SABAL TRAIL PROJECT

DRAFT RESOURCE REPORT 9
Air and Noise Quality

FERC Docket No. PF14-1-000

June 2014

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☒ Describe existing air quality in the vicinity of the project. (§ 380.12(k)(1)) • Identify criteria pollutants that may be emitted above EPA-identified significance levels.	Section 9.2.4
☐ Quantify the existing noise levels (day-night sound level (Ldn) and other applicable noise parameters) at noise sensitive areas and at other areas covered by relevant state and local noise ordinances. (§ 380.12(k)(2)) • If new compressor station sites are proposed, measure or estimate the existing ambient sound environment based on current land uses and activities. • For existing compressor stations (operated at full load), include the results of a sound level survey at the site property line and nearby noise-sensitive areas. • Include a plot plan that identifies the locations and duration of noise measurements. • All surveys must identify the time of day, weather conditions, wind speed and direction, engine load, and other noise sources present during each measurement.	Section 9.3.3 • To be provided • N/A • To be provided • To be provided
☐ Quantify existing and proposed emissions of compressor equipment, plus construction emissions, including nitrogen oxides (NO_x) and carbon monoxide (CO), and the basis for these calculations. Summarize anticipated air quality impacts for the project. (§ 380.12(k)(3)) • Provide the emission rate of NO_x from existing and proposed facilities, expressed in pounds per hour and tons per year for maximum operating conditions, include supporting calculations, emission factors, fuel consumption rate, and annual hours of operation.	Sections 9.2.6 and 9.2.7 Appendices 9A [To be provided with the Project Application] Appendix 9B [To be provided with the Project Application]
☒ Describe the existing compressor units at each station where new, additional, or modified compressor units are proposed, including the manufacturer, model number, and horsepower of the compressor units. For proposed new, additional, or modified compressor units include the horsepower, type, and energy source. (§ 380.12(k)(4))	Sections 9.2.1
☐ Identify any nearby noise-sensitive area by distance and direction from the proposed compressor unit building/enclosure. (§ 380.12(k)(4))	Section 9.3.1 Appendix 9C [To be provided with the Project Application]
☒ Identify any applicable state or local noise regulations. (§ 380.12(k)(4)) • Specify how the facility will meet the regulations.	Section 9.3.3

RESOURCE REPORT 9—AIR AND NOISE QUALITY	
Filing Requirement	**Location in Environmental Report**
☐ Calculate the noise impact at noise-sensitive areas of the proposed compressor unit modifications or additions, specifying how the impact was calculated, including manufacturer's data and proposed noise control equipment. (§ 380.12(k)(4))	Section 9.3.4 Appendix 9C [To be provided with the Project Application]
Additional Information Often Missing and Resulting in Data Requests	
☐ Provide copies of application for state air permits and agency determinations, as appropriate.	Appendix 9A [To be provided with the Project Application]
☐ For major sources of air emissions (as defined by the EPA), provide copies of applications for permits to construct (and operate, if applicable) or for applicability determinations under regulations for the prevention of significant air quality deterioration and subsequent determinations.	Appendix 9A [To be provided with the Project Application]
☒ Describe measures and manufacturer's specifications for equipment proposed to mitigate impact to air and noise quality, including emission control systems, installation of filters, mufflers, or insulation of piping and building, and orientation of equipment away from noise-sensitive areas.	Section 9.2.6.1 and Section 9.3.5
☐ Provide greenhouse gas emission estimates for both construction and operation activities associated with the project.	Section 9.2.7 and Section 9.3.5 Appendix 9A [To be provided with the Project Application] Appendix 9B [To be provided with the Project Application]
☐ Provide construction emission estimates resulting from all construction activities associated with the project.	Appendix 9B [To be provided with the Project Application]

ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
ADEM	Alabama Department of Environmental Management
ADEM Admin. Code	Alabama Department of Environmental Management Administrative Code
API *Compendium*	American Petroleum Institute *Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry*, August 2009
Application	Certificate Application
AQCR	air quality control region
AQRV	air quality related value
A-wt.	A weighting
BACT	Best Available Control Technology
CAA	Clean Air Act
Certificate	Certificate of Public Convenience and Necessity
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalents
dB	decibels
dBA	A-weighted decibels
EF	Enhanced Fujita
F.A.C.	Florida Administrative Code
FCVs	flow-control valves
FERC	Federal Energy Regulatory Commission
FGT	Florida Gas Transmission Company, LLC
FDEP	Florida Department of Environmental Protection
FSC	Florida Southeast Connection, LLC
GEPD	Georgia Department of Natural Resources, Environmental Protection Division
GHG	greenhouse gas
GRAQC	Georgia Rules for Air Quality Control
Gulfstream	Gulfstream Natural Gas System, LLC
H&K	Hoover and Keith, Inc.
HDD	horizontal directional drilling
HDDV	heavy-duty diesel vehicle
hp	horsepower
ICE	internal combustion engine
ISO	International Standard Operations
kg	kilograms
km	kilometers
L_{eq}	equivalent sound level in decibels
M&R	meter and regulating
MMBtu/hr	million British thermal units per hour
MMcf	million cubic feet
MP	milepost
NAAQS	National Ambient Air Quality Standards

NESHAP	National Emission Standards for Hazardous Air Pollutants
NEMA	National Electrical Manufacturers Association
NNSR	nonattainment area NSR
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NSAs	noise sensitive areas
NSPS	New Source Performance Standards
NSR	New Source Review
OD	outside diameter
O_3	ozone
Pb	lead
PBR	Permit-by-Rule
PD	pressure drop
PM	particulate matter
PM_{10}	particulate matter with a diameter ≤ 10 microns
$PM_{2.5}$	particulate matter with a diameter ≤ 2.5 microns
Project	Sabal Trail Project
PSD	Prevention of Significant Deterioration
PTE	potential to emit
RICE	reciprocating internal combustion engine(s)
Sabal Trail	Sabal Trail Transmission, LLC
SER	significant emission rate
SI	spark-ignition
SIP	State Implementation Plan
Solar	Solar Turbines Inc.
TPY	tons per year
Transco	Transcontinental Gas Pipe Line Company, LLC
USDOT	U.S. Department of Transportation
USEIA	U.S. Energy Information Administration
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound(s)

9.0 RESOURCE REPORT 9 – AIR AND NOISE QUALITY

9.1 Introduction

Sabal Trail Transmission, LLC ("Sabal Trail"), a joint venture between affiliates of Spectra Energy Partners, LP and NextEra Energy, Inc., is seeking a Certificate of Public Convenience and Necessity ("Certificate") from the Federal Energy Regulatory Commission ("FERC") pursuant to Section 7 (c) of the Natural Gas Act authorizing the construction and operation of the Sabal Trail Project ("Project").

The Project is a new natural gas transmission pipeline that will be constructed, owned and operated by Sabal Trail, extending from Tallapoosa County, Alabama to a new interconnection hub ("the Central Florida Hub") in Osceola County, Florida. At the Central Florida Hub, the Project will connect with the Florida Southeast Connection Pipeline Project, currently being proposed by Florida Southeast Connection, LLC ("FSC") (FERC Docket No. PF14-2-000). In addition, at or near the Central Florida Hub, the Project will interconnect with Gulfstream Natural Gas System, LLC ("Gulfstream") and Florida Gas Transmission Company, LLC ("FGT"). Sabal Trail will also lease capacity from Transcontinental Gas Pipe Line Company, LLC ("Transco") on facilities Transco is proposing to construct for its Hillabee Expansion Project (FERC Docket No. PF14-6-000). The Project will have an initial capacity of 800,000 dekatherms per day with a proposed in-service date of May 1, 2017. Through a series of phased compressor station expansions to meet the future capacity needs of Sabal Trail's customers, the Project capacity will increase to approximately 1,100,000 dekatherms per day by 2021.

The proposed Project consists of the following facilities:

Pipeline Facilities

The Project includes construction of approximately 462.9 miles of new 36-inch diameter natural gas transmission pipeline (the "Mainline Route"), approximately 13.3 miles of new 36-inch diameter natural gas pipeline ("Hunters Creek Line"), and approximately 22.3 miles of new 24-inch diameter natural gas pipeline (the "Citrus County Line"). A summary of the Project pipeline facilities is provided in Table 1.2-1 (*see* Tables section of Resource Report 1). A location map of the Project pipeline facilities is provided as Figure 1.1-1 (*see* Figures section of Resource Report 1).

- Mainline Route – Originates in Tallapoosa County, Alabama near Transco milepost ("MP") 944 and ends at an interconnection with the Florida Southeast Connection Pipeline Project at the Central Florida Hub in Osceola County, Florida;
- Hunters Creek Line – Connects at the proposed Reunion Compressor Station located at approximately MP 462.9 to FGT's existing 30-inch diameter mainline natural gas pipeline in Orange County, Florida; and
- Citrus County Line – Located in Marion and Citrus Counties, Florida, extending from Sabal Trail's facilities at approximately MP 384.2 to a new electric generation plant proposed by Duke Energy Florida, Inc. to be located in Citrus County, Florida.

Aboveground Facilities

Five new compressor stations are proposed to be constructed along the Mainline Route. Three compressor stations would have a 2017 in-service date, followed by two additional compressor stations with a 2020 in-service date. Expansion work (i.e., additional compression) at two of these five new compressor stations would then be completed with an in-service date of 2021. Natural gas will be the proposed fuel source for the facilities within each compressor station. A summary of the Project aboveground facilities is provided in Table 1.2-2 of Resource Report 1. Aboveground facility plot plans are provided in Appendix 1A, Volume II-B of Resource Report 1. United States ("U.S.") Geological

Survey ("USGS") topographic location excerpts and aerial photography are provided as Figures 1.1-2 and 1.1-3 of Resource Report 1.

- Compressor Stations
    - Alexander City Compressor Station (approximate MP 0.0) – In service 2017. Construction of a compressor station near Alexander City in Tallapoosa County, Alabama. The compressor station will include two Solar Titan 130 and one Solar Titan 250 compressor units;
    - Albany Compressor Station (approximate MP 157.7) – In service 2020. Construction of a compressor station near Albany in Dougherty County, Georgia after the initial Project in-service date. The compressor station will include one Solar Titan 130 compressor unit. An additional Solar Titan 130 compressor unit will be constructed in a later phase of the Project with an in-service date of 2021;
    - Hildreth Compressor Station (approximate MP 292.7) – In service 2017. Construction of a compressor station near Lake City in Suwannee County, Florida, consisting of one Solar Titan 130 compressor unit. An additional Solar Titan 130 compressor unit will be constructed in a later phase of the Project with an in-service date of 2021;
    - Dunnellon Compressor Station (approximate MP 384.2) – In service 2020. Construction of a compressor station near Ocala in Marion County, Florida after the initial in-service date. The compressor station will include one Solar Titan 130 compressor unit; and
    - Reunion Compressor Station (approximate MP 462.9) – In service 2017. Construction of a compressor station near Intercession City in Osceola County, Florida, consisting of one Titan 130 compressor unit and one Solar Mars 100 compressor unit.

Additional details regarding the proposed work at the new compressor stations are provided in Section 9.2.1, below.

In addition, six meter and regulating ("M&R") stations are proposed for the Project.

- M&R Stations
    - Mainline Route M&R Stations
        - Transco Hillabee M&R Station in Tallapoosa County, Alabama (MP 0.0)
        - FGT Suwannee M&R Station in Suwannee County, Florida (MP 296.2)
        - FSC M&R Station in Osceola County, Florida (MP 462.9)
        - Gulfstream M&R Station in Osceola County, Florida (MP 462.9)
    - Hunters Creek Line M&R Station
        - FGT Hunters Creek M&R Station in Orange County, Florida (MP 13.3)
    - Citrus County Line M&R Station
        - Duke Energy Citrus County M&R Station in Citrus County, Florida (MP 22.3)

Proposed Mainline Capacity Lease

Transco Lease – Mainline capacity lease on Transco's existing pipeline facilities extending from Transco's Zone 4 Pool and Transco's interconnections with Midcontinent Express Pipeline, LLC and Gulf South Pipeline Company, LP, all located near Transco MP 784 in Choctaw County, Alabama to the

point of interconnection with the proposed Sabal Trail facilities to be located near Transco MP 944 in Tallapoosa County, Alabama.

Refer to Resource Report 1, Appendix 1A for Project drawings and mapping that show the location of all proposed facilities.

This draft Resource Report 9 addresses air quality (Section 9.2) and noise effects (Section 9.3) related to the construction and operation of the proposed Project facilities. Please note that some of the information typically provided in Resource Report 9 is currently under development or preliminary at this time. Unless otherwise indicated herein, Sabal Trail will provide missing or updated information in the final version of Resource Report 9 that will be filed with the Project Certificate Application ("Application").

9.2 Air Quality

The following subsections discuss air emissions and related effects associated with Project construction activities as well as from operation of stationary equipment proposed at Project facilities. Topics discussed within this section include proposed facilities and stationary equipment, existing ambient air quality, applicable permitting and regulatory requirements, air emissions, anticipated air quality effects, and potential air quality mitigation measures.

9.2.1 Proposed Compressor Stations

Five new compressor stations are proposed for the Project. The preliminary design of the compressor stations includes the following air emission sources at each facility. All horsepower ("hp") ratings for compressor turbines are provided at International Standard Operations ("ISO") conditions. An equivalent rating at National Electrical Manufacturers Association ("NEMA") conditions is provided for each turbine in Table 9.2-1.

Alabama

Alexander City Compressor Station - *Tallapoosa County, Alabama – In Service 2017*

The proposed Alexander City Compressor Station will include the following point source emissions units:

- Two (2) 20,500 hp Titan 130-20502 natural gas-fired turbine compressor units, manufactured by Solar Turbines, Inc. ("Solar");
- One (1) 30,000 hp Solar Titan 250-30002 natural gas-fired turbine compressor unit;
- One (1) new 1.9 million British thermal units per hour ("MMBtu/hr") natural gas-fired compressor turbine fuel heater;
- Two (2) new 1.5 MMBtu/hr natural gas-fired compressor turbine fuel heaters; and
- One (1) Waukesha VGF48GL natural gas-fired emergency generator with a power output rating of 1,175 hp.

Georgia

Albany Compressor Station - *Dougherty County, Georgia – In Service 2020*

The proposed Albany Compressor Station will include the following point source emissions units:

- One (1) 20,500 hp Solar Titan 130-20502 natural gas-fired turbine compressor unit;
- One (1) 20,500 hp Solar Titan 130-20502 natural gas-fired turbine compressor unit (in service 2021);
- Two (2) new 1.5 MMBtu/hr natural gas-fired compressor turbine fuel heaters; and

- One (1) Waukesha VGF36GL natural gas-fired emergency generator with a power output rating of 880 hp.

Florida

Hildreth Compressor Station - *Suwannee County, Florida – In Service 2017*

The proposed Hildreth Compressor Station will include the following point source emissions units:

- One (1) 20,500 hp Solar Titan 130-20502 natural gas-fired turbine compressor unit;
- One (1) 20,500 hp Solar Titan 130-20502 natural gas-fired turbine compressor unit (in service 2021);
- Two (2) new 1.5 MMBtu/hr natural gas-fired compressor turbine fuel heaters; and
- One (1) Waukesha VGF36GL natural gas-fired emergency generator with a power output rating of 880 hp.

Dunnellon Compressor Station - *Marion County, Florida – In Service 2020*

The proposed Dunnellon Compressor Station will include the following point source emissions units:

- One (1) 20,500 hp Solar Titan 130-20502 natural gas-fired turbine compressor unit;
- One (1) new 1.5 MMBtu/hr natural gas-fired compressor turbine fuel heater; and
- One (1) Waukesha VGF24GL natural gas-fired emergency generator with a power output rating of 585 hp.

Reunion Compressor Station - *Osceola County, Florida – In Service 2017*

The proposed Reunion Compressor Station will include the following point source emissions units:

- One (1) 20,500 hp Solar Titan 130-20502 natural gas-fired turbine compressor unit;
- One (1) 15,900 hp Solar Mars 100-16002 natural gas-fired turbine compressor unit;
- One (1) new 1.2 MMBtu/hr natural gas-fired compressor turbine fuel heater;
- One (1) new 1.5 MMBtu/hr natural gas-fired compressor turbine fuel heater; and
- One (1) Waukesha VGF36GL natural gas-fired emergency generator with a power output rating of 880 hp.

Included with the new turbine compressor units at the five affected compressor stations will be lube oil coolers, turbine exhaust systems, turbine air intake systems, and unit control panels. Operation of the new compressor units will have small, long-term effects on air quality. To minimize potential air quality effects, all of the new compressor turbines will be equipped with Solar's SoLoNO$_x$ emissions control technology. This technology incorporates low nitrogen oxides ("NO$_x$") combustors to limit emissions of NO$_x$ and also limits emissions of carbon monoxide ("CO") and other pollutants. The new turbines will also be equipped with oxidation catalysts to further reduce CO, volatile organic compounds ("VOC"), and hazardous air pollutant ("HAP") emissions. Table 9.2-1 provides a summary of proposed compression facilities for the Project.

9.2.2 Other Aboveground Facilities

As presented in Section 9.1, Sabal Trail will construct one new M&R station in Alabama and five new M&R stations in Florida. These new M&R facilities will be constructed in Tallapoosa County, Alabama;

Suwannee County, Florida; Osceola County, Florida; Orange County, Florida; and Citrus County, Florida. The new M&R stations will contain meter runs with gas flow meters, regulator runs with flow- and pressure-control valves for measuring and controlling gas flow and regulating gas pressures, isolation block valves, associated instrumentation/controls and small natural gas heaters for space heat and to protect instrumentation.

