 sufficient to compress the additional 115,000 Dth/d of Project volumes would not provide for minimum pressure requirements for existing customers as specified in Tennessee's firm transportation agreements, due to the pressure drop that would result from gas flowing through Tennessee's 300-1 and 300-2 Lines from CS 325 to the Project Shipper's requested delivery points. In addition, according to Tennessee, adding compression at any other points along Tennessee's existing system would not provide for its customer's minimum pressure requirements. Therefore, we conclude that an alternative involving additional increases in new compression at any combination of Tennessee's existing compressor stations (in lieu of constructing CS 327) would not be practical or feasible from engineering and system design perspectives, and we have eliminated this alternative from further consideration.

Because the Project proposes the addition of new compression to existing CS 321 and CS 325, involving minimal ground disturbance entirely within land owned by Tennessee and within the existing property boundaries of each station, and because we did not conclude any significant impacts related to these upgrades, we did not perform site alternative or looping analyses for these two stations.

In order to reduce permanent land use impacts from new aboveground facilities, we did consider an alternative that would rely on additional pipeline looping rather than the new CS 327. However, if we were to recommend a pipeline (looping) alternative to CS 327, it would require around 23 miles of pipeline resulting in 279 acres of temporary disturbance, including impacts on 19 acres of wetlands and 8 waterbodies; and require 121 acres of permanent operational right-of-way impact. In addition, this alternative would impact over 200 private landowners, none of whom are directly affected by the Project as proposed. Constructing looping pipeline instead of CS 327 would eliminate a permanent aboveground facility and the associated land use, visual, and operational air and noise impacts discussed for this facility in sections B.5, B.8, and B.9 of this EA. However, we have concluded that land use and visual impacts would not be significant; impacts from air emissions from the new station, combined with existing ambient concentrations, would remain below the NAAQS; and, with our recommendations above, CS 327 would not result in significant noise impacts at any nearby NSA. We conclude that the environmental and landowner impacts related to about 23 miles of pipeline do not offer a significant environmental advantage over the proposed construction of CS 327; thus, we do not recommend this alternative.

3. Site Alternatives

We received a comment opposed to the siting of CS 327 due to the proximity of the station to nearby residents and nearby hiking areas, and due to the potential of the station to release harmful pollutants into the air and the nearby Wanaque Reservoir. Tennessee, in its Project development, identified five other sites it considered for siting CS 327. The commentor did not suggest an alternate site, so we used the sites identified by Tennessee

as points of comparison. The comparative impacts of these five alternate sites, as well as the proposed site, are provided in table 25 below.

Alternative Site 1 is approximately 2 miles west of the Proposed Site, at the intersection of Union Valley Road and Pinecliff Lake Drive. Alternative Site 2 is approximately 4 miles west of the Proposed Site, and overlaps the historic Wallisch Farm Property. Alternative Site 3 is approximately 3 miles west of the Proposed Site; about one-third of Alternate Site 3 is in commercial use, with about two-thirds being forested. Alternative Site 4 is adjacent to the Proposed Site and contains several existing industrial facilities. Alternative Site 5 is approximately 4 miles southeast of the Proposed Site and consists primarily of forested land and wetland.

Due to hydraulic system constraints or the need to construct additional connecting pipeline, all Alternative Sites are within the Highlands Preservation Area. However, all Alternative Sites are more distant from the Long Pond Ironworks State Park and associated Highlands Trail, and all but Alternative Site 5 are more distant from the Wanaque Reservoir. Therefore, we considered these sites as potentially feasible alternatives to the Proposed Site in response to the commentor's specific concerns.

The alternative sites, to varying degrees, offer some relative advantages to the Proposed Site for CS 327 in the categories of total parcel size, required suction/discharge pipeline length, distance to nearest NSA, state lands within 0.5 mile, and required length of electric power line. However, these advantages are diminished by considerably greater impacts on forested and non-forested wetlands, upland forests, and prime farmland, as well as a much greater number of affected nearby NSAs.

Table 25 Comparison of Proposed and Alternative Sites for CS 327						
Siting impact criterion	**Proposed Site**	**Alternative Site 1**	**Alternative Site 2**	**Alternative Site 3**	**Alternative Site 4**	**Alternative Site 5**
total parcel size (acres)	43.85	39.78	40.64	27.56	27.44	42.92
required tie-in (suction/discharge) pipeline length (feet)	1,400	1,000	1,200	1,000	1,000	1,000
wetlands (acres)	0.00	27.69	25.77	2.22	0.31	11.63
open land (acres)	2.86	5.91	11.24	2.35	2.39	0.11
Developed land (acres)	9.25	6.18	3.63	10.50	13.55	1.54
upland forest (acres)	0.00	0.00	0.00	12.49	11.19	29.64
prime farmland (acres)	0.00	10.77	2.81	0.00	0.00	0.00
NSAs within 0.5 mile (number)	4	625	426	309	36	9
NSAs within 1 mile (number)	49	1,713	1,441	1,019	98	81
distance to nearest NSA (feet)	950	945	945	1,270	2,850	3,380
State lands within 0.5 mile (number)	8	1	3	6	7	2
federally threatened or endangered species potentially present (number)	4	3	3	4	4	4
total mapped waterbodies within site (number)	0	1	1	0	0	1
non-forested wetlands (acres)	0	23.62	15.51	0	0	0.02
forested wetlands (acres)	0	4.07	10.26	2.22	0.31	11.61
required electric power line (feet)	7,350	4,000	4,500	2,250	2,250	500
FEMA floodplain (yes/no/partial)	partial	partial	yes	no	no	partial