9.2.3 New Pipeline Facilities

The Project will include construction of approximately 462.9 miles of new 36-inch diameter mainline natural gas pipeline, approximately 13.3 miles of new 36-inch diameter natural gas pipeline, and approximately 22.3 miles of new 24-inch diameter natural gas pipeline. The proposed pipeline facilities will be constructed in Alabama, Georgia, and Florida.

9.2.4 Existing Conditions

This subsection discusses the existing air quality conditions in the vicinity of the Project facilities.

9.2.4.1 Climate

Alabama

The climate within the state of Alabama is classified as humid subtropical. Temperatures are warmer in the southern half of the state due to its proximity to the Gulf of Mexico. Alabama has a lengthy growing season reaching up to 300 days and receives a large amount of precipitation throughout the year. Thunderstorms occur most frequently in the summer, but are the most severe in the spring and fall. Alabama experiences one of the hottest summer seasons in the country. However, this heat is lessened in the south by winds coming off the Gulf, and in the north by high elevations. The central and northern parts of the state are prone to severe thunderstorms which produce strong lightning and large hail. The peak season for tornadoes varies throughout the state from north to south. Alabama, along with Kansas, has more reported Category 5 tornadoes, the most intense category for tornadoes on the Enhanced Fujita ("EF") scale, than any other state. Alabama is also one of only a few places in the world that has two distinct tornado seasons, November/December and the spring severe weather season (Climate, 2014a).

Regional climate data for Tallapoosa County, Alabama indicate temperatures near the Project facilities in the southeastern part of Alabama are generally highest in July with an average maximum temperature of 90.7 degrees Fahrenheit ("°F"), and lowest in January with an average minimum temperature of 31.6 °F. The mean annual precipitation is about 4.6 inches, with monthly average precipitation ranging from a low of about 3.1 inches in October to a maximum of about 5.5 inches in March (NCDC, 2012).

Georgia

The state of Georgia is also classified as a humid subtropical climate and contains two distinct climate regions that are separated by the Chattahoochee River. Weather conditions throughout the state vary depending on proximity to the Atlantic Ocean of the Gulf of Mexico, as well as altitude. The entire state receives moderate to heavy rain, as well as some snowfall which increases in frequency and amounts from south to north. The mountains of Georgia have the coolest climate and most frequent snowfall. Freezing rain poses the biggest problem to Georgia throughout the winter months. The southern half of the state experiences more mild weather in the winter, and the highest levels of humidity in the summer. A direct hit from a tropical cyclone is rare due to the state's small coastline. However, Georgia experiences hurricane force winds and heavy rain from hurricanes that strike the Florida Panhandle. Georgia is also one of the leading states in tornado incidents, and reports the occasional F0 and F1 tornadoes during summer thunderstorms (Climate, 2014b).

Regional climate data for Dougherty County, Georgia indicate temperatures near the Project facilities in the southwestern part of Georgia are generally highest in July with an average maximum temperature of 92.8 °F, and lowest in January with an average minimum temperature of 37.9 °F. The mean annual precipitation is about 4.1 inches, with monthly average precipitation ranging from a low of about 2.5 inches in October to a maximum of about 5.5 inches in July (NCDC, 2012).

Florida

Northern and central Florida are classified as a humid subtropical climate. There is a defined rainy season that occurs from June to September, which is the same time Florida is at the greatest risk from tropical cyclones. Between the months of October and May, fronts pass through the state creating dry conditions and brush fires. In July, the tradewinds expand northwestward into Florida, and dust from the Sahara moves into the state. This dust suppresses rainfall, alters the color of the sky, and negatively affects the air quality of the state. Summers tend to be very hot and humid, with relief coming from sea breezes off the cooler ocean and afternoon thunderstorms. Like most of the southeastern United States, Florida experiences very dense fog conditions, particularly in the winter months. Florida reports more thunderstorms than any other US state, and receives the highest density of lightning strikes within the United States. There are also more tornadoes per square mile in Florida than any other state, but they tend to be much weaker than those that occur in the Midwest and Great Plains. Tropical cyclones have been known to affect Florida during every month of the year except January or March, with the majority occurring between August and October. Both El Nino and La Nina have significant effects on the climate of the state. El Nino brings heavy rainfall in the spring, followed by dry conditions and wildfire threats, as well as a decreased frequency of storms and hurricanes. La Nina brings dry conditions in the fall and spring with an increased risk of wildfires during the spring and summer. Temperatures during La Nina are slightly above normal and the chance of hurricane activity increases dramatically (Climate, 2014c).

Regional climate data for Madison County, Florida indicate temperatures near the Project facilities in the northern part of Florida are generally highest in July with an average maximum temperature of 91.4 °F, and lowest in January with an average minimum temperature of 38.2 °F. The mean annual precipitation is about 4.4 inches, with monthly average precipitation ranging from a low of about 2.6 inches in May to a maximum of about 6.6 inches in June (NCDC, 2012).

Regional climate data for Gainesville County, Florida indicate temperatures near the Project facilities in the north-central part of Florida are generally highest in July with an average maximum temperature of 90.9 °F, and lowest in January with an average of minimum temperature of 42.3 °F. The mean annual precipitation is about 3.9 inches, with monthly average precipitation ranging from a low of about 2.1 inches in November to a maximum of about 7.1 inches in June (NCDC, 2012).

Regional climate data for Orange County, Florida indicate temperatures near the Project facilities in the central part of Florida are generally highest in July with an average maximum temperature of 91.8 °F, and lowest in January with an average of minimum temperature of 49.2 °F. The mean annual precipitation is about 4.2 inches, with monthly average precipitation ranging from a low of about 2.2 inches in November to a maximum of about 7.6 inches in June (NCDC, 2012).

9.2.4.2 National and State Ambient Air Quality Standards

The U.S. Environmental Protection Agency ("USEPA") has promulgated National Ambient Air Quality Standards ("NAAQS") to protect human health and welfare. The NAAQS include primary standards, which are designed to protect human health, including the health of sensitive subpopulations such as children and those with chronic respiratory problems. The NAAQS also include secondary standards designed to protect public welfare, including economic interests, visibility, vegetation, animal species, and other concerns not related to human health.

NAAQS currently apply to the following criteria pollutants: particulate matter ("PM") with a nominal aerodynamic diameter of 10 microns or less ("PM_{10}"); PM with a nominal aerodynamic diameter of 2.5 microns or less ("$PM_{2.5}$"); sulfur dioxide ("SO_2"); nitrogen dioxide ("NO_2"); CO; ozone ("O_3"); and lead ("Pb"). Each NAAQS is expressed in terms of a concentration level and an associated averaging period. The current NAAQS for these criteria pollutants are summarized in Table 9.2-2. Footnotes to Table 9.2-2 explain how compliance with each NAAQS is assessed.

The NAAQS apply in all Project areas. The Alabama Department of Environmental Management ("ADEM"), Georgia Department of Natural Resources, Environmental Protection Division ("GEPD"), and Florida Department of Environmental Protection ("FDEP") have adopted all of the NAAQS in full and have repealed their previously promulgated state ambient air quality standards.

9.2.4.3 Existing Ambient Air Quality

The Project will involve construction in various counties in Alabama, Georgia, and Florida. Many of these counties contain ambient air quality monitors that collect data concerning existing levels of various air pollutants. Summary data from the USEPA AirData database were reviewed to characterize maximum or near-maximum existing concentrations in representative counties in which Project facilities will be constructed (USEPA, 2013). In most cases, the county in which a proposed compressor station is located is used to represent existing air quality for the Project facilities in that vicinity. In some cases in which no data were available from a representative county, data from a neighboring or nearby county were used as a substitute.

Ambient air quality monitoring data from the 3-year period 2010-2012 are summarized in Table 9.2-3 for those counties in or near the Project facilities. For each county, Table 9.2-3 lists the maximum annual mean concentration and/or a near-maximum short-term concentration in each year. Second-high short-term concentrations are listed for most pollutants, but Table 9.2-3 includes the fourth-highest 8-hour average concentration for ozone, the 98^{th} percentile 1-hour average concentration for NO_2, the 98^{th} percentile 24-hour average concentration for $PM_{2.5}$, and the 99^{th} percentile 1-hour average concentration for SO_2.

As mentioned above, the listed concentrations are maximum or near-maximum values for monitors in the indicated counties. As such, they are not necessarily meant to be representative of current average air quality in the vicinity of individual Project facilities.

9.2.4.4 Attainment Status

An air quality control region ("AQCR"), as defined in Section 107 of the Clean Air Act ("CAA"), is a federally designated area in which Federal ambient air quality standards must be met. An implementation plan is developed for each AQCR describing how ambient air quality standards will be achieved and maintained.

USEPA designates the attainment status of an area on a pollutant-specific basis based on whether an area meets the NAAQS. Areas that meet the NAAQS are termed "attainment areas." Areas that do not meet the NAAQS are termed "nonattainment areas." Areas for which insufficient data are available to determine attainment status are termed "unclassified areas." Areas formerly designated as nonattainment areas that have subsequently reached attainment are termed "maintenance areas."

The attainment status designations appear in the Code of Federal Regulations ("CFR") at 40 CFR Part 81. The attainment status of a region, in conjunction with projected emission rates or emissions increases, determines the regulatory review process for a new project. All counties in which the Project facilities would be located are designated as attainment/unclassifiable for all pollutants.

9.2.5 Relevant Air Quality and Permitting Requirements

In addition to the NAAQS, Project air emissions and equipment will be subject to various other federal and state air quality regulations. Federal air quality requirements are contained in 40 CFR Parts 50 through 99. The following sections briefly discuss air regulations that potentially apply to Project facilities.

9.2.5.1 New Source Review Permitting/Licensing

Preconstruction air permitting programs that regulate the construction of new stationary sources of air pollution and the modification of existing stationary sources are commonly referred to as New Source Review ("NSR"). NSR can be divided into two categories: major NSR and minor NSR. Major NSR has two components: the Prevention of Significant Deterioration ("PSD") permitting program and the nonattainment area NSR ("NNSR") permitting program. Major NSR requirements are established on a federal level but may be implemented by state or local permitting authorities under either a delegation agreement with USEPA or as a State Implementation Plan ("SIP") program approved by USEPA. As a result, the major NSR thresholds can vary by state and by location within a state.

The requirements for the PSD and state NSR programs in Alabama, Georgia, and Florida are discussed below. All facilities proposed as part of the Project are located in attainment areas. As a result, NNSR permitting requirements are not discussed. The states of Alabama, Georgia, and Florida have all adopted into their SIPs the federal PSD thresholds at 40 CFR 52.21. Natural gas compressor stations are not on the list of 28 named source categories at 40 CFR 52.21(b)(1)(iii); therefore the applicable PSD threshold is 250 tons per year ("TPY") for any regulated NSR pollutant. If new sources located within areas designated as attainment or unclassifiable are major for at least one regulated pollutant, all other pollutants emitted from the source are compared against the Significant Emission Rates ("SERs") for PSD review. PSD review includes Best Available Control Technology ("BACT"), air dispersion modeling and a secondary impacts analysis, and consideration of impacts to Class I areas. New sources that emit less than the major NSR thresholds are considered minor NSR sources and may need to obtain a state NSR permit from the state or local permitting authority.

Alabama

ADEM administers its NSR permitting program through ADEM Administrative Code ("ADEM Admin. Code") Chapter 335-3-14 *Air Permits.* The major NSR permitting program is found at ADEM Admin. Code Rule 335-3-14-.04 *Air Permits Authorizing Construction in Clean Air Areas [Prevention of Significant Deterioration Permitting (PSD)]*. In addition to the PSD threshold of 250 TPY, ADEM also considers 100,000 TPY of carbon dioxide equivalents ("CO_2e") a PSD threshold.[1] Specifically, ADEM did not consider the "subject to regulation" test when establishing greenhouse gases ("GHGs") as a NSR pollutant within Alabama regulation. This differs from how the EPA Tailoring Rule incorporated GHGs into the federal NSR rules, and how other states (i.e., Georgia and Florida) have incorporated the EPA Tailoring Rule into their state major NSR permitting programs, by including language as follows discussing "subject to regulation": *Beginning July 1, 2011, in addition to the provisions in paragraph (b)(49)(iv) of this section, the pollutant GHGs shall also be subject to regulation…at a new stationary source that will emit or have the potential to emit 100,000 TPY CO_2e.* ADEM considers this discrepancy between the ADEM state rules and the EPA Tailoring Rule as acceptable since the state rules are more stringent.

[1] CO_2e is calculated as the sum of the six well-mixed GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) with applicable global warming potentials per 40 CFR 98 applied.

For projects which do not trigger major NSR permitting, ADEM requires a minor source air permit. ADEM has not established a list of source types or sizes that are exempt from permitting, but rather determines, on a case-by-case basis whether or not an air quality permit is necessary.

Alexander City Compressor Station – Tallapoosa County, Alabama

Tallapoosa County is designated attainment or unclassifiable for all NAAQS. The Alexander City Compressor Station will include three (3) simple-cycle modern natural gas-fired turbines fitted with SoLoNO$_x$ combustors and oxidation catalyst emission controls. Ancillary emissions sources such as fuel gas heaters and an emergency generator are planned.

Preliminary emissions estimates for the Alexander City Compressor Station indicate a potential to emit ("PTE") greater than 100,000 TPY CO_2e and a PTE above the respective SERs for VOC, NO_x, PM_{10}, and $PM_{2.5}$. Therefore, Sabal Trail has determined that the compressor station will be a major source of GHG with respect to the federal PSD permitting program. Since there are no NAAQS or PSD increments established for GHG, the compressor station will only be subject to BACT requirements for GHG, while a full PSD review, including BACT and air dispersion modeling, must be conducted for those criteria pollutants exceeding the SERs. The nearest Class I area is Sipsey Wilderness Area located in Lawrence County, Alabama. Air quality modeling for determination of air quality related value ("AQRV") impacts on the nearest Class I area is not expected to be required since the nearest receptor location specified by the Federal Land Manager for Sipsey Wilderness Area is approximately 198 kilometers ("km"), or 123 miles, from the proposed compressor station location. ADEM also has state-only toxics air dispersion requirements, which Sabal Trail will review and address, as applicable, in the application to ADEM.

Transco Hillabee M&R Station in Alabama

One new M&R station, the Transco Hillabee M&R Station in Tallapoosa County, is proposed in Alabama. ADEM has not established a list of source types or sizes that are exempt from permitting, but rather determines, on a case-by-case basis whether or not an air quality permit is necessary. Therefore, the emissions from the new M&R station may require a minor source air permit from ADEM. Sabal Trail will submit information about the Transco Hillabee M&R Station to ADEM upon finalization of station design information so that ADEM can make its determination whether the emissions from the new M&R station will require permitting or other authorization. If it is found that the emissions from the new M&R station will require construction authorization, Sabal Trail will submit an application for the appropriate authorization to ADEM during the first quarter of 2015.

Georgia

The GEPD administers its major NSR permitting program through the Georgia Rules for Air Quality Control ("GRAQC") Chapter 391-3-1-.02(7) *Prevention of Significant Deterioration of Air Quality* and establishes preconstruction, construction and operation requirements for new and modified sources through GRAQC Chapter 391-3-1-.03 *Permits*. As mentioned previously, Georgia has adopted the "subject to regulation" language from the EPA Tailoring Rule into its major NSR permitting program.[2]

Albany Compressor Station – Dougherty County, Georgia

Dougherty County is designated attainment or unclassifiable for all NAAQS. The Albany Compressor Station will include two (2) simple-cycle modern natural gas-fired turbines fitted with SoLoNO$_X$

[2] Based on the Tailoring Rule (75 FR 31514), GHG's become "subject to regulation" when the project has a potential to emit 100,000 TPY of CO_2e, and 250 TPY on a mass basis. In this way, the potential to emit threshold of 100,000 TPY CO_2e is similar in application to a "major source threshold." The Tailoring Rule did not modify the definition of "major stationary source" at 40 CFR 52.21(b)(1)(i).

combustors and oxidation catalyst emission controls. Ancillary emissions sources such as fuel gas heaters and an emergency generator are planned.

Preliminary emissions estimates for the Albany Compressor Station indicate a PTE greater than 100,000 TPY CO_2e and a PTE above the respective SERs for VOC and NO_x. Therefore, Sabal Trail has determined that the compressor station will be a major source of GHG with respect to the federal PSD permitting program. As stated previously, there are no NAAQS or PSD increments established for GHG, therefore the compressor station will only be subject to BACT requirements for GHG, while a full PSD review, including BACT and air dispersion modeling, must be conducted for those criteria pollutants exceeding the SERs. The nearest Class I area is Bradwell Bay Wilderness Area located in Wakulla County, Florida. Air quality modeling for determination of AQRV impacts on the nearest Class I area is not expected to be required since it is approximately 145 km, or 90 miles, from the proposed compressor station location. EPD also has state-only toxics air dispersion requirements, which Sabal Trail will review and address, as applicable, in the application to EPD.

Project M&R Stations in Georgia

There are no new or modified M&R stations proposed in Georgia.

Florida

The FDEP administers its NSR permitting program under Chapter 62-212 of the Florida Administrative Code ("F.A.C.") *Stationary Sources – Preconstruction Review*. The major NSR permitting program is found at 62-212.400, F.A.C. On May 1, 2014, EPA approved Florida's SIP, providing FDEP with the authority to regulate GHGs under its PSD and Title V programs, to establish applicability thresholds for GHG emissions at the same emissions thresholds and in the same timeframes as those specified by EPA in the GHG Tailoring Rule. For projects which do not trigger major NSR permitting, FDEP requires a state air construction permit for projects meeting the applicability of Rule 62-210.300(1), F.A.C. A state air construction permit is not required for any facility, emissions unit or pollutant-emitting activity that satisfies the applicable permitting exemption criteria of Rule 62-210.300(3)(a) or (b), F.A.C.

Hildreth Compressor Station – Suwannee County, Florida

Suwannee County is designated attainment or unclassifiable for all NAAQS. The Hildreth Compressor Station will include two (2) simple-cycle modern natural gas-fired turbines fitted with $SoLoNO_x$ combustors and oxidation catalyst emission controls, and ancillary emissions sources similar to the compressor stations in Alabama and Georgia.

Preliminary emissions estimates for the Hildreth Compressor Station indicate a PTE greater than 100,000 TPY CO_2e and a PTE above the respective SERs for VOC and NO_x. Therefore, Sabal Trail has determined that the compressor station will be a major GHG source with respect to the PSD permitting program. The compressor station will be subject to BACT requirements for GHG, while a full PSD review, including BACT and air dispersion modeling, must be conducted for those criteria pollutants exceeding the SERs. The nearest Class I area is Okefenokee Wilderness Area located in Clinch County, Georgia. Air quality modeling for determination of AQRV impacts on the nearest Class I area is not expected to be required since it is approximately 74 km, or 46 miles, from the proposed compressor station location.

Dunnellon Compressor Station – Marion County, Florida

Marion County is designated attainment or unclassifiable for all NAAQS. The Dunnellon Compressor Station will include one (1) simple-cycle modern natural gas-fired turbine fitted with a $SoLoNO_x$ combustor, oxidation catalyst emission controls, and similar ancillary emissions sources to the other new compressor stations proposed as part of the Project.

Preliminary emissions estimates for the Dunnellon Compressor Station indicate a PTE less than 100,000 TPY CO_2e and less than 250 TPY for all NSR pollutants. Therefore, Sabal Trail has determined that the compressor station will be a minor source and not subject to the federal PSD permitting program. As a minor source, the station will be required to obtain a State Air Construction Permit. PSD permitting requirements such as implementation of BACT, air dispersion modeling, and analysis of secondary impacts, will not be required as part of the State Air Construction Permit application process. Although BACT will not be required, Sabal Trail is proposing to install emissions controls on the simple-cycle natural gas-fired turbine at the Dunnellon Compressor Station that are equivalent to those presented for the other new compressor stations proposed as part of the Project.

Reunion Compressor Station – Osceola County, Florida

Osceola County is designated attainment or unclassifiable for all NAAQS. The Reunion Compressor Station will include two (2) simple-cycle modern natural gas-fired turbines fitted with $SoLoNO_x$ combustors, oxidation catalyst emission controls, and similar ancillary emissions sources to the other proposed compressor stations.

Preliminary emissions estimates for the Reunion Compressor Station indicate a PTE greater than 100,000 TPY CO_2e and a PTE above the respective SERs for VOC and NO_x. Therefore, Sabal Trail has determined that the compressor station will be a major GHG source with respect to the federal PSD permitting program. The compressor station will be subject to BACT requirements for GHG, while a full PSD review, including BACT and air dispersion modeling, must be conducted for those criteria pollutants exceeding the SERs. The nearest Class I area is Chassahowitzka Wilderness Area, located in Citrus County, Florida. Air quality modeling for determination of AQRV impacts on the nearest Class I area is not expected to be required since it is approximately 114 km, or 71 miles, from the proposed compressor station location.

Project M&R Stations in Florida

Five new M&R stations, the FGT Suwannee M&R Station in Suwannee County, FSC M&R Station in Osceola County, Gulfstream M&R Station in Osceola County, FGT Hunters Creek M&R Station in Orange County, and Duke Energy Citrus County M&R Station in Citrus County, are proposed in Florida. The emissions from the new M&R stations are expected to meet the Generic Facility Exemption of Rule 62-210.300(3)(b)1., F.A.C., and therefore will likely not require State Air Construction Permits from Florida DEP.[3] Sabal Trail will make its final determination whether the emissions from the new M&R stations in Florida require permitting or other authorization upon finalization of station design information. If it is found that the emissions from the new M&R stations will require construction authorizations, Sabal Trail will apply for the appropriate authorizations during the first quarter of 2015.

A copy of the compressor station air permit applications sent to ADEM, GEPD, and FDEP will be included in Appendix 9A in the final version of Resource Report 9 that will be filed with the Project Application.

[3] The General Facility Exemption of Rule 62-210.300(3)(b)1., F.A.C., exempts a facility that is not entitled to a categorical or conditional exemption pursuant to paragraph 62-210.300(3)(a), F.A.C., from the requirement to obtain an air construction permit if none of the emissions units and pollutant-emitting activities within the facility, including any proposed new emissions units and activities, are subject to any unit-specific limitation or requirement and the facility has potential to emit less than 1,000 lb/yr lead and lead compounds; 1 TPY of any HAP; 2.5 TPY total HAPs; 25 TPY CO, NO_x, and SO_2; and 10 TPY of any other regulated air pollutant as defined at Rule 62-210.200, F.A.C.

9.2.5.2 State and Title V Operating Permit Programs

The Title V permit program in 40 CFR Part 70 requires major sources of air pollutants to obtain federal operating permits. The major source thresholds under the Title V program, as defined in 40 CFR § 70.2 and which are different from the federal NSR major source thresholds, are 100 TPY of any air pollutant, 10 TPY of any single HAP, or 25 TPY of total HAPs. More stringent Title V major source thresholds apply for VOC and NO_x in ozone nonattainment areas, namely 50 TPY of VOC or NO_x in areas defined as serious, 25 TPY in areas defined as severe, and 10 TPY in areas classified as extreme. Additionally, as of July 1, 2011, stationary sources that emit or have a potential to emit 100,000 TPY CO_2e or more are subject to Title V permitting.

Alabama

Alexander City Compressor Station – Tallapoosa County, Alabama

Sabal Trail has determined that the Alexander City Compressor Station will be a major source with respect to the Title V (Part 70) Operating Permit Program. An application for a Title V permit will be submitted within 12 months after the compressor station commences operation, in accordance with ADEM Admin. Code r. 335-3-16 *Major Source Operating Permits*.

Project M&R Station in Alabama

Title V Operating Permits are only required for major stationary sources. A Synthetic Minor Operating Permit is required only for a source that elects to restrict its potential to emit to less than Title V major source thresholds via an operating permit, or a source whose potential to emit is greater than Title V major source thresholds, but whose actual emissions are less than or equal to 50 percent of any applicable major source thresholds. The Transco Hillabee M&R Station in Tallapoosa County is expected to be a minor source of air emissions and either require a minor source construction permit or be exempt from permitting. Therefore, the Transco Hillabee M&R Station will not be required to obtain a Synthetic Minor or Title V operating permit.

Georgia

Albany Compressor Station – Dougherty County, Georgia

Sabal Trail has determined that the Albany Compressor Station will be a major source with respect to the Title V Operating Permit Program. An application for a Title V permit will be submitted within 12 months after the compressor station commences operation, in accordance with GRAQC 391-3-1-.03 (10)(c) *Title V Operating Permits.*

Florida

Following the construction authorization, completion of construction, and initial operation, Florida DEP requires submittal of an application for State Minor Source Air Operation Permit under Rule 62-210.300(2), F.A.C., or Title V Air Operation Permit under Rule 62-213, F.A.C., as applicable.

Hildreth Compressor Station – Suwannee County, Florida and Reunion Compressor Station – Osceola County, Florida

Sabal Trail has determined that the Hildreth and Reunion Compressor Stations will be major sources with respect to the Title V Air Operation Permit Program under Rule 62-213, F.A.C., *Operation Permits for Major Sources of Air Pollution*. Applications for a Title V permit for each compressor station will be submitted within 12 months after the stations commence operation, in accordance with Rule 62-213, F.A.C.

Dunnellon Compressor Station – Marion County, Florida

Sabal Trail has determined that the Dunnellon Compressor Station will be a minor source with respect to the Title V Air Operation Permit Program. An application for a State Air Operation Permit will be submitted within 12 months after the compressor station commences operation, in accordance with Rule 62-210.300(2), F.A.C. *Permits Required – Air Operation Permits*.

Project M&R Stations in Florida

Title V operating permits are only required for major stationary sources. A State Air Operation Permit is required for minor stationary sources. The five M&R stations proposed in Florida are each expected to be minor sources of air emissions and either require State Air Construction Permits or be exempt from permitting. Sabal Trail will make its final determination whether the emissions from the new M&R stations in Florida require permitting or other authorization upon finalization of station design information. If it is found that the emissions from the new M&R stations are not exempt from permitting, Sabal Trail will apply for State Minor Source Air Operation Permits within 12 months after the stations commence operation, in accordance with Rule 62-210.300(2), F.A.C. *Permits Required – Air Operation Permits*.

9.2.5.3 Standards of Performance for New Stationary Sources

New Source Performance Standards ("NSPS") in 40 CFR Part 60 regulate certain emissions from specific source categories. Facilities associated with the Project include equipment in some source categories that could be subject to NSPS requirements as discussed below.

40 CFR Part 60, Subpart Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units)

40 CFR Part 60, Subpart Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units) applies to steam generating units, as defined in 40 CFR § 60.41c, with a maximum design heat input capacity of greater than or equal to 10 MMBtu/hr but less than or equal to 100 MMBtu/hr for which construction, modification, or reconstruction is commenced after June 9, 1989. There will not be any subject steam generating units with a maximum design heat input capacity greater than or equal to 10 MMBtu/hr installed at any of the Project compressor stations. However, at this time, it cannot be determined if there will be any subject steam generating units installed at any of the Project M&R stations. If any steam generating units with a maximum design heat input capacity greater than 10 MMBtu/hr are installed as part of the Project, they will be subject to Subpart Dc requirements. There are no emissions limitations that apply to natural gas-fired steam generating units subject to Subpart Dc. However, there are reporting requirements (for notification of initial construction and initial startup) and recordkeeping requirements (for amount of fuel combusted) that will apply.

40 CFR Part 60, Subpart Kb (Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984)

40 CFR Part 60, Subpart Kb (Standards of Performance For Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984) potentially applies to storage vessels with a capacity greater than 75 cubic meters (m^3) that will store volatile organic liquids. A capacity of 75 m^3 is equal to approximately 19,813 gallons. The Project does not include the construction, reconstruction, or modification of any storage vessels with a capacity greater than 75 m^3. Therefore, NSPS Subpart Kb will not apply to Project activities.

40 CFR Part 60, Subpart JJJJ (Standards of Performance for Stationary Spark Ignition Internal Combustion Engines)

40 CFR Part 60, Subpart JJJJ, is applicable to owners and operators of new or existing stationary spark ignition internal combustion engines ("SI ICE") that commence construction, modification, or reconstruction after June 12, 2006. The Project includes new emergency stationary SI ICE greater than 25 hp at the five affected compressor stations. Therefore, requirements of Subpart JJJJ will apply to the Project.

40 CFR Part 60, Subpart KKKK (Standards of Performance for Stationary Combustion Turbines)

40 CFR Part 60, Subpart KKKK applies to stationary combustion turbines with a heat input rate at peak load of 10 MMBtu/hr or greater that commenced construction, modification (as defined in 40 CFR 60.14), or reconstruction (as defined in 40 CFR 60.15) after February 18, 2005. Subpart KKKK limits emissions of NO_x as well as the sulfur content of fuel that is combusted from subject units. The Project involves the installation of new stationary combustion turbines at all five affected compressor stations. Therefore, the Project will trigger the emissions limitations as well as the monitoring, reporting, recordkeeping, and testing requirements under Subpart KKKK of Part 60.

40 CFR Part 60, Subpart OOOO (Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution)

40 CFR Part 60, Subpart OOOO applies to storage vessels that are located in the oil and natural gas production segment, natural gas processing segment or natural gas transmission and storage segment that commenced construction, reconstruction, or modification after August 23, 2011, and have the potential to emit VOC emissions equal to or greater than 6 TPY, as determined in accordance with § 60.5365(e). Natural gas transmission is defined as the pipelines used for the long distance transport of natural gas (excluding processing). Specific equipment used in natural gas transmission includes the land, mains, valves, meters, boosters, regulators, storage vessels, dehydrators, compressors, and their driving units and appurtenances, and equipment used for transporting gas from a production plant, delivery point of purchased gas, gathering system, storage area, or other wholesale source of gas to one or more distribution area(s).

The Project does not include the construction, reconstruction, or modification of any storage vessels with potential to emit VOC emissions equal to or greater than 6 TPY. Therefore, the requirements of Subpart OOOO do not apply.

9.2.5.4 National Emission Standards for Hazardous Air Pollutants

The USEPA has established National Emission Standards for Hazardous Air Pollutants ("NESHAP") for specific pollutants and industries in 40 CFR Part 61. The Project does not include any of the specific sources for which NESHAP have been established in Part 61. Therefore, Part 61 NESHAP requirements will not apply to the Project.

The USEPA has also established NESHAP requirements in 40 CFR Part 63 for various source categories. The Part 63 NESHAP apply to certain emission units at facilities that are major sources of HAP. Some NESHAP apply or may apply in the future to non-major sources (area sources) of HAP. The Project involves some facilities that include units that could potentially be subject to certain Part 63 NESHAP, such as those in Subpart YYYY (NESHAP for Stationary Combustion Turbines), Subpart ZZZZ (NESHAP for Stationary Reciprocating Internal Combustion Engines), and Subpart DDDDD (NESHAP for Industrial, Commercial, And Institutional Boilers and Process Heaters).

40 CFR Part 63, Subpart HHH (National Emission Standards for Hazardous Air Pollutants from Natural Gas Transmission and Storage Facilities)

40 CFR Part 63, Subpart HHH is for natural gas transmission and storage facilities that are major sources of HAP and that transport or store natural gas prior to entering the pipeline to a local distribution company or to a final end user (if there is no local distribution company). The affected source is each new and existing glycol dehydration unit located at the facility. The owner or operator of a facility that does not contain an affected source is not subject to the requirements of this subpart. The new compressor stations proposed as part of the Project will not be major sources of HAP and the Project does not include any glycol dehydration units. Therefore, the requirements of Subpart HHH will not apply to the Project.

40 CFR Part 63, Subpart YYYY (National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines)

40 CFR Part 63, Subpart YYYY applies to stationary combustion turbines at major sources of HAPs. Emissions and operating limitations under Subpart YYYY apply to new and reconstructed stationary combustion turbines. The Project does not involve any major sources of HAPs. Therefore, the Project will not trigger any requirements under Subpart YYYY.

40 CFR Part 63, Subpart ZZZZ (National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines)

40 CFR Part 63, Subpart ZZZZ, applies to existing, new, and reconstructed stationary reciprocating internal combustion engines ("RICE") depending on size, use, and whether the engine is located at a major or area source of HAP.

The Project includes new emergency stationary RICE at all five of the new compressor stations. New stationary RICE located at an area source of HAP must meet the requirements of Subpart ZZZZ by meeting the NSPS. As discussed above in Section 9.2.5.3, the new emergency engines proposed for these facilities are subject to the NSPS at 40 CFR Part 60, Subpart JJJJ, therefore the requirements of Subpart ZZZZ will be met.

40 CFR Part 63, Subpart DDDDD (National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters)

40 CFR Part 63, Subpart DDDDD applies to certain new and existing boilers and process heaters at major HAP sources. The Project does not involve any major sources of HAPs. Therefore, the Project will not trigger any Subpart DDDDD requirements.

40 CFR Part 63, Subpart JJJJJJ (National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources)

40 CFR Part 63, Subpart JJJJJJ applies only to certain new and existing boilers at area sources, where a boiler is defined as "an enclosed device using controlled flame combustion in which water is heated to recover thermal energy in the form of steam and/or hot water." The rule does not apply to natural gas-fired boilers. Any new heating devices proposed as part of the Project will be fired by natural gas, and therefore the Project is not expected to be subject to Subpart JJJJJJ requirements.

9.2.5.5 Risk Management Program

USEPA has established accidental release prevention and risk management plan requirements as part of 40 CFR Part 68 (Chemical Accident Prevention Provisions). Part 68 lists regulated substances along with thresholds for determining the applicability of the associated requirements. If a regulated substance is

handled, stored, or processed in greater than threshold quantities at a stationary source, then a risk management plan must be prepared.

Even if a facility is not required to prepare a risk management plan, requirements of the General Duty Clause in the CAA still apply if the facility produces, processes, handles, or stores regulated substances or other extremely hazardous substances on site. Compliance with the General Duty Clause requires that owners of facilities be continuously vigilant about potential hazards and methods of minimizing the consequences of accidental releases.

Except for constituents of natural gas, such as ethane and methane, the Project is not expected to produce, process, handle, or store any substance regulated under Part 68 in quantities exceeding applicability thresholds. Natural gas pipelines are not subject to Part 68 if they are subject to U.S. Department of Transportation ("USDOT") requirements or to a state natural gas program certified by USDOT. In addition, the storage of natural gas incidental to transportation (i.e., natural gas taken from a pipeline during non-peak periods, placed in storage fields, and then returned to the pipeline when needed) is not subject to Part 68. Consequently, the Project will not be subject to Part 68 requirements.

9.2.5.6 General Conformity

General conformity regulations in 40 CFR Part 93, Subpart B, are designed to ensure that federal actions that occur in nonattainment and maintenance areas do not interfere with a state's ability to attain or maintain compliance with NAAQS. The Project is considered to be a federal action, since a Federal agency (i.e., FERC) will be licensing, permitting, or otherwise approving portions of the Project. None of the proposed Project activities will occur in federally designated nonattainment or maintenance areas. Consequently, neither a general conformity applicability analysis nor a conformity determination are required.