Further, Alternative Site 1 would involve greater impact to construct the suction/discharge pipeline. Alternative Site 2 would impact the Wallisch Farm Property and Wallisch Environmental Trail, an historic homestead designated as an endangered historic site by Preservation New Jersey. Alternative Site 3 potentially has unmapped tributaries, and is shared with existing commercial infrastructure, thereby not allowing sufficient space to construct CS 327 without additional impacts on these features and resources. As mentioned above, Alternative Site 4 is within the Highlands Preservation Area and includes parcels that are individually owned and currently occupied by operating facilities; constructing CS 327 at Alternative Site 4 would require disruption or possibly relocation of these businesses. In addition, utilizing Alternative Site 4 to construct CS 327 would impact nearly 30 acres of upland forest and almost 12 acres of wetlands. In contrast, utilizing the Proposed site for construction and operation of CS 327 would have no impact on wetlands, upland forest, prime farmland, or historic sites.

For the above reasons, we have eliminated Alternative Sites 1 through 5 from further consideration.

4. Conclusion

Based on our analysis above, we conclude that no alternatives present a significant environmental advantage over the proposed Project. Therefore, we conclude that the proposed Project is the preferred alternative to meet the Project's objectives.

D. CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis in this EA, we have determined that if Tennessee constructs and operates the proposed facilities in accordance with its application and supplements, and the staff's recommended mitigation measures below, approval of the Project would not constitute a major action significantly affecting the quality of the human environment. We recommend that the Commission Order contain a finding of no significant impact and include the measures listed below as conditions in any authorization the Commission may issue to Tennessee.

1. Tennessee shall follow the construction procedures and mitigation measures described in its application and supplements (including responses to staff data requests) and as identified in the EA, unless modified by the Order. Tennessee must:

    a. request any modification to these procedures, measures, or conditions in a filing with the Secretary;
    b. justify each modification relative to site-specific conditions;
    c. explain how that modification provides an equal or greater level of environmental protection than the original measure; and
    d. receive approval in writing from the Director of OEP, or the Director's designee, **before using that modification**.

2. The Director of OEP, or the Director's designee, has delegated authority to address any requests for approvals or authorizations necessary to carry out the conditions of the Order, and take whatever steps are necessary to ensure the protection of environmental resources during construction and operation of the project. This authority shall allow:

    a. the modification of conditions of the Order;
    b. stop-work authority; and
    c. the imposition of any additional measures deemed necessary to ensure continued compliance with the intent of the conditions of the Order as well as the avoidance or mitigation of unforeseen adverse environmental impact resulting from project construction and operation.

3. **Prior to any construction**, Tennessee shall file an affirmative statement with the Secretary, certified by a senior company official, that all company personnel, EIs, and contractor personnel will be informed of the EI's authority and have been or will be trained on the implementation of the environmental mitigation measures appropriate to their jobs **before** becoming involved with construction and restoration activities.

4. The authorized facility locations shall be as shown in the EA, as supplemented by filed alignment sheets. **As soon as they are available, and before the start of construction**, Tennessee shall file with the Secretary any revised detailed survey alignment maps/sheets at a scale not smaller than 1:6,000 with station positions for all facilities approved by the Order. All requests for modifications of environmental conditions of the Order or site-specific clearances must be written and must reference locations designated on these alignment maps/sheets.

   Tennessee's exercise of eminent domain authority granted under Natural Gas Act (NGA) section 7(h) in any condemnation proceedings related to the Order must be consistent with these authorized facilities and locations. Tennessee's right of eminent domain granted under NGA section 7(h) does not authorize it to increase the size of its natural gas *facilities* to accommodate future needs or to acquire a right-of-way for a pipeline to transport a commodity other than natural gas.