9.2.6 Anticipated Air Quality Impacts

9.2.6.1 Air Quality Mitigation Measures

The emissions from the new compressor stations will need to meet rigorous technology and operational requirements to obtain and comply with the required air emissions permits. As part of PSD review, the proposed new turbines at Alexander City, Albany, Hildreth, and Reunion Compressor Stations will be required to meet BACT to control emissions of GHG, NO_x, and VOC. The Alexander City Compressor Station will also have to meet BACT to control emissions of PM_{10} and $PM_{2.5}$. Although BACT will not be required for the proposed new turbine at the Dunnellon Compressor Station, Sabal Trail is proposing to install emissions controls that are equivalent to those presented for the new turbines at the four other compressor stations proposed as part of the Project. The PSD permit applications for the Alexander City, Albany, Hildreth, and Reunion Compressor Stations will include air quality analyses that must demonstrate compliance with the NAAQS, as required.

Measures proposed to minimize air quality effects include the use of clean burning natural gas as the fuel for all combustion devices and use of $SoLoNO_x$ combustion technology to control NO_x and CO emissions from the new turbines. The proposed new turbines will also be equipped with oxidation catalysts to further reduce CO, VOC, and HAP emissions. Compliance with applicable federal and state air regulations and state permit requirements will ensure that the air quality effects from the proposed compressor stations are minimized.

Implementation of Sabal Trail's preventive maintenance program at all Project facilities will serve to identify and prevent leaks, repair quickly any leaks that are found, and reduce the frequency and extent of unscheduled maintenance requiring evacuating the gas from aboveground facilities and/or portions of the pipeline ("blowdowns") will minimize fugitive VOC and GHG emissions.

Fugitive dust emissions during construction will be mitigated, as necessary, by spraying water or application of other commercially-available dust control agents on unpaved areas subject to frequent vehicle traffic. In addition, construction equipment will be properly tuned, and operated only on an as-needed basis to minimize the combustion emissions from diesel and gasoline engines.

9.2.6.2 Emissions from Operation of the Affected Compressor Stations

Preliminary air emissions estimates for the new compressor stations are summarized in Tables 9.2-4 through 9.2-8. Tables 9.2-4 through 9.2-8 include the emissions from the new emissions sources. Further information about the proposed air emission sources, detailed emissions calculations, and the basis for emission rates and calculations will be provided in the compressor station air permit applications that will be included in Appendix 9A of the final version of Resource Report 9 that will be filed with the Project Application.

9.2.6.3 Emissions from Operation of Project M&R Stations

The design of the Project M&R stations is ongoing at this time and accurate emissions estimates for these stations are not available. Final equipment selection and piping configurations are needed to provide an accurate estimate, so Sabal Trail is providing emissions information that is considered to be representative of the emissions that could result from operation of these facilities, but will vary depending on the final design and actual operation.

The potential emissions of criteria pollutants from any natural gas-fired instrument heaters that may be installed at Project M&R stations for space heat and to protect instrumentation are expected to be less than 1 TPY for each criteria pollutant and less than 2 TPY for GHG. No in-line gas heaters are proposed.

Additional emissions from the operation of all Project M&R stations result from fugitive releases from piping components, such as valves and fittings, as well as "non-routine" activities, such as pigging operations and other non-routine maintenance activities requiring blowdown of either the M&R station or a section of pipeline with a terminus at the M&R station. Table 9.2-9 provides the Project's estimated fugitive and non-routine emissions from operation of all of the new M&R stations proposed as part of the Project combined. This estimate utilizes industry emission factors provided in Table 5-26 and Table 6-6 of the *Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry (*"API *Compendium*"), prepared by the American Petroleum Institute in August 2009 (API, 2009). The fugitive emission factor from the API *Compendium* is an average of the emissions measured at M&R stations included in a June 1996 methane emissions study completed by the Gas Research Institute and USEPA. The non-routine emissions factor was developed from the *Updated Canadian National Greenhouse Gas Inventory for 1995, Emission Factor Documentation, Technical Memorandum*, Final, October 2001, prepared by the URS Corporation. The emission factors in the API *Compendium* were adjusted based on the expected methane ("CH_4") content of the site-specific gas.

9.2.6.4 Emissions from Operation of the Sabal Trail Pipelines

Emissions from the operation of natural gas transmission pipelines result from fugitive releases from piping components. Occasionally, non-routine activities, such as maintenance activities, will require venting/blowdown of a section of pipe between valves located along the pipeline. Table 9.2-10 presents an estimate of the actual emissions from operation of the Project pipelines (approximately 498.5 miles of pipe), using industry emission factors provided in Table 5-26 and Table 6-6 of the API *Compendium*. The emission factors were adjusted based on the expected CH_4 content of the site-specific gas.

9.2.6.5 Air Quality Benefits from the Use of Natural Gas to Generate Electricity

The use of natural gas results in lower emission rates of greenhouse gases and criteria air pollutants than all other fossil fuels (standardized to emissions per unit of energy consumed). Based on default CO_2

emission factors for various types of fuel provided in Table C-1 of 40 CFR Part 98, *Mandatory Greenhouse Gas Reporting*, use of natural gas results in nearly half the GHG emissions as the use of coal, in terms of CO_2 per unit of energy input (i.e., 53 kilograms ("kg ") of CO_2 per MMBtu of natural gas versus 93.3 kg CO_2 per MMBtu of coal). Because this natural gas will be utilized by electric generation stations utilizing more energy efficient combined cycle combustion turbine technology than simple cycle combustion turbines and boilers, less fuel is required to produce the same amount of electricity (i.e., the resulting CO_2 emission rates are substantially lower on a per megawatt-hour of generation basis).

Table 9.2-11 provides a comparison of the CO_2 emissions resulting from less efficient coal- and oil-fired electric generation versus new energy efficient combined cycle gas generation.

Based on recent statistics from the Florida Public Service Commission regarding energy production by fuel type, the vast majority of electric generation in Florida is produced from natural gas, followed by coal and, minimally, fuel oil (i.e., 137,243 gigawatt hours of natural gas electricity, 56,014 gigawatt hours of coal electricity, and 1,178 gigawatt hours of oil electricity) (FPSC, 2012). Thus, it is expected that the new natural gas electric generation that would be fueled by this pipeline will primarily replace (either physically or in the form of reduced operating hours) the electricity generated by the use of coal, resulting in substantial emission reductions.

Using natural gas in place of coal and oil to generate electricity will also minimize emissions of NO_x, SO_2, and PM_{10} and $PM_{2.5}$, with virtually no emissions of other fuel-bound contaminants such as mercury. The large reduction in air emissions when switching to natural gas is, in part, a result of the composition of natural gas. Pipeline natural gas, as proposed for the Project pipeline, is at least 80 percent methane (typically much higher than this minimum specification), meaning that natural gas is less chemically complex than other fuels with multiple chemical constituents. Natural gas also contains significantly less impurities that react during combustion to form air pollutants (e.g., SO_2 and mercury). The greater chemical consistency and lower impurities reduces the formation of air pollutants, but also yields higher combustion efficiency – further reducing the air emissions per unit of heat input. Efficiency can also be improved through the use of combined cycle power plants, which can reach greater than 60 percent efficiency when fueled by natural gas. In contrast the most efficient pulverized coal-fired electric utility steam generating units approach only approximately 40 percent efficiency.

The additional natural gas brought to the region will enable utilities and industry in the southeast to utilize this clean fuel for maximum efficiency at new projects, and for fuel switching at existing facilities. The United State Energy Information Administration ("USEIA") summarizes that natural gas consumption has increased in the national Electric Utility sector by nearly 37 percent between 2008 and 2012 (USEIA, 2013a). This increase is far larger in the Sabal Trail Project area; i.e., Alabama had a 144 percent increase, Georgia had a 220 percent increase, and Florida had a 43 percent increase over the same time period in the Electric Utility sector (USEIA, 2013b).

New USEPA rules reducing the emissions from the Electric Utility sector (such as the Mercury and Air Toxics Standards (40 CFR Part 63, Subpart UUUU) and the proposed Standards of Performance for Greenhouse Gas Emissions From New Stationary Sources: Electric Utility Generating Units (Federal Register Volume 79, Issue 5, pp. 1429-1519) are providing an additional driving force to the use of natural gas as a fuel for power plants. The natural gas provided by the Project will enable utilities in Florida and, potentially, Alabama and Georgia, access to natural gas needed to build new power plants and re-power existing plants with natural gas as the primary fuel, enabling them to meet USEPA's latest standards.

To the extent the new supply of natural gas provided by the Project is used to displace electric generation using coal and oil, significant reductions in regional air emissions can be expected.

9.2.7 Construction Emissions

Sabal Trail will estimate construction-related emissions of criteria pollutants and greenhouse gases for the Project. Construction of the Project will result in temporary increases in emissions of some pollutants due to the use of equipment powered by diesel fuel or gasoline engines. Construction activities may also result in the temporary generation of fugitive dust due to disturbance of the ground surface and other dust generating actions. There may also be some temporary indirect emissions attributable to construction workers commuting to and from work sites during construction.

The construction emissions summary tables referenced in this section (Tables 9.2-12 through 9.2-16) will be provided in the Tables section of the final version of Resource Report 9 to be filed with the Project Application, as will Appendix 9B, which will provide the detailed construction emissions calculations along with the methodology and emissions factors.

9.2.7.1 Fugitive Dust Emissions

Construction activities along the pipeline right-of-ways and at the compressor station and M&R station sites will result in emissions of fugitive dust from vehicular traffic and soil disturbance, and combustion emissions from diesel and gasoline fired construction equipment. Such air quality effects; however, will generally be temporary and localized, and are not expected to cause or significantly contribute to an exceedance of the NAAQS. Large earth-moving equipment and other mobile sources are sources of combustion-related emissions, including criteria pollutants (i.e., NO_x, CO, VOC, SO_2, $PM_{2.5}$, and PM_{10}) and small amounts of HAPs. Air pollutants from the construction equipment will be limited to the immediate vicinity of the construction area and will be temporary.

The majority of air emissions produced during construction activities will be PM_{10} and $PM_{2.5}$ in the form of fugitive dust. Fugitive dust will result from land clearing, grading, excavation, concrete work, and vehicle traffic on paved and unpaved roads. The amount of dust generated will be a function of construction activity, soil type, soil moisture content, wind speed, precipitation, vehicle traffic, vehicle types, and roadway characteristics. Emissions will be greater during dry periods and in areas of fine-textured soils subject to surface activity. Sabal Trail will employ proven construction-related practices to control fugitive dust such as application of water or other commercially-available dust control agents on unpaved areas subject to frequent vehicle traffic. In addition, construction equipment will be operated only on an as-needed basis.

Table 9.2-12 will provide estimates of fugitive dust emissions associated with construction activities.

9.2.7.2 Construction Engine Emissions

Construction-related emission estimates will be based on a typical construction equipment list, hours of operation, and vehicle miles traveled by the construction equipment and supporting vehicles for each pipeline segment of the Project and for work planned at above ground facilities and ware yards. This is a conservative estimate based on worst case assumptions and USEPA emission factors. Nevertheless, the estimated air emissions from construction of the Project are expected to be transient in nature, with negligible effect on the regional air quality.

There will be some emissions attributable to vehicles delivering materials to the construction site. Emission factors in grams per vehicle mile traveled for on-road vehicles will be obtained from the USEPA MOVES (Motor Vehicle Emission Simulator) model. Emissions from non-road construction equipment engines used during Project construction will be estimated based on the anticipated types of non-road equipment and their associated levels of use. Emission factors in grams per hp-hour will be obtained using the most recent version of EPA's NONROAD model (NONROAD2008a).

Table 9.2-13 will summarize the estimated emissions of criteria pollutants and total HAPs from construction equipment and material deliveries and Table 9.2-14 will summarize the estimated GHG emissions from construction equipment and material deliveries.

9.2.7.3 Emissions from Commuting

There also will be some emissions attributable to vehicles driven by construction workers commuting to and from the Project work site during construction. Emission factors in grams per vehicle mile traveled for on-road vehicles will be obtained from the USEPA MOVES model. Table 9.2-15 will provide estimates of emissions of criteria pollutants from vehicles used by commuting construction workers and Table 9.2-16 will provide estimates of emissions of GHG emissions from vehicles used by commuting construction workers.

9.3 Noise Quality

This section of Resource Report 9 and associated appendices provide an overview of applicable noise standards; an assessment of the existing ambient noise levels at nearby noise-sensitive areas ("NSAs") such as a residence, school, hospital, etc.; and a preliminary noise evaluation of new aboveground permanent facilities (i.e., new compressor stations and new M&R facilities), and horizontal directional drilling ("HDD") operations associated with installation of the new pipeline at nearby NSAs surrounding each respective facility and planned HDD crossing. In addition, this section includes a summary of noise mitigation measures that could be implemented to ensure compliance with the FERC noise guidelines during operation of the Project compressor stations and M&R stations, and during HDD operations, as well as any potentially applicable local requirements. Information about the noise effects from other construction activities is also provided.

On-site ambient sound surveys and/or acoustical analyses for the Project compressor stations, new M&R stations, and potential HDD crossings will be conducted by Hoover & Keith Inc. ("H&K"), an acoustical engineering company headquartered in Houston, Texas.

In general, the operation of the Project compressor stations and new M&R stations will result in an increase in noise levels in the vicinity of the respective facilities over the life of the facilities. In addition, the installation of the new pipeline segments for the Project and other project-related construction activities will result in short-term increases in noise in the vicinity of those activities.

9.3.1 Aboveground Facilities

Table 9.3-1 summarizes the five (5) new natural gas compressor stations associated with the Project that could affect the existing acoustical environment at nearby NSAs during operation, the general location of those facilities, and a summary of the anticipated equipment at each respective compressor station that could result in a noise effect at nearby NSAs. In general, the current ("pre-existing") ambient sound levels at nearby NSAs for each Project compressor station will be determined from 2014 ambient ("pre-construction") sound surveys. In addition, an acoustical analysis for each Project compressor station will be performed since the noise of each Project compressor station could have a noise effect at the nearby NSAs.

Table 9.3-2 summarizes the proposed new natural gas M&R stations associated with the Project along with the general location of each Project M&R station and the anticipated equipment that could affect the noise generated by the M&R station. For any M&R station associated with the Project for which there are no NSAs within ½ mile, an acoustical analysis should not be necessary and will not be performed. The M&R stations that may require an acoustical analysis are described in more detail in Table 9.3-2.

9.3.1.1 Alexander City Compressor Station

An acoustical analysis will be conducted for the new Alexander City Compressor Station utilizing the results of a site ambient sound survey to establish the current, pre-existing ambient sound levels and to verify NSAs (primarily residences) around the compressor station site. A noise-related report entitled *Alexander City Compressor Station - Results of the Ambient Sound Survey and Acoustical Analysis of this New Station Associated with the Sabal Trail Project*, which will include an area layout of the proposed compressor station showing the NSAs surrounding the site, will be provided in Appendix 9C of the final version of Resource Report 9 that will be filed with the Project Application.

The Alexander City Compressor Station will be located in Tallapoosa County, AL, with Alexander City, AL being the closest town. The following describes the closest NSAs identified in each cardinal direction utilizing available aerial photography.

- NSA #1: Residence located approximately 1,110 feet north of the Compressor Building (i.e., site "acoustic" center); and
- NSA #2: Residence located approximately 1,800 feet NW of the Compressor Building.

Currently, the Alexander City Compressor Station will consist of two (2) Solar Titan 130 natural gas turbine compressor units, one (1) Solar Titan 250 natural gas turbine compressor unit, and gas cooling that will serve all compressor units at the station. The turbines/compressors will be installed inside an acoustically-insulated building or buildings ["Compressor Building(s)"]. Primary auxiliary equipment for the compressor units will include: (1) lube oil cooler, (2) turbine exhaust system with exhaust stack, (3) turbine air intake system, (4) gas piping, and (5) a unit blowdown silencer for each compressor unit.

9.3.1.2 Albany Compressor Station

An acoustical analysis will be conducted for the new Albany Compressor Station utilizing the results of a site ambient sound survey to establish the current, pre-existing ambient sound levels and to verify NSAs (primarily residences) around the compressor station site. A noise-related report entitled *Albany Compressor Station - Results of the Ambient Sound Survey and Acoustical Analysis of this New Station Associated with the Sabal Trail Project*, which will include an area layout of the proposed compressor station showing the NSAs surrounding the site, will be provided in Appendix 9C of the final version of Resource Report 9 that will be filed with the Project Application.

The Albany Compressor Station will be located in Dougherty County, Georgia, with the City of Albany, Georgia being the closest city. The following describes the closest NSAs identified in each cardinal direction utilizing available aerial photography.

- NSA #1: Residence located approximately 940 feet SE of the Compressor Building;
- NSA #2: Residence located approximately 1,250 feet WSW of the Compressor Building; and
- NSA #3: Residence located approximately 1,760 feet south of the Compressor Building.

Currently, the Albany Compressor Station will consist of one (2) Solar Titan 130 natural gas turbine compressor units and gas cooling that will serve all compressor units at the station. The turbines/compressors will be installed inside an acoustically-insulated Compressor Building(s). Primary auxiliary equipment for the compressor units is the same as that for the Alexander City Compressor Station.

9.3.1.3 Hildreth Compressor Station

An acoustical analysis will be conducted for the new Hildreth Compressor Station utilizing the results of a site ambient sound survey to establish the current, pre-existing ambient sound levels and to verify NSAs

(primarily residences) around the compressor station site. A noise-related report entitled *Hildreth Compressor Station - Results of the Ambient Sound Survey and Acoustical Analysis of this New Station Associated with the Sabal Trail Project*, which will include an area layout of the proposed compressor station showing the NSAs surrounding the site, will be provided in Appendix 9C of the final version of Resource Report 9 that will be filed with the Project Application.

The Hildreth Compressor Station will be located in Suwannee County, Florida, with Branford, Florida being the closest town. The following describes the closest NSAs identified in each cardinal direction utilizing available aerial photography.

- NSA #1: Residence located approximately 1,500 feet south of the Compressor Building;
- NSA #2: Residence located approximately 1,870 feet NW of the Compressor Building; and
- NSA #3: Residence located approximately 1,960 feet SW of the Compressor Building.

Currently, the Hildreth Compressor Station will consist of one (2) Solar Titan 130 natural gas turbine compressor units and gas cooling that will serve all compressor units at the station. The turbines/compressors will be installed inside an acoustically-insulated Compressor Building. Primary auxiliary equipment for the compressor units is the same as that for the Alexander City Compressor Station.

9.3.1.4 Dunnellon Compressor Station

An acoustical analysis will be conducted for the new Dunnellon Compressor Station utilizing the results of a site ambient sound survey to establish the current, pre-existing ambient sound levels and to verify NSAs (primarily residences) around the compressor station site. A noise-related report entitled *Dunnellon Compressor Station - Results of the Ambient Sound Survey and Acoustical Analysis of this New Station Associated with the Sabal Trail Project*, which will include an area layout of the proposed compressor station showing the NSAs surrounding the site, will be provided in Appendix 9C of the final version of Resource Report 9 that will be filed with the Project Application.

The Dunnellon Compressor Station will be located in Marion County, Florida, with Dunnellon, Florida being the closest town. The following describes the closest NSAs identified in each cardinal direction utilizing available aerial photography.

- NSA #1: Residence located approximately 1,750 feet west of the Compressor Building; and
- NSA #2: Residence located approximately 1,900 feet NNW of the Compressor Building.

Currently, the Dunnellon Compressor Station will consist of one (1) Solar Titan 130 natural gas turbine compressor unit and gas cooling that will serve the compressor unit at the station. The turbine/compressor will be installed inside an acoustically-insulated building Compressor Building. Primary auxiliary equipment for the compressor unit is the same as that for the Alexander City Compressor Station.

9.3.1.5 Reunion Compressor Station

An acoustical analysis will be conducted for the new Reunion Compressor Station utilizing the results of a site ambient sound survey to establish the current, pre-existing ambient sound levels and to verify NSAs (primarily residences) around the compressor station site. A noise-related report entitled *Reunion Compressor Station - Results of the Ambient Sound Survey and Acoustical Analysis of this New Station Associated with the Sabal Trail Project*, which will include an area layout of the proposed compressor station showing the NSAs surrounding the site, will be provided in Appendix 9C of the final version of Resource Report 9 that will be filed with the Project Application.

The Reunion Compressor Station will be located in Osceola County, Florida, with Reunion, Florida being the closest town. The following describes the closest NSAs identified in each cardinal direction utilizing available aerial photography.

- NSA #1: Residence located approximately 1,340 feet SW of the Compressor Building;
- NSA #2: Residence located approximately 1,470 feet SE of the Compressor Building; and
- NSA #3: Residence located approximately 1,630 feet south of the Compressor Building.

Currently, the Reunion Compressor Station will consist of one (1) Solar Titan 130 natural gas turbine compressor unit, one (1) Solar Mars 100 natural gas turbine compressor unit, and gas cooling that will serve all compressor units at the station. The turbines and compressors will be installed inside an acoustically-insulated Compressor Building(s). Primary auxiliary equipment for the compressor units is the same as that for the Alexander City Compressor Station.

9.3.1.6 Project Meter Stations

Ambient noise surveys will be conducted at the new M&R stations to quantify the current environmental noise levels around each M&R station site and verify the nearby/closest NSAs. Each new M&R station will consist of meter runs with gas flow meters, regulator runs with flow-control valves ("FCVs") employed for gas flow-control and gas pressure regulation, isolation block valve(s), some aboveground piping/components, and associated instrumentation/controls. An acoustical analysis will be conducted for each M&R station that has NSAs within ½ mile of the respective M&R site. A noise-related report entitled *Acoustical Assessment of M&R Stations Associated with the Sabal Trail Project* will be provided in Appendix 9D of the final version of Resource Report 9 that will be filed with the Project Application. A general layout of each respective M&R station (i.e., each facility with NSAs within ½ mile of the site) showing its location, surrounding NSAs, and other areas of interest will be included in the subject noise report in Appendix 9D.

9.3.2 Horizontal Directional Drilling

Currently, the HDD method for installing the pipeline is being evaluated for use to cross approximately 20 locations along the Project pipeline route. For most of the HDDs, the drilling rig will be located at the "HDD entry site" (i.e., not utilized at the "HDD exit site"). Table 9.3-3 provides a list of the potential HDDs for the Project. The name of each respective HDD provides the type of area to be crossed (e.g., creek, river, other water body, wetlands area and/or a highway).

Ambient noise surveys at the potential HDD sites will be conducted to quantify the current ambient noise levels around the HDD sites and document/verify existing nearby NSAs. In addition, a noise assessment of the HDD sites (i.e., predicted sound contribution of HDD operations at the closest NSA during peak operating conditions) will be conducted for those HDD sites with NSAs within ½ mile of the HDD entry or exit site. A noise-related report that summarizes the results of the ambient sound surveys and the HDD noise assessments entitled *Acoustical Assessment of Planned HDDs for the New Natural Gas Pipeline Associated with the Sabal Trail Project* will be provided in Appendix 9E of the final version of Resource Report 9 that will be filed with the Project Application.

9.3.3 Applicable Noise Guidelines and Summary of Acoustical Terminology

The unit of noise measurement is the decibel ("dB"), which measures the energy of noise. Because the human ear is not uniformly sensitive to all noise frequencies, the A-weighted ("A-wt.") frequency scale (denoted as "dBA") was devised to correspond with the ear's sensitivity.

The equivalent sound level ("L_{eq}", expressed in dBA) is considered an average A-wt. sound level measured during a period of time, including any fluctuating sound levels during that period. The L_{eq} is

equal to the level of a steady (in time) A-wt. sound level that would be equivalent to the sampled A-wt. sound level on an energy basis for a specified measurement interval. The concept of measuring L_{eq} has been used broadly to relate individual and community reaction to aircraft and other environmental noises.

The daytime sound level (L_d) is the equivalent A-wt. sound level for a 15 hour time period, between 07:00 to 22:00 Hours (7:00 a.m. to 10:00 p.m.). The nighttime sound level (L_n) is the equivalent A-wt. sound level for a 9 hour time period, between 22:00 to 07:00 Hours (10:00 p.m. to 7:00 a.m.).

The L_{dn} is a 24-hour average A-wt. L_{eq} of the measured daytime L_{eq} (or L_d) and measured nighttime L_{eq} (or L_n) with 10 dB added to the sound levels occurring during the nighttime hours of 10 pm to 7 am to compensate for enhanced receptor sensitivity during the nighttime. Rather than being a true measure of the sound level, the L_{dn} represents a skewed average that correlates generally with the results of studies relating environmental sound levels to physiological reaction and effects. For a source that operates at a continuous sound level over a 24-hour period, such as a compressor station, the L_{dn} is approximately 6.4 dB above the measured L_{eq}. Consequently, an L_{dn} of 55 dBA corresponds to a L_{eq} of 48.6 dBA. If both the L_d and L_n are measured, then the L_{dn} is calculated using the following formula:

$$L_{dn} = 10\log_{10}\left(\frac{15}{24}10^{L_d/10} + \frac{9}{24}10^{(L_n+10)/10}\right)$$

9.3.3.1 Federal Energy Regulatory Commission Guidelines

In 1974, the USEPA published a document evaluating the effects of environmental noise with respect to health and safety. Using results presented in this document, the USEPA determined that noise levels should not exceed an L_{dn} of 55 dBA, defined as the level that protects the public from indoor and outdoor activity interference. This noise level has been referenced by state and federal agencies to establish noise limitations for various noise sources, such as natural gas compressor stations. However, this noise level is not a regulatory standard.

Accordingly, the FERC Office of Energy Projects Certificate of Public Convenience and Necessity conditions require that sound attributable to a new compressor station not exceed an L_{dn} of 55 dBA at any nearby NSA, such as a residence, school, or hospital, and is typically also utilized for new M&R stations. In addition, FERC guidelines typically require that the operation of a new compressor station should not result in a perceptible increase in vibration at any nearby NSA. The sound level of 55 dBA (L_{dn}) also can be used as a "benchmark sound criterion/guideline" for assessing the noise impact of temporary or intermittent noise such as site construction noise and a blowdown event at a compressor station.

Regarding HDD construction sites, conditions set forth by the FERC typically require that the sound attributable to drilling operations should not exceed 55 dBA (L_{dn}) at any NSA. If it is projected that this sound criterion/guideline could be exceeded at any nearby NSA, it will be necessary to describe noise mitigation measures/options which would be implemented during drilling activity to reduce the noise effect of the drilling operations and achieve the sound criterion/guideline.

9.3.3.2 State and Local Noise Regulations

Alabama

There are no applicable State of Alabama noise regulations related to the construction and/or the permanent operation of the Project facilities. Local (e.g., county or township) noise regulations will be addressed through consultations with the local municipality in demonstrating compliance with the FERC noise standard of 55 dBA (L_{dn}) at the nearby NSAs.

Georgia

There are no applicable State of Georgia noise regulations related to the construction and/or the permanent operation of the Project facilities. Local (e.g., county or township) noise regulations will be addressed through consultations with the local municipality in demonstrating compliance with the FERC noise standard of 55 dBA (L_{dn}) at the nearby NSAs.

Florida

There are no applicable State of Florida noise regulations related to the construction and/or the permanent operation of the proposed Project facilities. Local (e.g., county or township) noise regulations will be addressed through consultations with the local municipality in demonstrating compliance with the FERC noise standard of 55 dBA (L_{dn}) at the nearby NSAs.

9.3.4 Noise Quality Analysis and Effects

9.3.4.1 Compressor Stations

The complete results of the acoustical analyses, including the current ambient noise levels, will be provided in the noise-related report for each of the new Project compressor stations in Appendix 9C of the final version of Resource Report 9 that will be filed with the application. The acoustical analysis for the compressor stations will consider the noise that will be produced by all continuous-operating equipment at the compressor station that could affect the sound contribution at nearby NSAs. For the acoustical analysis, the sound contribution of the compressor station at the closest NSAs is estimated along with the total compressor station noise at the closest NSAs (i.e., estimated sound level contribution of the compressor station plus the current ambient noise level). The following sound sources at the new Project compressor stations are considered significant:

- Noise generated by the turbines/compressors that penetrates the compressor building(s);
- Turbine exhaust noise (primary noise source that could generate perceptible vibration);
- Noise radiated from aboveground gas piping and related piping components;
- Noise of the outdoor lube oil cooler(s) and outdoor gas cooler(s); and
- Noise generated by the turbine air intake system.

Tables 9.3-4 through 9.3-8 provide a preliminary, "desktop" Noise Quality Analysis for each of the new Project compressor stations, assuming operation of the station equipment at full load, noting that the estimated (calculated) A-wt. sound level was used to infer a representative L_{dn}. A description of the acoustical analysis methodology and source of sound data related to the final Noise Quality Analysis will be provided in the respective noise-related report.

The results of the preliminary acoustical analysis indicate that, if the anticipated and recommended noise control measures for the new Project compressor stations are successfully implemented, the noise attributable to each compressor station will be lower than 55 dBA (L_{dn}). In addition, since noise sources that could cause perceptible vibration (e.g., turbine exhaust noise) will be adequately mitigated, there should not be any perceptible increase in vibration at any NSA during compressor station operation, and the noise of a gas blowdown associated with the new compressor units will be lower than 55 dBA (L_{dn}).

9.3.4.2 Meter Stations

The complete results of the environmental noise surveys and acoustical analyses, as related to the Project M&R stations, including the measured ambient noise levels and subsequent data calculations, will be provided in the noise-related report in Appendix 9D of the final version of Resource Report 9 that will be

filed with the Project Application. The acoustical analyses for the M&R stations will consider the noise that will be produced by all continuous-operating equipment at each facility that could affect the sound levels at nearby NSAs. For the acoustical analyses, the sound contribution at the closest NSA(s) along with the total noise level at the closest NSA(s) is estimated (i.e., estimated sound level contribution of the M&R station plus the existing ambient noise level).

The primary noise associated with an M&R station is related to the FCVs (i.e., regulator valve-generated noise) and the FCV noise radiated from aboveground gas piping. The level of piping noise is directly related to the gas pressure drop ("PD") and amount of gas flow across the FCVs. For the acoustical analysis of each facility, Sabal Trail will evaluate the operating condition that could generate the highest amount of meter station noise (i.e., so-called "worst case" condition). The analysis will assume that the valve-generated noise will be equal to or less than 85 dBA for the worst case operating condition (i.e., measured A-wt. sound level at 3 feet from the piping downstream of the regulator valve during operation of the respective regulator run), and if necessary to achieve the noise criteria, additional noise control measures will be included (e.g., acoustical building for the regulator skid or acoustical insulation for regulator skid piping).

Table 9.3-9 provides a preliminary, desktop Noise Quality Analysis for the proposed new M&R stations that may warrant a noise analysis (i.e., nearby NSAs less than ½ mile of the respective M&R). The projected sound levels include the estimated sound level of the M&R station during operation plus the current ambient noise level, noting that the estimated/calculated A-wt. sound level was used to infer a representative L_{dn}.

Based on the preliminary acoustical analyses, if the anticipated and/or recommended noise control measures for the Project M&R stations are successfully implemented, the noise attributable to each respective M&R station will be lower than 55 dBA (L_{dn}) at the nearby NSAs.

9.3.4.3 Construction Activities

9.3.4.3.1 Pipeline Construction

Pipeline construction activity and associated noise levels for the new pipeline will vary depending on the phase of construction in progress at any one time. These construction phases include site grading, clearing/grubbing, trenching and pipeline installation, backfilling, *etc.* The highest level of construction noise is assumed to occur during earth work.

Pipeline construction noise-related effects from the Project are expected to be short in duration at any given location and, therefore, have minimal effect. The equipment likely to be used during pipeline construction is listed in Table 9.3-10. Construction equipment noise levels will typically be less than 85 dBA at 50 feet when equipment is operating at full load. People at nearby residences and buildings will hear the construction noise but the overall impact will be short-lived and insignificant. Construction will not result in the generation of, or exposure of persons to, excessive noise or vibration levels for lengthy periods.

Construction noise, while varying according to equipment in use, will be mitigated by the attenuating effect of distance and the intermittent and short-lived character of the noise. Further, the nature of construction of a pipeline dictates that construction activities and associated noise levels will move along the corridor and that no single NSA will be exposed to significant noise levels for an extended period. Some discrete activities (e.g., hydrostatic testing, tie-ins, purge and packing the pipeline, *etc.*) may require 24 hours of activity for limited periods of time (e.g., from one to three days). These 24-hour activities require only a few overnight construction personnel and do not result in significant noise generation.

There will be locations where pipeline construction will occur within 50 feet of residences. Noise and any vibration generated during construction at this distance will not be unusual in nature and will be similar to that which occurs during public works type projects (e.g., paving, trenching). This work will only occur for a few days or less at any location and any effects will be temporary. This work will only occur during daytime hours in order to minimize effects.

9.3.4.3.2 Horizontal Directional Drilling

The complete results of the environmental noise surveys and acoustical analyses, as related to the Project HDD sites, including the measured ambient noise levels and subsequent data calculations, will be provided in the noise-related report in Appendix 9E of the final version of Resource Report 9 that will be filed with the application. The acoustical analyses for HDD sites with NSAs within ½ mile of the HDD entry or exit site will consider the noise that will be produced during peak HDD operating conditions that could affect the sound levels at nearby NSAs. For the acoustical analyses, the sound contribution at the closest NSA(s) along with the total noise level at the closest NSA(s) is estimated (i.e., estimated sound level contribution of the HDD operations plus the existing ambient noise level).

Table 9.3-11 provides a preliminary, desktop Noise Quality Analysis for the planned HDD sites at the closest NSA(s) on each side of the proposed HDD for those HDDs with NSAs within ½ mile of the potential HDD entry or exit sites, and assumes that a "standard" drilling rig is employed (i.e., no additional noise mitigation measures included). If a noise analysis of a previously listed potential HDD site is not included in Table 9.3-11, then it can be assumed that this HDD site does not have any NSAs within ½ mile of either the HDD entry and/or exit site.

The preliminary acoustical assessment indicates that the noise of HDD operations at some of the HDD entry sites and exit sites could exceed the 55 dBA (L_{dn}) noise criterion/guideline at the closest NSA(s) if no additional noise mitigation measures are employed. Table 9.3-12 provides a preliminary noise contribution of HDD operations at the HDD sites if additional noise mitigation measures are employed. Additional discussion and summary of noise mitigation measures that could be implemented at HDD sites will be provided in the respective noise-related report.

It is anticipated that if adequate noise mitigations are successfully employed, the sound level due to HDD operations at the planned HDD construction sites should not exceed the 55 dBA (L_{dn}) FERC sound criterion/guideline at the nearby NSAs.

9.3.4.3.3 Aboveground Facilities

Site construction noise associated with the installation of new Project compressor stations and new M&R stations should have a negligible effect on the nearby NSAs, noting that the construction will be primarily limited to daytime hours. Construction activities will be performed with standard heavy equipment such as a track-excavator, backhoe, as well as use of a bulldozer, dump truck(s) and concrete trucks. Many construction machines operate intermittently and the types of machines in use at a construction site changes with the construction phase.

A preliminary acoustical assessment indicates that the noise from construction activities at the Project compressor station sites and M&R stations should have a minimal effect on the surrounding environments [i.e., noise of construction activities should be lower than 55 dBA (L_{dn})]. If necessary, pro-active measures will be used to further reduce noise levels during construction so that the estimated maximum construction-related sound levels at the nearest NSAs will be less than 55 dBA (L_{dn}). For these reasons, it is not anticipated that construction noise at the Project compressor stations and at the Project M&R stations will have significant impacts on the surrounding environment, noting that aboveground facility construction activities only occur during the daytime hours.