5. Tennessee shall file with the Secretary detailed alignment maps/sheets and aerial photographs at a scale not smaller than 1:6,000 identifying all route realignments or facility relocations, and staging areas, pipe storage yards, new access roads, and other areas that would be used or disturbed and have not been previously identified in filings with the Secretary. Approval for each of these areas must be explicitly requested in writing. For each area, the request must include a description of the existing land use/cover type, documentation of landowner approval, whether any cultural resources or federally listed threatened or endangered species would be affected, and whether any other environmentally sensitive areas are within or abutting the area. All areas shall be clearly identified on the maps/sheets/aerial photographs. Each area must be approved in writing by the Director of OEP, or the Director's designee, **before construction in or near that area**.

   This requirement does not apply to extra workspace allowed by the Commission's *Upland Erosion Control, Revegetation, and Maintenance Plan* and/or minor field realignments which do not affect other landowners or sensitive environmental areas such as wetlands.

   Examples of alterations requiring approval include all route realignments and facility location changes resulting from:

   a. implementation of cultural resources mitigation measures;
   b. implementation of endangered, threatened, or special concern species mitigation measures;
   c. recommendations by state regulatory authorities; and
   d. facilities or realignments that affect other landowners or could affect sensitive environmental areas.

6. **At least 60 days before construction begins**, Tennessee shall file an Implementation Plan with the Secretary for review and written approval by the Director of OEP, or the Director's designee. Tennessee must file revisions to the plan as schedules change. The plan shall identify:

   a. how Tennessee will implement the construction procedures and mitigation measures described in its application and supplements (including responses to staff data requests), identified in the EA, and required by the Order;
   b. how Tennessee will incorporate these requirements into the contract bid documents, construction contracts (especially penalty clauses and specifications), and construction drawings so that the mitigation required at each site is clear to onsite construction and inspection personnel;
   c. the number of EIs assigned per facility site, and how the company will ensure that sufficient personnel are available to implement the environmental mitigation;
   d. company personnel, including EIs and contractors, who will receive copies of the appropriate material;
   e. the location and dates of the environmental compliance training and instructions Tennessee will give to all personnel involved with construction and restoration (initial and refresher training as the project progresses and personnel change);
   f. the company personnel (if known) and specific portion of Tennessee's organization having responsibility for compliance;
   g. the procedures (including use of contract penalties) Tennessee will follow if noncompliance occurs; and
   h. for each discrete facility, a Gantt or PERT chart (or similar project scheduling diagram), and dates for:

      (1) the completion of all required surveys and reports;
      (2) the environmental compliance training of onsite personnel;
      (3) the start of construction; and
      (4) the start and completion of restoration.

7. Tennessee shall employ at least one EI per facility site. The EIs shall be:

   a. responsible for monitoring and ensuring compliance with all mitigation measures required by the Order and other grants, permits, certificates, or other authorizing documents;
   b. responsible for evaluating the construction contractor's implementation of the environmental mitigation measures required in the contract (see condition 6 above) and any other authorizing document;

c. empowered to order correction of acts that violate the environmental conditions of the Order, and any other authorizing document;
d. responsible for documenting compliance with the environmental conditions of the Order, as well as any environmental conditions/permit requirements imposed by other federal, state, or local agencies; and
e. responsible for maintaining status reports.

8. Beginning with the filing of its Implementation Plan, Tennessee shall file updated status reports with the Secretary on a **monthly** basis until all construction and restoration activities are complete. On request, these status reports will also be provided to other federal and state agencies with permitting responsibilities. Status reports shall include:

a. an update on Tennessee's efforts to obtain the necessary federal authorizations;
b. the construction status of each facility site, work planned for the following reporting period, and any schedule changes for stream crossings or work in other environmentally-sensitive areas;
c. a listing of all problems encountered and each instance of noncompliance observed by the EI(s) during the reporting period (both for the conditions imposed by the Commission and any environmental conditions/permit requirements imposed by other federal, state, or local agencies);
d. a description of the corrective actions implemented in response to all instances of noncompliance;
e. the effectiveness of all corrective actions implemented;
f. a description of any landowner/resident complaints which may relate to compliance with the requirements of the Order, and the measures taken to satisfy their concerns; and
g. copies of any correspondence received by Tennessee from other federal, state, or local permitting agencies concerning instances of noncompliance, and Tennessee's response.

9. **Within 5 days of receipt of a water quality certification issued by PADEP**, Tennessee shall file the complete certification, including all conditions, for review by the Director of OEP, or the Director's designee, under 40 CFR 121.9. All conditions attached to the water quality certification except those that the Director of OEP, or the Director's designee, may identify as waived pursuant to 40 CFR. 121.9, constitute mandatory conditions of this Certificate Order. **Prior to construction**, Tennessee shall file, for review and written approval by the Director of OEP, or the Director's designee, any revisions to its project design necessary to comply with the water quality certification conditions.

10. Tennessee must receive written authorization from the Director of OEP, or the Director's designee, **before commencing construction of any project facilities.** To obtain such authorization, Tennessee must file with the Secretary documentation that it has received all applicable authorizations required under federal law (or evidence of waiver thereof).

11. Tennessee must receive written authorization from the Director of OEP, or the Director's designee, **before placing the new and modified compressor stations into service**. Such authorization will only be granted following a determination that rehabilitation and restoration of the facility site and other areas affected by the project are proceeding satisfactorily.

12. **Within 30 days of placing the authorized facilities in service**, Tennessee shall file an affirmative statement with the Secretary, certified by a senior company official:

    a. that the facilities have been constructed in compliance with all applicable conditions, and that continuing activities will be consistent with all applicable conditions; or
    b. identifying which of the conditions in the Order Tennessee has complied with or will comply with. This statement shall also identify any areas affected by the project where compliance measures were not properly implemented, if not previously identified in filed status reports, and the reason for noncompliance.

13. Tennessee shall file with Secretary noise surveys for the operation of the modified Compressor Stations 321 and 325 and new Compressor Station 327 **no later than 60 days after placing each respective station into service**. If a full power load condition noise survey is not possible, Tennessee should file an interim survey at the maximum possible power load **within 60 days** of placing each station into service and file the full power load survey **within 6 months**. If the noise attributable to operation of all equipment at any station under interim or full power load conditions exceeds an L_{dn} of 55 dBA at any nearby NSA, Tennessee should:

    a. file a report with the Secretary, for review and written approval by the Director of OEP, or the Director's designee, on what changes are needed;
    b. install additional noise controls to meet that level **within 1 year** of the in-service date; and
    c. confirm compliance with this requirement by filing a second full power load noise survey with the Secretary **no later than 60 days** after it installs the additional noise controls.

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Appendix A

Consultations, Permits, and Approvals

Table A-1 Consultations, Permits, and Approvals for the Project		
Permit/Approval	**Administering Agency**	**Applicable Facility / Status**
Federal		
Certificate of Public Convenience and Necessity	Federal Energy Regulatory Commission	Application filed June 30, 2020. Certificate pending.
Rivers and Harbors Act, Section 10 Clean Water Act Section 404	U.S. Army Corps of Engineers (USACE) - Baltimore District	CS 321, 325, 327: No navigable waterways would be crossed at CS 321, CS 325, or CS 327. CS 321: No USACE jurisdictional features would be impacted at CS 321. Discussion held with USACE – Baltimore District Office – Pennsylvania Section Chief on June 18, 2020. Phone call with Mike Dombroskie, USACE, State College Field Office, on August 14, 2020 reviewing proposed Project activities and associated state-regulated isolated wetland at CS 321.
Endangered Species Act, Section 7 Consultation Bald and Golden Eagle Act Migratory Bird Treaty Act	U.S. Fish and Wildlife Service (FWS) Pennsylvania Field Office New Jersey Field Office	CS 321: Included as part of Pennsylvania Natural Diversity Inventory completed on May 14, 2020. FWS: No impacts to federally listed or proposed species are anticipated. No further consultation is required. Robert Anderson, FWS State College Pennsylvania Field Office, on a call with Tennessee on September 8, 2020, noted no further consultation needed regarding CS 321. CS325 / CS327: Field surveys completed. Consultation letter and biological reports sent on June 23, 2020. Letter and materials resent to Ron Popowski, Supervisor, Endangered Species Program, on August 5, 2020. By letter dated September 24, 2020, the FWS concurred that the proposed Project is not likely to adversely affect federally listed or proposed listed species.
State - New Jersey		
Clean Air Act Permits	New Jersey Department of Environmental Protection (NJDEP), Air Quality Permitting and Planning, Bureau of Stationary Sources	CS 325: Significant Modification to Title V Permit. Permit No. 83405 Application submitted electronically on June 29, 2020. Assigned Activity No. BOP200001. CS 327: General Permit CP-005B issued October 29, 2020 for proposed emergency generator. General Permit GP-007 issued June 29, 2020 for proposed pipeline liquids storage tank.