9.3.5 Noise Mitigation Measures

9.3.5.1 Compressor Stations

Noise control measures to be implemented at each new compressor station for the Project are currently being evaluated by Sabal Trail and H&K. The noise-related reports will provide detailed recommendations for noise control measures and equipment sound requirements for the significant sound sources associated with each proposed station along with other assumptions that may affect the noise and vibration generated by the compressor station equipment. The following is a summary list of noise control measures that are being evaluated for the equipment at the compressor stations.

- Noise control measures will be applied to the compressor building enclosing the new turbine(s) and compressor(s), including the use of appropriate building materials;
- Adequate muffler system for each turbine exhaust system;
- If necessary, acoustical pipe insulation for outdoor aboveground gas piping;
- Adequate silencer for each turbine air intake system;
- Low-noise lube oil cooler for each compressor unit;
- Low-noise gas cooler(s); and
- A blowdown silencer specified to meet an A-wt. sound level of 60 dBA at a distance of 300 feet will be employed during a blowdown event for any new compressor unit. A unit blowdown event occurs for a short time frame (e.g., a 1 to 5 minute period).

9.3.5.2 M&R Stations

Noise control measures to be implemented related to the Project M&R stations are currently being evaluated. The noise report will provide noise control recommendations and equipment sound specifications for the respective M&R stations along with other assumptions that may affect the noise and vibration generated by these facilities. For each respective Project M&R station, FCVs associated with any new regulator runs should be designed to achieve 85 dBA for the full range of operating conditions (i.e., A-wt. sound level at 3 feet from the piping downstream of the FCV). In addition, to reduce pipe/valve–radiated noise associated with the regulator skid, it may be necessary to cover aboveground gas piping with a type of acoustical insulation if the FCVs cannot achieve 85 dBA for the full range of operating conditions. Also, if necessary to meet the sound level requirements, regulator runs/valves (e.g., regulator skid) at the respective M&R stations could be located inside an acoustically-insulated building (i.e., building that covers the regulator skid and associated aboveground gas piping).

9.3.5.3 Construction Activities

Because of the temporary nature of the construction noise during normal installation of the pipeline(s) along the pipeline route, no adverse or long term effects are anticipated. Noise mitigation measures to be employed during construction include ensuring that sound muffling devices that are provided as standard equipment by the construction equipment manufacturer are kept in good working order. If needed, additional noise abatement techniques and other measures can be implemented during the construction phase to mitigate construction-related noise disturbances at nearby NSAs.

9.3.5.3.1 Horizontal Directional Drilling

Sabal Trail will evaluate and implement noise mitigation measures for the HDDs proposed as part of the Project as needed to meet the 55 dBA (L_{dn}) sound criterion/guideline at any NSA. For example, a temporary noise barrier could be employed prior to commencement of drilling operations and/or

temporary noise-reducing tent placed over the HDD workspace. In addition, residential–grade exhaust silencers should be employed on any engines associated with the operation of HDD equipment, and to insure that the HDD operational noise is below the sound level criterion at the HDD entry sites, the following additional noise mitigation measures may also have to be employed: (a) equipment relocation (e.g., relocate mud rig remotely); (b) install a partial barrier or enclosure around the hydraulic power unit; (c) install a partial barrier around other engine-driven equipment (e.g., pumps and generators); and/or (d) daytime operation, only.

9.3.6 Post-Construction Sound Survey(s)

Within 60 days of placing the Project compressor stations in-service, a "post-construction" sound survey will be performed to ensure that the sound level attributable to each respective new compressor station, at full load operation does not exceed the FERC sound level requirement and/or any applicable state/local noise regulations. The results of the post-construction sound surveys will be filed with the Commission when completed.

9.4 References

[API, 2009] – URS Corporation, Theresa M. Shires, Christopher J. Loughran, Stephanie Jones, and Emily Hopkins. Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry. Washington, DC: American Petroleum Institute, 2009. PDF file. <http://www.api.org/ehs/climate/new/upload/2009_ghg_compendium.pdf.>

[Climate, 2014a] – "Climate of Alabama." Wikipedia. Accessed online March 11, 2014 at: http://en.wikipedia.org/wiki/Climate_of_Alabama.

[Climate, 2014b] – "Climate of Georgia." Wikipedia. Accessed online March 11, 2014 at: http://en.wikipedia.org/wiki/Climate_of_Georgia_(U.S._state).

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[USEIA, 2013a] – USEIA, Natural Gas Annual, with data for 2012, release date December 12, 2013: Table B1. Summary statistics for natural gas in the United States, metric equivalents, 2008-2012. 37% calculated from the following values: 188,827 in 2008 and 257,989 in 2012.

[USEIA, 2013b] – Ibid. Alabama: 2008 - 164,266 million cubic feet ("MMcf"); 2012 - 401,306 MMcf. Georgia: 2008 - 96,316 MMcf; 2012 - 308,096 MMcf. Florida: 2008 - 797,266 MMcf; 2012 - 1,138,771 MMcf.

[USEPA, 2013] – "Monitor Values Report." AirData. United States Environmental Protection Agency. Accessed online March 5, 2014 at: http://www.epa.gov/airdata/ad_rep_mon.html.

TABLES

TABLE 9.2-1

Summary of Proposed Sabal Trail Compression Facilities

Unit ID	Make and Model	In-Service Date	Rated Engine Output (hp/ISO)	Rated Engine Output (hp/NEMA)
Alexander City Compressor Station, Tallapoosa County, AL				
ALEX TBC 01	Solar Titan 130-20502 Turbine Engine	2017	20,500	18,100
ALEX TBC 02	Solar Titan 130-20502 Turbine Engine	2017	20,500	18,100
ALEX TBC 03	Solar Titan 250-30002 Turbine Engine	2017	30,000	26,000
		Station Subtotal:	***71,000***	***62,200***
Albany Compressor Station, Dougherty County, GA				
ALBA TBC 01	Solar Titan 130-20502 Turbine Engine	2020	20,500	18,100
ALBA TBC 02	Solar Titan 130-20502 Turbine Engine	2021	20,500	18,100
		Station Subtotal:	***41,000***	***36,200***
Hildreth Compressor Station, Suwannee County, FL				
HILD TBC 01	Solar Titan 130-20502 Turbine Engine	2017	20,500	18,100
HILD TBC 02	Solar Titan 130-20502 Turbine Engine	2021	20,500	18,100
		Station Subtotal:	***41,000***	***36,200***
Dunnellon Compressor Station, Marion County, FL				
DUNN TBC 01	Solar Titan 130-20502 Turbine Engine	2020	20,500	18,100
		Station Subtotal:	***20,500***	***18,100***
Reunion Compressor Station, Osceola County, FL				
REUN TBC 01	Solar Titan 130-20502 Turbine Engine	2017	20,500	18,100
REUN TBC 02	Solar Mars 100-16002 Turbine Engine	2017	15,900	14,200
		Station Subtotal:	***36,400***	***32,300***
		PROJECT TOTAL:	**209,900**	**185,000**

Notes:
hp = horsepower
ISO = International Standard Operations conditions.
NEMA = National Electrical Manufacturers Association conditions.

TABLE 9.2-2

National Ambient Air Quality Standards

Pollutant	Averaging Period	Standards	
		Primary	Secondary
Sulfur dioxide (SO_2)	1-hour l/, m/	75 ppb	
	3-hour b/	--	0.5 ppm 1300 µg/m^3
	Annual a/, m/	0.03 ppm 80 µg/m^3	--
	24-hour b/, m/	0.14 ppm 365 µg/m^3	--
PM_{10}	24-hour d/	150 µg/m^3	150 µg/m^3
$PM_{2.5}$ (2012 Standard)	Annual e/, n/	12.0 µg/m^3	15.0 µg/m^3
$PM_{2.5}$ (2006 Standard)	24-hour f/	35 µg/m^3	35 µg/m^3
$PM_{2.5}$ (1997 Standard)	Annual e/, n/	15.0 µg/m^3	15.0 µg/m^3
	24-hour f/	65 µg/m^3	65 µg/m^3
Nitrogen Dioxide (NO_2)	Annual a/	0.053 ppm (53 ppb) 100 µg/m^3	0.053 ppm (53 ppb) 100 µg/m^3
	1-hour c/	100 ppb 188 ug/m^3	--
Carbon Monoxide (CO)	8-hour b/	9 ppm 10,000 µg/m^3	--
	1-hour b/	35 ppm 40,000 µg/m^3	--
Ozone (2008 Standard)	8-hour g/, h/, i/	0.075 ppm	0.075 ppm
Ozone (1997 Standard)	8-hour g/, i/	0.080 ppm	0.080 ppm
Ozone (O_3)	1-hour j/, k/	0.12 ppm	0.12 ppm
Lead (Pb)	Rolling 3-month a/	0.15 µg/m^3	0.15 µg/m^3

Notes:
a/ Not to be exceeded.
b/ Not to be exceeded more than once per year.
c/ Compliance based on 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area.
d/ Not to be exceeded more than once per year on average over 3 years.
e/ Compliance based on 3-year average of weighted annual mean $PM_{2.5}$ concentrations at community-oriented monitors.
f/ Compliance based on 3-year average of 98th percentile of 24-hour concentrations at each population-oriented monitor within an area.
g/ Compliance based on 3-year average of fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area.
h/ USEPA is currently reconsidering the 8-hour ozone standard set in March 2008. However, EPA has moved forward with implementing the 2008 standard until the reconsideration is finalized.

TABLE 9.2-2

National Ambient Air Quality Standards

Pollutant	Averaging Period	Standards	
		Primary	Secondary

i/ EPA proposed to revoke the 1997 8-hour ozone NAAQS in June 2013; until this action appears in the Federal Register as a final rule, the Project is still subject to requirements related to its maintenance status under the 1997 8-hour ozone NAAQS.
j/ Maximum 1-hour daily average not to be exceeded more than one day per calendar year on average.
k/ The 1-hour ozone standard has been revoked in all areas in which Project activities will occur.
l/ Compliance based on 3-year average of 99th percentile of the daily maximum 1-hour average at each monitor within an area.
m/ The 24-hour and annual average primary standards for SO_2 remain in effect until one year after an area is designated for the 1-hour standard. Area designations in the Project area have not yet been finalized for the 1-hour standard.
n/ The 1997 annual $PM_{2.5}$ standard and associated implementation rules remain in effect until one year after an area is designated for the 2012 annual $PM_{2.5}$ standard. Area designations have not yet been finalized for the 2012 standard.

ppm = parts per million by volume
ppb = parts per billion by volume
µg/m^3 = micrograms per cubic meter

TABLE 9.2-3

Ambient Air Quality Concentrations Representative of Sabal Trail Project Area

Pollutant	Averaging Period	Rank	County, State	2010	2011	2012	Units	Monitor(s)
CO	1-hour	2nd high	Jefferson, AL	6.5	4.1	5.1	ppm	A
			Jefferson, AL	1.7	1.4	2.4	ppm	O
			DeKalb, GA	2.3	1.6	1.6	ppm	C
			Fulton, GA	1.7	1.8	1.7	ppm	P
			Paulding, GA	0.6	0.6	0.8	ppm	I
			Duval, FL	2.2	5.9	3.2	ppm	Q
			Hillsborough, FL	1	0.9	1.3	ppm	R
			Orange, FL	1.7	2	1.3	ppm	F
			Pinellas, FL	1.9	1.5	2.5	ppm	S
CO	8-hour	2nd high	Jefferson, AL	2.2	2.1	1.7	ppm	A
			Jefferson, AL	1.1	0.9	1	ppm	O
			DeKalb, GA	1.9	1.5	1.4	ppm	C
			Fulton, GA	1.3	1.3	1.1	ppm	P
			Paulding, GA	0.5	0.5	0.6	ppm	I
			Duval, FL	1.9	2.1	1.4	ppm	Q
			Hillsborough, FL	0.9	0.5	0.9	ppm	R
			Orange, FL	1.3	1	1.1	ppm	F
			Pinellas, FL	1.1	1	1.1	ppm	S
NO_2	1-hour	98th percentile	DeKalb, GA	58	57	53	ppb	C
			Paulding, GA	18	18	15	ppb	I
			Rockdale, GA	24	18	18	ppb	J

TABLE 9.2-3

Ambient Air Quality Concentrations Representative of Sabal Trail Project Area

Pollutant	Averaging Period	Rank	County, State	2010	2011	2012	Units	Monitor(s)
			Duval, FL	44	39	37	ppb	K
			Hillsborough, FL	40	33	31	ppb	L
			Orange, FL	40	33	35	ppb	F
			Pinellas, FL	38	34	34	ppb	M
			Sarasota, FL	24	16	10	ppb	N
NO_2	annual	maximum	DeKalb, GA	13.7	13.4	11.5	ppb	C
			Paulding, GA	2.6	2.8	2.8	ppb	I
			Rockdale, GA	4	4	4.2	ppb	J
			Duval, FL (1)	9	8	-	ppb	K
			Hillsborough, FL (2)	6	5	-	ppb	L
			Orange, FL	6	5	-	ppb	F
			Pinellas, FL (2)	6	5	-	ppb	M
			Sarasota, FL	4	3	-	ppb	N
O_3	8-hour	4th high	Elmore, AL	0.073	0.068	0.065	ppm	GG
			Jefferson, AL	0.072	0.077	0.08	ppm	T
			Russell, AL	0.069	0.066	0.067	ppm	HH
			Bibb, GA	0.071	0.078	0.072	ppm	B
			Coweta, GA	0.065	0.072	0.062	ppm	II
			Sumter, GA	0.069	0.066	0.065	ppm	JJ
			Alachua, FL	0.069	0.064	0.064	ppm	KK
			Columbia, FL	0.068	0.064	0.062	ppm	LL
			Leon, FL	0.065	0.066	0.067	ppm	FF
			Marion, FL	0.065	0.065	0.059	ppm	MM
			Osceola, FL	0.067	0.068	0.065	ppm	NN
			Pasco, FL	0.067	0.071	0.064	ppm	OO
$PM_{2.5}$	24-hour	98th percentile	Clay, AL	22	22	20	µg/m^3	Z
			Montgomery, AL	21	24	20	µg/m^3	U
			Russell, AL	26	30	18	µg/m^3	AA
			Talladega, AL	21	25	21	µg/m^3	BB
			Bibb, GA	28	30	25	µg/m^3	V
			Dougherty, GA	30	29	25	µg/m^3	W
			Lowndes, GA	25	33	14	µg/m^3	CC
			Alachua, FL	16	26	17	µg/m^3	DD
			Citrus, FL	16	18	18	µg/m^3	EE
			Duval, FL	20	20	22	µg/m^3	K
			Leon, FL	23	27	18	µg/m^3	FF
			Orange, FL	14	17	15	µg/m^3	F
			Polk, FL	15	17	15	µg/m^3	Y

TABLE 9.2-3

Ambient Air Quality Concentrations Representative of Sabal Trail Project Area

Pollutant	Averaging Period	Rank	County, State	2010	2011	2012	Units	Monitor(s)
$PM_{2.5}$	annual	mean	Clay, AL	10.5	10.6	8.9	$\mu g/m^3$	Z
			Montgomery, AL	10.8	1.11	10.6	$\mu g/m^3$	U
			Russell, AL	13.1	12.4	8.9	$\mu g/m^3$	AA
			Talladega, AL	11.7	12.4	10.3	$\mu g/m^3$	AB
			Bibb, GA	13.7	14.2	11.4	$\mu g/m^3$	V
			Dougherty, GA	12.3	12.1	10.6	$\mu g/m^3$	W
			Lowndes, GA	10.8	10.5	8.6	$\mu g/m^3$	AC
			Alachua, FL	7.8	8.3	7	$\mu g/m^3$	AD
			Citrus, FL	7.6	7.5	6.7	$\mu g/m^3$	AE
			Duval, FL	9.4	8.5	8	$\mu g/m^3$	K
			Leon, FL	9.7	10.2	8.7	$\mu g/m^3$	AF
			Orange, FL	7.4	7.2	6.4	$\mu g/m^3$	F
			Polk, FL	7.7	7.5	7.2	$\mu g/m^3$	Y
PM_{10}	24-hour	2nd high	Jefferson, AL	52	46	35	$\mu g/m^3$	A
			Jefferson, AL	57	51	38	$\mu g/m^3$	T
			Montgomery, AL	61	40	28	$\mu g/m^3$	U
			Bibb, GA	48	50	43	$\mu g/m^3$	V
			Dougherty, GA	50	35	29	$\mu g/m^3$	W
			Muscogee, GA	38	38	29	$\mu g/m^3$	X
			Hillsborough, FL	41	27	28	$\mu g/m^3$	R
			Orange, FL	34	30	30	$\mu g/m^3$	F
			Pinellas, FL	40	28	29	$\mu g/m^3$	M
			Polk, FL (blk avg)	51	31	43	$\mu g/m^3$	Y
SO_2	1-hour	99th percentile	Jefferson, AL	33	31	36	ppb	A
			Bibb, GA	23	21	21	ppb	B
			DeKalb, GA	25	18	11	ppb	C
			Hamilton, FL	21	23	25	ppb	D
			Hillsborough, FL	104	102	110	ppb	E
			Orange, FL	7	5	5	ppb	F
			Pinellas, FL	34	32	9	ppb	G
			Putnam, FL	33	32	26	ppb	H
SO_2	24-hour	2nd high	Jefferson, AL	7	9	7	ppb	A
			Bibb, GA	6	5	4	ppb	B
			DeKalb, GA	6	4	2	ppb	C
			Hamilton, FL	4	6	9	ppb	D
			Hillsborough, FL	29	20	69	ppb	E
			Orange, FL	2	1	2	ppb	F
			Pinellas, FL	6	3	2	ppb	G