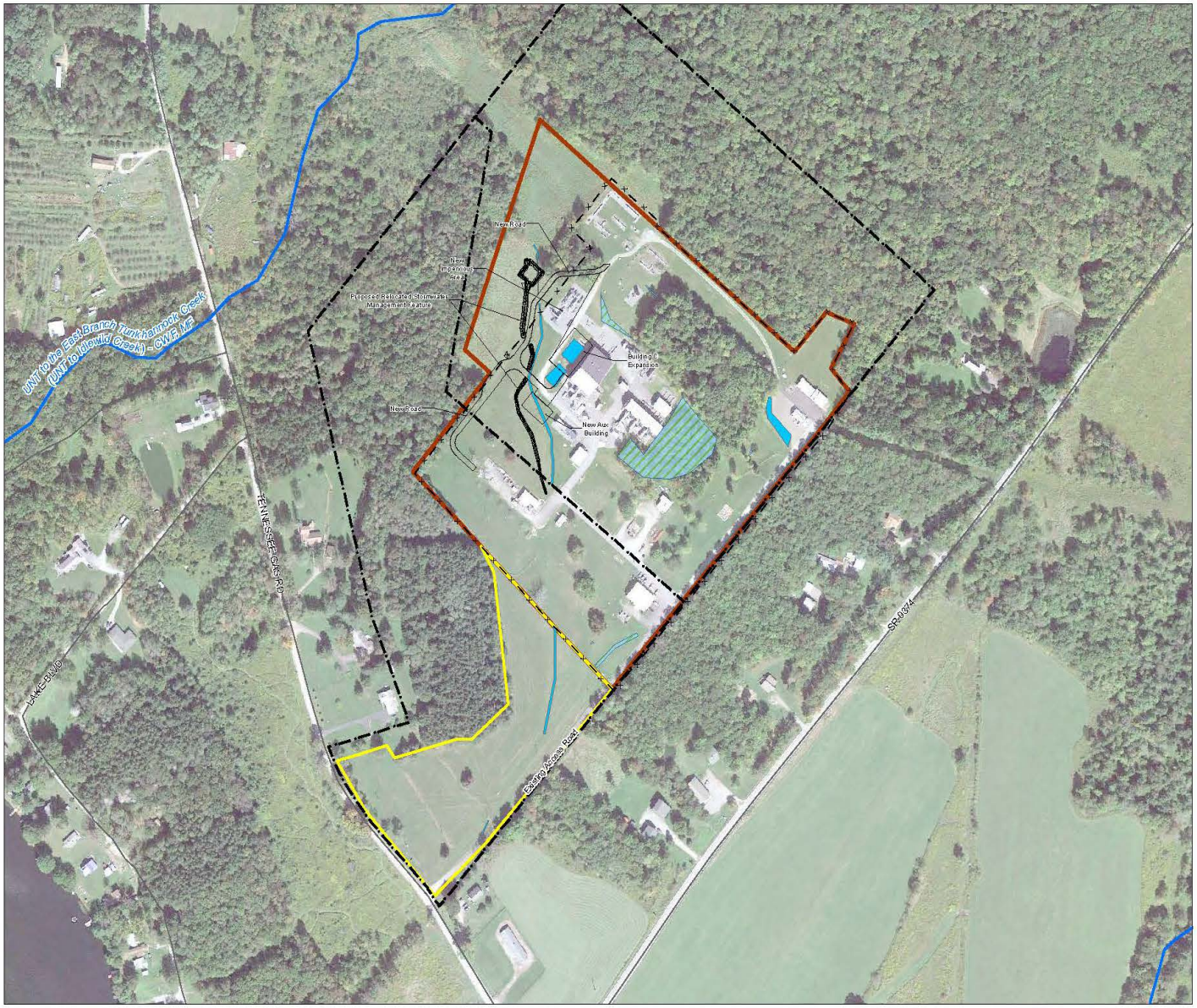
Table A-1 Consultations, Permits, and Approvals for the Project		
Permit/Approval	**Administering Agency**	**Applicable Facility / Status**
Highlands Applicability Determination – Exemption #11	NJDEP – New Jersey Highlands Council	CS 327: Applicable for activities within the Highlands Preservation Area. Pre-application meetings with NJDEP and Highlands Council staff conducted in April and May 2020. Highlands Applicability Determination application filed on August 28, 2020. On October 16, 2020, Highlands Council determined that the Project is consistent with the goals of the Highlands Act and stated that it does not object to the issuance of exemption 11 by NJDEP.
Freshwater Wetlands Protection Act • General Permit • Letter of Interpretation	NJDEP – Division of Land Use Regulation	CS 327: Applicable for activities within wetland transition areas. Pre-application meetings with NJDEP conducted in April and May 2020. CS 325: Application for Letter of Interpretation confirming the location of wetlands submitted to the NJDEP on September 1, 2020. Tennessee provided technical responses to NJDEP in October and November 2020.
Flood Hazard Area • Verification • Permits-by-Rule	NJDEP – Division of Land Use Regulation	CS 325 and CS 327: Application for Flood Hazard Area Verification for CS 327 submitted to the NJDEP on August 31, 2020. Application for Flood Hazard Area Verification for CS 325 submitted to the NJDEP on September 1, 2020. In October and November 2020, Tennessee provided technical responses. CS 327: Consultations with NJDEP regarding applicability of Permit-by-Rule for temporary storage of equipment and materials within the flood hazard area conducted June through August 2020. Flood Hazard Area Applicability Determination submitted to the NJDEP on August 31, 2020 to confirm that Tennessee's proposed activities qualify for Permits-by-Rule.
New Jersey Pollutant Discharge Elimination System General Permits, Discharge of Stormwater to Surface Water	NJDEP – Division of Water Quality Management	CS 325 and CS 327: Application to be filed prior to commencement of construction.
Short Term Water Use Permit-by-Rule (BWA-003)	NJDEP – Division of Water Supply and Geoscience	CS 325 and CS 327: Applications to be filed 30 days prior to commencement of construction.