TABLE 9.2-3

Ambient Air Quality Concentrations Representative of Sabal Trail Project Area

Pollutant	Averaging Period	Rank	County, State	2010	2011	2012	Units	Monitor(s)
			Putnam, FL	5	7	5	ppb	H

Notes:

Monitor Key

A. Fairfield, Pfd, 5229 Court B, Fairfield, Jefferson Co., AL (monitor # 010731003)
B. Georgia Forestry Commission, 5645 Riggins Mill Road, Dry Branch, Macon, Bibb Co., GA (monitor # 130210012)
C. Pumping Station @ Intersection Of W. Lathrop And Augusta Ave, Savannah, Chatham Co., GA (monitor # 130890002)
D. County Road 137 At Entrance To Oxy Srcc, White Springs, Hamilton Co., FL (monitor # 120470015)
E. 9851 Highway 41 South, Tampa, Hillsborough Co., FL (monitor # 120570109)
F. Morris Blvd., Winter Park, Orange Co., FL (monitor # 120952002)
G. 40671 Us 19 North, Tarpon Springs, Pinellas Co., FL (monitor # 121035003)
H. Comfort And Port Roads, Palatka, Putnam Co., FL (monitor # 121071008)
I. King Farm, 160 Ralph King Path, Rockmart, Paulding Co., GA (monitor # 132230003)
J. Monastery Of The Holy Spirit, 2625 Georgia 212, Conyers, Rockdale Co., GA (monitor # 132470001)
K. 2900 Bennett St., Jacksonville, Duval Co., FL (monitor # 120310032)
L. 5121 Gandy Blvd, Tampa, Hillsborough Co., FL (monitor # 120571065)
M. 7200-22 Avenue North, Saint, Pinellas Co., FL (monitor # 121030018)
N. 4570 17th Street, Sarasota, Sarasota Co., FL (monitor # 121151006)
O. 4113 Shuttlesworth Drive, Birmingham, Jefferson Co., AL (monitor # 010736004)
P. Georgia Power Substation, 4434 Roswell Rd, Atlanta, Fulton Co., GA (monitor # 131210099)
Q. Lasalle St., Jacksonville, Duval Co., FL (monitor # 120310080)
R. 1167 North Dover Road, Valrico, Hillsborough Co., FL (monitor # 120573002)
S. 34th Street N., Clearwater (Ulmerton Rd), Clearwater, Pinellas Co., FL (monitor # 121032008)
T. 201 Ashville Road, Leeds, Jefferson Co., AL (monitor # 010731010)
U. 1350 Coliseum Blvd, Montgomery, Montgomery Co., Alabama (monitor # 011011002)
V. Allied Chemical, 600 Guy Paine Road, Macon, Bibb Co., GA (monitor # 130210007)
W. Turner Elementary School, 2001 Leonard Ave, Albany, Dougherty Co., GA (monitor # 130950007)
X. Cusseta Road Elementary School, 4150 Cusseta Road, Columbus, Muscogee Co., GA (monitor # 132150011)
Y. 1015 Sikes Blvd., Lakeland, Polk Co., FL (monitor # 121056006)
Z. Route 1, Ashland, Clay Co., AL (monitor # 010270001)
AA. St. Patrick Catholic Church, Broad Street, Phenix City, Russell Co., AL (monitor # 011130001)
BB. 300 1st St. Southeast, Childersburg, Talladega Co., AL (monitor # 011210002)
CC. S.L. Mason Elementary School, 821 West Gordon Street, Valdosta, Lowndes Co., GA (monitor # 131850003)
DD. 5400 Nw 43rd St., Gainesville, Alachua Co., FL (monitor # 120010023)
EE. Power Line Road, Citrus Co., FL (monitor # 120170005)
FF. 110 Century Park Circle West, Tallahassee, Leon Co., FL (monitor # 120730012)
GG. Dewberry Trail, Wetumpka, Elmore Co., AL (monitor # 010510001)
HH. 9 Woodland Drive (School), Ladonia, Russell Co., AL (monitor # 011130002)
II. University Of W. Ga At Newnan, 7 Solar Circle, Newnan, Coweta Co., GA (monitor # 130770002)
JJ. Leslie Community Center, N Bass St/E Allen St., Leslie, Sumter Co., GA (monitor # 132611001)
KK. 918 Se 119th Ave, Micanopy, Alachua Co., FL (monitor # 120013011)
LL. 751 Se Sycamore Terrace, Lake City, Columbia Co., FL (monitor # 120230002)
MM. 692 Nw 30th Ave, Ocala, Marion Co., FL (monitor # 120830004)
NN. 8706 West 192, Kissimmee, Osceola Co., FL (monitor # 120972002)
OO. 30908 Warder Road, Dade City, Pasco Co., FL (monitor # 121010005)

ppm = parts per million by volume
ppb = parts per billion by volume
$\mu g/m^3$ = micrograms per cubic meter

TABLE 9.2-4

Proposed Alexander City Compressor Station Emissions Summary (TPY)

		Potential Emissions							
ID	**Description**	**SO_2**	**$PM_{10/2.5}$**	**NO_x**	**CO**	**VOC**	**Total HAP**	**Hexane a/**	**CO_{2e}**
ALEX TBC 01	Turbine	2.34	4.54	22.40	18.24	2.63	0.52	-	81,543
ALEX TBC 02	Turbine	2.34	4.54	22.40	18.24	2.63	0.52	-	81,543
ALEX TBC 03	Turbine	3.09	6.01	29.62	5.54	3.15	0.56	-	107,843
ALEX ENGEN 01	IC Engine	0.001	0.023	1.30	2.59	1.16	0.70	0.011	576
ALEX FGH 01 to FGH 03	Heaters	0.013	0.163	2.11	3.22	0.78	0.18	0.17	2,584
ALEX-V01 to V04D	Separators	-	-	-	-	1.83	0.11	0.071	62.5
ALEX-V05 & TK01	Storage Vessels	-	-	-	-	0.71	0.044	0.020	37.9
ALEX-TL-PL & TL-OIL	Truck Loading	-	-	-	-	0.03	0.002	0.001	1.71
ALEX-PC-NG, PC-PL, & PC-OIL	Piping Components	-	-	-	-	14.63	1.72	0.23	1,778
ALEX-GR-ST and GR-PL	Gas Releases	-	-	-	-	44.76	3.82	0.89	26,267
ALEX-PW	Parts Washer	-	-	-	-	0.41	-	-	-
	TOTAL: b/	***7.79***	***15.27***	***77.82***	***47.82***	***72.72***	***8.17***	***1.39***	***302,236***
Major NSR Permitting Threshold		250	250	250	250	250	N/A	N/A	100,000
Title V Permitting Threshold		100	100	100	100	100	25	10	100,000

Notes:
a/ Hexane(n-) emissions are presented for worst-case Individual HAP.
b/ Total values may not equal table value sums due to rounding.

TPY = tons per year
SO_2 = sulfur dioxide
PM_{10} = particulate matter with a diameter ≤ 10 microns
$PM_{2.5}$ = particulate matter with a diameter ≤ 2.5 microns
NO_x = nitrogen oxides
CO = carbon monoxide
VOC = volatile organic compounds
HAP = hazardous air pollutants
CO_2e = carbon dioxide equivalents

TABLE 9.2-5

Proposed Albany Compressor Station Emissions Summary (TPY)

		Potential Emissions							
ID	**Description**	**SO_2**	**$PM_{10/2.5}$**	**NO_x**	**CO**	**VOC**	**Total HAP**	**Hexane a/**	**CO_{2e}**
ALBA TBC 01	Turbine	2.32	4.51	22.25	18.20	2.62	0.52	-	81,002
ALBA TBC 02	Turbine	2.32	4.51	22.25	18.20	2.62	0.52	-	81,002
ALBA ENGEN 01	IC Engine	0.001	0.017	0.97	1.94	0.87	0.53	0.008	432
ALBA FGH 01 & FGH 02	Heaters	0.008	0.10	1.30	1.98	0.48	0.11	0.105	1,590
ALBA-V01 to V04D	Separators	-	-	-	-	1.88	0.11	0.072	65.3
ALBA-V05 & TK01	Storage Vessels	-	-	-	-	0.78	0.048	0.022	41.6
ALBA-TL-PL & TL-OIL	Truck Loading	-	-	-	-	0.03	0.002	0.001	1.78
ALBA-PC-NG, PC-PL, & PC-OIL	Piping Components	-	-	-	-	10.64	1.25	0.17	1,370
ALBA-GR-ST and GR-PL	Gas Releases	-	-	-	-	37.48	3.20	0.74	21,994
ALBA-PW	Parts Washer	-	-	-	-	0.41	-	-	-
	TOTAL: b/	***4.66***	***9.14***	***46.77***	***40.33***	***57.80***	***6.28***	***1.12***	***187, 499***
	Major NSR Permitting Threshold	250	250	250	250	250	N/A	N/A	100,000
	Title V Permitting Threshold	100	100	100	100	100	25	10	100,000

Notes:
a/ Hexane(n-) emissions are presented for worst-case Individual HAP.
b/ Total values may not equal table value sums due to rounding.

TPY = tons per year
SO_2 = sulfur dioxide
PM_{10} = particulate matter with a diameter ≤ 10 microns
$PM_{2.5}$ = particulate matter with a diameter ≤ 2.5 microns
NO_x = nitrogen oxides
CO = carbon monoxide
VOC = volatile organic compounds
HAP = hazardous air pollutants
CO_2e = carbon dioxide equivalents

TABLE 9.2-6

Proposed Hildreth Compressor Station Emissions Summary (TPY)

		Potential Emissions							
ID	**Description**	**SO_2**	**$PM_{10/2.5}$**	**NO_x**	**CO**	**VOC**	**Total HAP**	**Hexane a/**	**CO_{2e}**
HILD TBC 01	Turbine	2.31	4.47	22.05	18.16	2.60	0.51	-	80,348
HILD TBC 02	Turbine	2.31	4.47	22.05	18.16	2.60	0.51	-	80,348
HILD ENGEN 01	IC Engine	0.001	0.017	0.97	1.94	0.87	0.53	0.008	432
HILD FGH 01 & FGH 02	Heaters	0.008	0.10	1.30	1.98	0.48	0.11	0.105	1,590
HILD-V01 to V04D	Separators	-	-	-	-	1.87	0.11	0.072	64.5
HILD-V05 & TK01	Storage Vessels	-	-	-	-	0.76	0.047	0.022	40.5
HILD-TL-PL & TL-OIL	Truck Loading	-	-	-	-	0.03	0.002	0.001	1.81
HILD-PC-NG, PC-PL, & PC-OIL	Piping Components	-	-	-	-	10.64	1.25	0.17	1,370
HILD-GR-ST and GR-PL	Gas Releases	-	-	-	-	37.48	3.20	0.74	21,994
HILD-PW	Parts Washer	-	-	-	-	0.41	-	-	-
	TOTAL: b/	***4.62***	***9.07***	***46.37***	***40.24***	***57.72***	***6.27***	***1.12***	***186,190***
Major NSR Permitting Threshold		250	250	250	250	250	N/A	N/A	100,000
Title V Permitting Threshold		100	100	100	100	100	25	10	100,000

Notes:
a/ Hexane(n-) emissions are presented for worst-case Individual HAP.
b/ Total values may not equal table value sums due to rounding.

TPY = tons per year
SO_2 = sulfur dioxide
PM_{10} = particulate matter with a diameter ≤ 10 microns
$PM_{2.5}$ = particulate matter with a diameter ≤ 2.5 microns
NO_x = nitrogen oxides
CO = carbon monoxide
VOC = volatile organic compounds
HAP = hazardous air pollutants
CO_2e = carbon dioxide equivalents

TABLE 9.2-7

Proposed Dunnellon Compressor Station Emissions Summary (TPY)

		Potential Emissions							
ID	**Description**	**SO_2**	**$PM_{10/2.5}$**	**NO_x**	**CO**	**VOC**	**Total HAP**	**Hexane a/**	**CO_{2e}**
DUNN TBC 01	Turbine	2.30	4.45	21.95	18.13	2.58	0.51	-	79,989
DUNN ENGEN 01	IC Engine	0.001	0.012	0.64	1.29	0.58	0.35	0.005	287
DUNN FGH 01	Heaters	0.004	0.050	0.65	0.99	0.24	0.055	0.053	795
DUNN-V01 to V04D	Separators	-	-	-	-	1.94	0.12	0.074	68.4
DUNN-V05 & TK01	Storage Vessels	-	-	-	-	0.85	0.053	0.024	45.6
DUNN-TL-PL & TL-OIL	Truck Loading	-	-	-	-	0.036	0.002	0.001	1.93
DUNN-PC-NG, PC-PL, & PC-OIL	Piping Components	-	-	-	-	6.64	0.79	0.11	963
DUNN-GR-ST and GR-PL	Gas Releases	-	-	-	-	30.20	2.58	0.60	17,721
DUNN-PW	Parts Washer	-	-	-	-	0.41	-	-	-
	Total b/	***2.30***	***4.52***	***23.24***	***20.41***	***43.48***	***4.45***	***0.86***	***99,872***
Major NSR Permitting Threshold		250	250	250	250	250	N/A	N/A	100,000
Title V Permitting Threshold		100	100	100	100	100	25	10	100,000

Notes:
a/ Hexane(n-) emissions are presented for worst-case Individual HAP.
b/ Total values may not equal table value sums due to rounding.

TPY = tons per year
SO_2 = sulfur dioxide
PM_{10} = particulate matter with a diameter ≤ 10 microns
$PM_{2.5}$ = particulate matter with a diameter ≤ 2.5 microns
NO_x = nitrogen oxides
CO = carbon monoxide
VOC = volatile organic compounds
HAP = hazardous air pollutants
CO_2e = carbon dioxide equivalents

TABLE 9.2-8

Proposed Reunion Compressor Station Emissions Summary (TPY)

		Potential Emissions							
ID	**Description**	**SO_2**	**$PM_{10/2.5}$**	**NO_x**	**CO**	**VOC**	**Total HAP**	**Hexane a/**	**CO_{2e}**
REUN TBC 01	Turbine	1.87	3.63	17.86	12.92	2.07	0.40	-	65,186
REUN TBC 02	Turbine	2.28	4.43	21.81	18.09	2.57	0.51	-	79,529
REUN ENGEN 01	IC Engine	0.001	0.017	0.97	1.94	0.87	0.53	0.008	432
REUN FGH 01 & FGH 02	Heaters	0.007	0.088	1.14	1.73	0.42	0.096	0.092	1,391
REUN-V01 to V04D	Separators	-	-	-	-	1.94	0.12	0.074	68.4
REUN-V05 & TK-01	Storage Vessels	-	-	-	-	0.85	0.053	0.024	45.6
REUN-TL-PL & TL-OIL	Truck Loading	-	-	-	-	0.036	0.002	0.001	1.93
REUN-PC-NG, PC-PL, & PC-OIL	Piping Components	-	-	-	-	10.64	1.25	0.17	1,370
REUN-GR-ST and GR-PL	Gas Releases	-	-	-	-	37.48	3.20	0.74	21,994
REUN-PW	Parts Washer	-	-	-	-	0.41	-	-	-
	TOTAL: b/	***4.16***	***8.16***	***41.78***	***34.68***	***57.29***	***6.16***	***1.11***	***170,019***
Major NSR Permitting Threshold		250	250	250	250	250	N/A	N/A	100,000
Title V Permitting Threshold		100	100	100	100	100	25	10	100,000

Notes:
a/ Hexane(n-) emissions are presented for worst-case Individual HAP.
b/ Total values may not equal table value sums due to rounding.

TPY = tons per year
SO_2 = sulfur dioxide
PM_{10} = particulate matter with a diameter ≤ 10 microns
$PM_{2.5}$ = particulate matter with a diameter ≤ 2.5 microns
NO_x = nitrogen oxides
CO = carbon monoxide
VOC = volatile organic compounds
HAP = hazardous air pollutants
CO_2e = carbon dioxide equivalents

TABLE 9.2-9

Estimated Actual Emissions from Non-Combustion Sources at Proposed M&R Stations (TPY)

	VOC	CO_2e
Fugitives	1.2	161.0
Non-Routine	22.1	3,051.6
Total	23.3	3,212.6

Notes:
TPY = tons per year
VOC = volatile organic compounds
CO_2e = carbon dioxide equivalents

TABLE 9.2-10

Estimated Actual Emissions from Proposed Sabal Trail Pipeline (TPY)

	VOC	CO_2e
Fugitives	0.9	125.4
Non-Routine	66.2	9,156.4
Total	67.1	9,281.8

Notes:
TPY = tons per year
VOC = volatile organic compounds
CO_2e = carbon dioxide equivalents

TABLE 9.2-11

CO_2 Emission Rates from Alternative Fuels

Technology	CO_2 Emission Rates (lb CO_2/MW-hr) a/
Combined Cycle Combustion Turbines	780
Oil Combustion	1,672
Coal Combustion	2,249

Notes:
a/ Based on USEPA emission factors found at:
http://www.epa.gov/cleanenergy/energy-and-you/affect/air-emissions.html
and typical EPA permit limits for newly built combined cycle power plants.