Table A-1 Consultations, Permits, and Approvals for the Project		
Permit/Approval	**Administering Agency**	**Applicable Facility / Status**
State Threatened and Endangered Species Consultation	NJDEP – Natural Heritage Program, Office of Natural Lands Management, Endangered and Non-Game Species Program	CS 325 and CS 327: Consultation initiated by email in May 2020. Provided shape files to Robert Cartica and Darin Oliver, NJDEP, Division of Parks and Forestry, in July 2020. NJDEP filed comments with the Commission on August 26, 2020, in the instant docket, including comments from the Division of Fish and Wildlife. On October 19, 2020, NJDEP Endangered and Non-game Species Program provided recommendations for consideration.
National Historic Preservation Act Section 106 Consultation	New Jersey State Historic Preservation Office	CS 325: Consultation completed July 29, 2020. CS 327: Consultation completed October 19, 2020: no historic properties affected.
State - Pennsylvania		
Clean Air Act Permits	Pennsylvania Department of Environmental Protection (PADEP) Bureau of Air Quality	CS 321: Air Quality Plan Approval application received by PADEP on June 30, 2020. Application deemed complete on August 5, 2020, and assigned Application No. 58-00001B.
Section 401 Water Quality Certification	PADEP – Regional Permit Coordination Office	CS 321: No potential impacts on federal jurisdictional features at CS 321. However, the PADEP has requested submission of a Section 401 Water Quality Certification Application in accordance with current PADEP policy. Pre-application meetings with PADEP conducted in May and June 2020. Section 401 Water Quality Certification Application filed on September 30, 2020.
State Wetland and Waterbody Crossing/Water Obstruction and Encroachment Permit General Permit	PADEP – Regional Permit Coordination Office	GP-5 application filed on September 30, 2020.
State Threatened and Endangered Species Consultation	Pennsylvania Department of Conservation and Natural Resources Pennsylvania Game Commission Pennsylvania Fish and Boat Commission	CS 321: Consultation complete. Included as part of the Pennsylvania Natural Diversity Inventory on May 14, 2020.
Erosion and Sediment Control General Permit	PADEP – Regional Permit Coordination Office	ESCGP-3 application filed on September 30, 2020. Tennessee received a completeness review letter from PADEP and Susquehanna County Conservation District on November 5, 2020.

Table A-1 Consultations, Permits, and Approvals for the Project		
Permit/Approval	**Administering Agency**	**Applicable Facility / Status**
National Historic Preservation Act Section 106 Consultation	Pennsylvania State Historic Preservation Office, Pennsylvania Historical & Museum Commission	CS321: Concurrence received September 8, 2020 that there will be no impacts from the proposed Project.
Local - Pennsylvania		
Erosion and Sediment Control General Permit	Susquehanna County Conservation District	ESCGP-3 application filed on September 30, 2020. Tennessee received a completeness review letter from PADEP and Susquehanna County Conservation District on November 5, 2020.

Appendix B

Topographic Maps



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(At original document size of 11x17)
1:3,600

Legend

- Stream
- Existing Fence Line
- Parcel Boundary
- Temporary Workspace
- Permanent Facility
- Existing Stormwater Management Feature
- Delineated Wetland

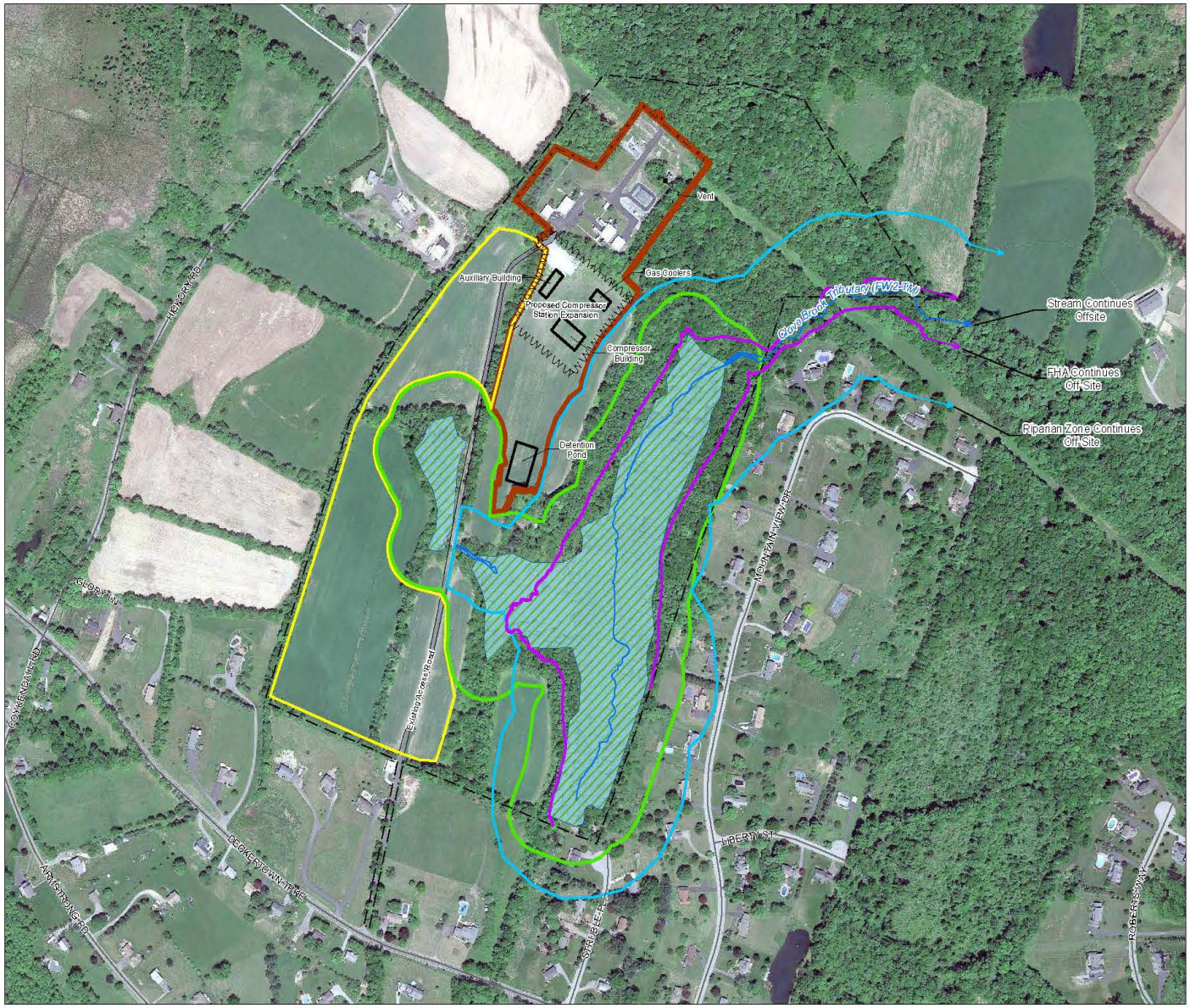
Tennessee Gas Pipeline, L.L.C.
East 300 Upgrade Project

Proposed Modifications to Compressor Station 321 (Susquehanna County, PA)

Docket No. CP20-493-000

Notes
1. Coordinate System: NAD 1983 StatePlane Pennsylvania North FIPS 3701 Feet
2. Data Sources: Stantec field work November 26, 2019, Susquehanna County GIS Parcel Data
3. Background: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community Service Layer Credits: Source: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community Google Earth Aerial Imagery 9/16/2019

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



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(At original document size of 11x17)
1:4,800

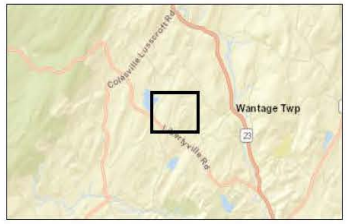
Legend

- Stream
- Existing Fence Line
- Flood Hazard Area (FHA) (Approximation Method 5)
- Riparian Zone
- Parcel Boundary
- 150' Wetland Transition Area
- New Facilities Area
- Temporary Workspace
- Permanent Facility
- Wetlands

Tennessee Gas Pipeline, L.L.C.
East 300 Upgrade Project

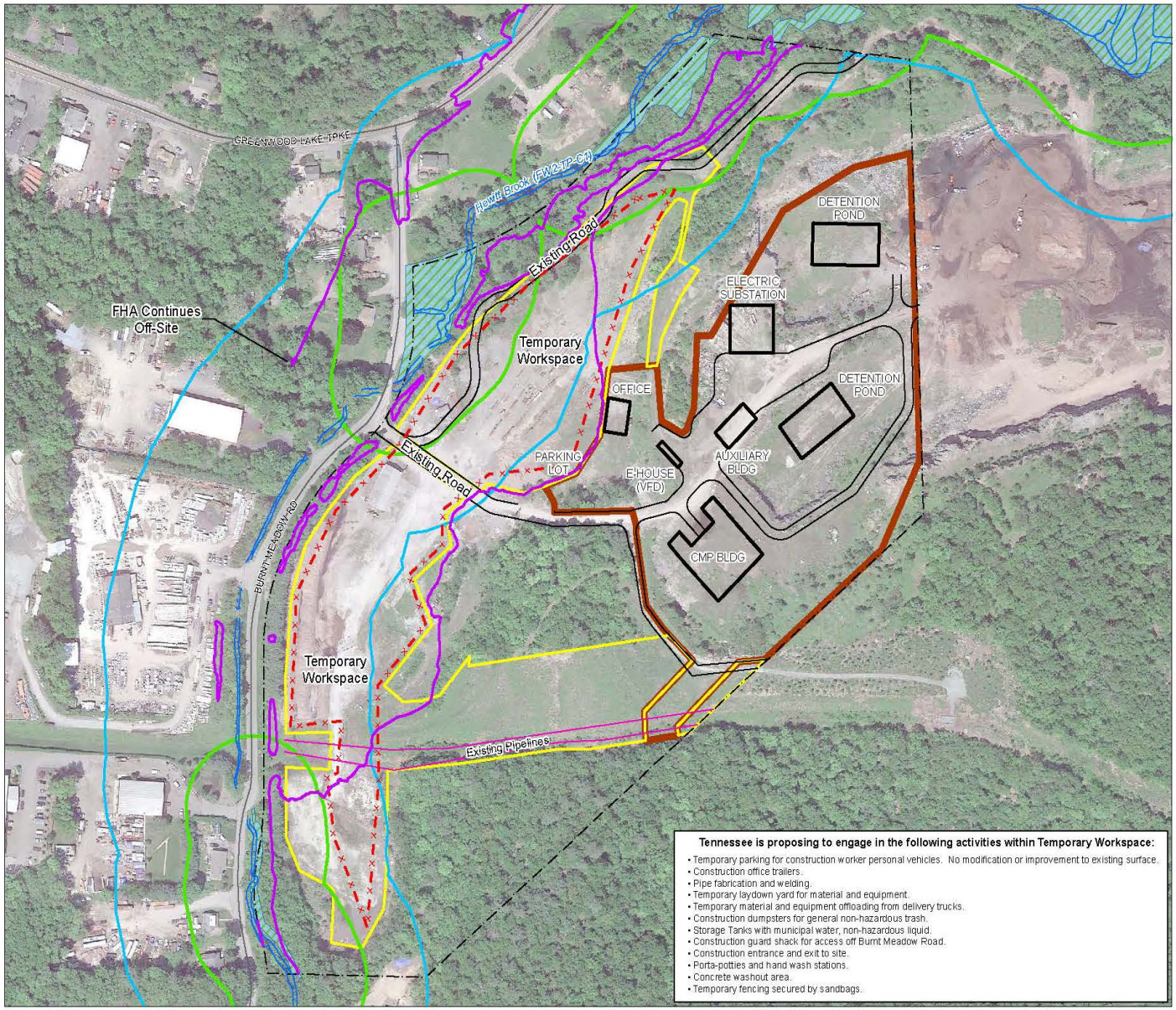
Proposed Modifications to Compressor Station 325 (Sussex County, NJ)

Docket No. CP20-493-000



Notes:
1. Coordinate System: NAD 1983 StatePlane New Jersey FIPS 2900 Feet
2. Data Sources: Wetland field work conducted on March 18 & 19, 2020, USGS National Hydrography Dataset (NHD)
3. Background: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User CommunityService Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
Google Earth Aerial Imagery 5/23/2018

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



Tennessee is proposing to engage in the following activities within Temporary Workspace:

- Temporary parking for construction worker personal vehicles. No modification or improvement to existing surface.
- Construction office trailers.
- Pipe fabrication and welding.
- Temporary laydown yard for material and equipment.
- Temporary material and equipment offloading from delivery trucks.
- Construction dumpsters for general non-hazardous trash.
- Storage Tanks with municipal water, non-hazardous liquid.
- Construction guard shack for access off Burnt Meadow Road.
- Construction entrance and exit to site.
- Porta-potties and hand wash stations.
- Concrete washout area.
- Temporary fencing secured by sandbags.

N

0 220 Feet
(At original document size of 11x17)
1:2,640

Legend

- Access Road
- Temporary Fence
- Stream
- Flood Hazard Area (FHA) (Approximation Method 5)
- Parcel Boundary
- Riparian Zone (C1 Waterway - 300')
- 150' Wetland Transition Area
- Temporary Workspace (< 6 months)
- Permanent Facility
- Wetlands (LOI dated 3/9/2018)

Tennessee Gas Pipeline, L.L.C.
East 300 Upgrade Project

Proposed New Compressor Station 327
(Passaic County, NJ)

Docket No. CP20-493-000

Notes:
1. Coordinate System: NAD 1983 StatePlane New Jersey FIPS 2900 Feet
2. Data Sources: NJDEP LOI 3/9/2018, USGS National Hydrography Dataset (NHD)
3. Background: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
Google Earth Aerial Imagery 5/23/2018

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