CO_2 = carbon dioxide
MW-hr = megawatt-hour

TABLE 9.2-12

Fugitive Dust Emissions from Construction Activities (TPY)
[To be provided with the Project Application]

Year	PM_{10}	$PM_{2.5}$

Notes:
TPY = tons per year
PM_{10} = particulate matter with a diameter ≤ 10 microns
$PM_{2.5}$ = particulate matter with a diameter ≤ 2.5 microns

TABLE 9.2-13

Non-Road Construction Emissions of Criteria Pollutants and HAPs (TPY)
[To be provided with the Project Application]

Year	NO_x	VOC	CO	SO_2	$PM_{10}/PM_{2.5}$	Total HAPs

Notes:
TPY = tons per year
NO_x = nitrogen oxides
VOC = volatile organic compounds
CO = carbon monoxide
SO_2 = sulfur dioxide
PM_{10} = particulate matter with a diameter ≤ 10 microns
$PM_{2.5}$ = particulate matter with a diameter ≤ 2.5 microns
HAP = hazardous air pollutants

TABLE 9.2-14

Non-Road Construction Emissions of Greenhouse Gases (TPY)
[To be provided with the Project Application]

Year	CO_2

Notes:
TPY = tons per year
CO_2 = carbon dioxide

TABLE 9.2-15

Commuting and On-road Construction Vehicles Emissions of Criteria Pollutants and HAPs (TPY)
[To be provided with the Project Application]

Year	NO_x	VOC	CO	SO_2	$PM_{10}/PM_{2.5}$	Total HAPs

Notes:
TPY = tons per year
NO_x = nitrogen oxides
VOC = volatile organic compounds
CO = carbon monoxide
SO_2 = sulfur dioxide
PM_{10} = particulate matter with a diameter ≤ 10 microns
$PM_{2.5}$ = particulate matter with a diameter ≤ 2.5 microns
HAP = hazardous air pollutants

TABLE 9.2-16

Commuting and On-road Construction Vehicles Emissions of Greenhouse Gases (TPY)
[To be provided with the Project Application]

Year	CO_2

Notes:
TPY = tons per year
CO_2 = carbon dioxide

TABLE 9.3-1

Summary of the Proposed Compressor Stations for the Sabal Trail Project

Facility Name	MP a/	Location (County, State)	Planned Compressor Station Equipment with Potential Noise Impact b/
Alexander City Compressor Station	0.0	Tallapoosa County, AL	New compressor station with: two (2) Solar Titan 130 turbine-driven compressor units, each unit rated at 20,500 hp (ISO) (2017 in-service); and one (1) Solar Titan 250 turbine-driven compressor unit rated at 30,000 hp (ISO) (2017 in-service), and gas cooling.
Albany Compressor Station	157.7	Dougherty County, GA	New compressor station with: one (1) Solar Titan 130 turbine-driven compressor unit rated at 20,500 hp (ISO) (2020 in-service); and one (1) Solar Titan 130 turbine-driven compressor unit rated at 20,500 hp (ISO) (2021 in-service); and gas cooling.
Hildreth Compressor Station	292.7	Suwannee County, FL	New compressor station with: one (1) Solar Titan 130 turbine-driven compressor unit rated at 20,500 hp (ISO) (2017 in-service); and one (1) Solar Titan 130 turbine-driven compressor unit rated at 20,500 hp (ISO) (2021 in-service); and gas cooling.
Dunnellon Compressor Station	384.2	Marion County, FL	New compressor station with: one (1) Solar Titan 130 turbine-driven compressor unit rated at 20,500 hp (ISO) (2020 in-service); and gas cooling.
Reunion Compressor Station	462.9	Osceola County, FL	New compressor station with: one (1) Solar Titan 130 turbine-driven compressor unit (rated at 20,500 hp (ISO) (2017 in-service); and one (1) Solar Mars 100 turbine-driven compressor unit (rated at 15,900 hp (ISO) (2017 in-service); and gas cooling.

Notes:
a/ Sabal Trail mainline pipeline milepost rounded to the nearest tenth. All mileposts are approximate at this time.
b/ Each new compressor station will include: lube oil cooler(s), turbine exhaust system with exhaust stack for each compressor unit, turbine air intake system for each compressor unit, gas aftercooling, aboveground gas piping and a unit blowdown silencer for each compressor unit.

TABLE 9.3-2

Summary of the Proposed M&R Stations for the Sabal Trail Project

Facility Name	MP	Location (County, State)	Planned M&R Station Equipment with Potential Noise Impact
Transco Hillabee M&R Station	0.0 a/	Tallapoosa County, AL	Two dual 16” (four total) ultrasonic metering and two dual 16” (four total) monitor regulating station
FGT Suwannee M&R Station	296.2 a/	Suwannee County, GA	Dual 16” and single 8” ultrasonic metering, triple 16” and single 8” monitor regulating, and dual 30” bi-directional skids M&R station.
FSC M&R Station	462.9 a/	Osceola County, FL	Dual 12” ultrasonic metering and dual 12” monitor regulating station
Gulfstream M&R Station	462.9 a/	Osceola County, FL	Dual 16” ultrasonic metering, dual 16” monitor regulating, and dual 24” bi-directional skids M&R station
FGT Hunters Creek M&R	13.3 b/	Orange County, FL	Dual 12” and single 8” ultrasonic metering, dual 12” and single 8” regulating, and dual 24” bi-directional

TABLE 9.3-2

Summary of the Proposed M&R Stations for the Sabal Trail Project

Facility Name	MP	Location (County, State)	Planned M&R Station Equipment with Potential Noise Impact
Station			skids M&R station (M&R station associated with the Hunters Creek Line)
Duke Citrus County M&R Station	22.3 c/	Citrus County, FL	Dual 12" ultrasonic metering, single 3" rotary metering, and dual 12" and single 3"regulating station (M&R station associated with Citrus County Line)

Notes:
a/ Sabal Trail Mainline milepost rounded to the nearest tenth. All mileposts are approximate at this time.
b/ Hunters Creek Line milepost rounded to the nearest tenth. All mileposts are approximate at this time.
c/ Citrus County Line milepost rounded to the nearest tenth. All mileposts are approximate at this time.

TABLE 9.3-3

Summary of the Potential HDD Locations for the Sabal Trail Project

HDD #	NAME	ENTRY MP	EXIT MP	Location (County, State)
1	Hillabee Creek	1.2 a/	1.8 a/	Tallapoosa County, AL
2	State Highway 22	2.6 a/	2.2 a/	Tallapoosa County, AL
3	Timbergut Creek	5.4 a/	5.0 a/	Tallapoosa County, AL
4	Tallapoosa River	7.7 a/	7.0 a/	Tallapoosa County, AL
5	Uchee Creek	70.5 a/	70.2 a/	Russell County, AL
6	Chattahoochee River	86.0 a/	85.7 a/	Stewart County, GA Russell County, AL
7	Hannahatchee Creek	91.0 a/	90.7 a/	Stewart County, GA
8	Flint River	160.8 a/	161.7 a/	Dougherty County, GA
9	Ochlockonee River	196.7 a/	197.0 a/	Colquitt County, GA
10	State Highway 84/221 & CSX RR	228.5 a/	228.1 a/	Brooks County, GA
11	Withlacoochee River	228.9 a/	229.6 a/	Brooks/Lowndes Counties, GA
12	Withlacoochee River	260.7 a/	261.2 a/	Hamilton/Madison Counties, FL
13	Suwanee River	264.4 a/	263.6 a/	Suwanee/Madison Counties, FL
14	Interstate Highway 10	266.0 a/	266.3 a/	Suwanee County, FL
15	Santa Fe River	303.7 a/	304.3 a/	Suwanee/Gilchrist Counties, FL
16	Gum Slough	390.2 a/	390.7 a/	Sumter County, FL
17	Outlet River	402.4 a/	402.9 a/	Sumter County, FL
18	US Highway 27	453.6 a/	453.2 a/	Polk County, FL
19	Toll Road 429	458.3 a/	458.7 a/	Osceola County, FL
20	Withlacoochee River	2.6 b/	2.1 b/	Citrus/Marion Counties, FL

Notes:
a/ Sabal Trail Mainline milepost rounded to the nearest tenth. All mileposts are approximate at this time.
b/ Citrus County Line milepost rounded to the nearest tenth. All mileposts are approximate at this time.

TABLE 9.3-4

Preliminary Noise Quality Analysis for the Alexander City Compressor Station

Closest NSA	Distance and Direction of NSA to Site Acoustic Center	Existing Ambient L_{dn} (dBA) a/	Est'd L_{dn} of the Station during Operation (dBA)	Station L_{dn} + Ambient L_{dn} (dBA)	Potential Change in Ambient Sound Level (dB)
NSA #1	1,110 feet (north)	45.0	49.8	51.0	6.0
NSA #2	1,800 feet (NW)	45.0	44.9	48.0	3.0

Notes:
a/ Ambient noise level (L_{dn}) at the NSA will be measured. This is the estimated ambient level until the ambient sound survey is conducted at the site.

NSA = noise sensitive area
L_{dn} = L_{dn} is an energy average of the measured daytime L_{eq} (i.e., L_d) and the measured nighttime L_{eq} (i.e., L_n) plus 10 dB. The 10 dB adjustment to the L_n is intended to compensate for nighttime sensitivity.
L_d = daytime equivalent sound level.
L_n = nighttime equivalent sound level.
dB = decibels
dBA = A-weighted decibels

TABLE 9.3-5

Preliminary Noise Quality Analysis for the Albany Compressor Station

Closest NSA	Distance and Direction of NSA to Acoustic Site Center	Existing Ambient L_{dn} (dBA) a/	Est'd L_{dn} of the Station during Operation (dBA)	Station L_{dn} + Ambient L_{dn} (dBA)	Potential Change in Ambient Sound Level (dB)
NSA #1	940 feet (SW)	45.0	50.1	51.3	6.3
NSA #2	1,250 feet (WSW)	45.0	47.2	49.3	4.3
NSA #3	1,760 feet (south)	45.0	43.7	47.4	2.4

Notes:
a/ Ambient noise level (L_{dn}) at the NSA will be measured. This is the estimated ambient level until the ambient sound survey is conducted at the site.

NSA = noise sensitive area
L_{dn} = L_{dn} is an energy average of the measured daytime L_{eq} (i.e., L_d) and the measured nighttime L_{eq} (i.e., L_n) plus 10 dB. The 10 dB adjustment to the L_n is intended to compensate for nighttime sensitivity.
L_d = daytime equivalent sound level.
L_n = nighttime equivalent sound level.
dB = decibels
dBA = A-weighted decibels

TABLE 9.3-6

Preliminary Noise Quality Analysis for the Hildreth Compressor Station

Closest NSA	Distance and Direction of NSA to Acoustic Site Center	Existing Ambient L_{dn} (dBA) a/	Est'd L_{dn} of the Station during Operation (dBA)	Station L_{dn} + Ambient L_{dn} (dBA)	Potential Change in Ambient Sound Level (dB)
NSA #1	1,500 feet (south)	45.0	46.3	48.7	3.7
NSA #2	1,870 feet (NW)	45.0	43.9	47.5	2.5
NSA #3	1,960 feet (SW)	45.0	43.4	47.3	2.3

Notes:
a/ Ambient noise level (L_{dn}) at the NSA will be measured. This is the estimated ambient level until the ambient sound survey is conducted at the site.

NSA = noise sensitive area
L_{dn} = L_{dn} is an energy average of the measured daytime L_{eq} (i.e., L_d) and the measured nighttime L_{eq} (i.e., L_n) plus 10 dB. The 10 dB adjustment to the L_n is intended to compensate for nighttime sensitivity.
L_d = daytime equivalent sound level.
L_n = nighttime equivalent sound level.
dB = decibels
dBA = A-weighted decibels

TABLE 9.3-7

Preliminary Noise Quality Analysis for the Dunnellon Compressor Station

Closest NSA	Distance and Direction of NSA to Acoustical Site Center	Existing Ambient L_{dn} (dBA) a/	Est'd L_{dn} of the Station during Operation (dBA)	Station L_{dn} + Ambient L_{dn} (dBA)	Potential Change in Ambient Sound Level (dB)
NSA #1	1,750 feet (west)	45.0	42.5	46.9	1.9
NSA #2	700 feet (west)	45.0	41.6	46.6	1.6

Notes:
a/ Ambient noise level (L_{dn}) at the NSA will be measured. This is the estimated ambient level until the ambient sound survey is conducted at the site.

NSA = noise sensitive area
L_{dn} = L_{dn} is an energy average of the measured daytime L_{eq} (i.e., L_d) and the measured nighttime L_{eq} (i.e., L_n) plus 10 dB. The 10 dB adjustment to the L_n is intended to compensate for nighttime sensitivity.
L_d = daytime equivalent sound level.
L_n = nighttime equivalent sound level.
dB = decibels
dBA = A-weighted decibels

TABLE 9.3-8

Preliminary Noise Quality Analysis for the Reunion Compressor Station

Closest NSA	Distance and Direction of NSA to Acoustical Site Center	Existing Ambient L_{dn} (dBA) a/	Est'd L_{dn} of the Station during Operation (dBA)	Station L_{dn} + Ambient L_{dn} (dBA)	Potential Change in Ambient Sound Level (dB)
NSA #1	1,340 feet (SW)	50.0	48.3	52.2	2.2
NSA #2	1,470 feet (SE)	50.0	47.3	51.9	1.9
NSA #3	700 feet (west)	50.0	46.1	51.5	1.5

Notes:
a/ Ambient noise level (L_{dn}) at the NSA will be measured. This is the estimated ambient level until the ambient sound survey is conducted at the site.

NSA = noise sensitive area
L_{dn} = L_{dn} is an energy average of the measured daytime L_{eq} (i.e., L_d) and the measured nighttime L_{eq} (i.e., L_n) plus 10 dB. The 10 dB adjustment to the L_n is intended to compensate for nighttime sensitivity.
L_d = daytime equivalent sound level.
L_n = nighttime equivalent sound level.
dB = decibels
dBA = A-weighted decibels

TABLE 9.3-9

Preliminary Noise Quality Analysis for the Project M&R Stations

Respective M&R Station and Closest NSA(s)	Distance and Direction of Closest NSA to the M&R Station	Existing Ambient L_{dn} (dBA) a/	Est'd L_{dn} due to the M&R Station (dBA)	M&R Station L_{dn} + Ambient L_{dn} (dBA)	Potential Change in the Ambient Sound Level (dB)
Transco Hillabee M&R	850 feet (NE)	45.0	50.0	51.2	6.2
FGT Suwannee M&R	No NSAs within ½ mile	Not applicable ("N/A")	N/A	N/A	N/A
FSC M&R	980 feet (SW)	50.0	47.6	52.0	2.0
Gulfstream M&R	1,300 feet (SW)	50.0	44.7	51.1	1.1
FGT Hunters Creek M&R	1,530 feet (NW)	40.0	41.8	44.0	4.0
Duke Citrus County M&R	No NSAs within ½ mile	N/A	N/A	N/A	N/A

Notes:
a/ Ambient noise level (L_{dn}) at the NSA will be measured. This is the estimated ambient level until the ambient sound survey is conducted at the site.

NSA = noise sensitive area
L_{dn} = L_{dn} is an energy average of the measured daytime L_{eq} (i.e., L_d) and the measured nighttime L_{eq} (i.e., L_n) plus 10 dB. The 10 dB adjustment to the L_n is intended to compensate for nighttime sensitivity.
L_d = daytime equivalent sound level.
L_n = nighttime equivalent sound level.
dB = decibels
dBA = A-weighted decibels

TABLE 9.3-10

Noise Levels of Major Construction Equipment a/

Equipment Type	Sound Level at 50 Feet (dBA)
Trucks	85
Crane	80
Roller	80
Bulldozers	85
Pickup Trucks	55
Backhoes	80

Notes:
a/ U.S. Department of Transportation, Federal Highway Administration. 2006. FHWA Highway Construction Noise Handbook. Available online at: http://www.fhwa.dot.gov/environment/noise/handbook/09.htm

dBA = A-weighted decibels

TABLE 9.3-11

Preliminary Noise Quality Analysis for the HDD Sites with NSAs within ½ Mile of Site (assumes Standard Rig Employed)

HDD Segment (Entry or Exit Site)	Distance and Direction of the Closest NSA to HDD Site Center	Existing Ambient L_{dn} (dBA) a/	Calculated L_{dn} of the HDD Operations (dBA)	L_{dn} of HDD Operations + Ambient L_{dn} (dBA)	Potential Change in the Ambient Noise
HDD #3 (Entry)	1,080 ft. (WSW)	45.0 dBA	59.0 dBA	59.3 dBA	14.3 dBA
HDD #3 (Exit)	750 ft. (south)	45.0 dBA	50.0 dBA	52.0 dBA	7.0 dBA
HDD #4 (Entry)	1,350 ft. (SSW)	45.0 dBA	54.0 dBA	55.0 dBA	10.0 dBA
HDD #7 (Entry)	1,360 ft. (north)	45.0 dBA	52.0 dBA	53.0 dBA	8.0 dBA
HDD #7 (Exit)	940 ft. (north)	45.0 dBA	48.0 dBA	50.0 dBA	5.0 dBA
HDD #8 (Entry)	400 ft. (east)	45.0 dBA	68.0 dBA	69.0 dBA	24.0 dBA
HDD #9 (Exit)	1,450 ft. (SE)	45.0 dBA	45.0 dBA	48.0 dBA	3.0 dBA
HDD #10 (Entry)	1,120 ft. (SW)	45.0 dBA	54.0 dBA	55.0 dBA	10.0 dBA
HDD #10 (Exit)	560 ft. (SW)	45.0 dBA	50.0 dBA	52.0 dBA	7.0 dBA
HDD #11 (Entry)	820 ft. (NW)	45.0 dBA	59.0 dBA	59.3 dBA	14.3 dBA
HDD #11 (Exit)	1,610 ft. (NE)	45.0 dBA	45.0 dBA	48.0 dBA	3.0 dBA
HDD #12 (Entry)	1,000 ft. (west)	45.0 dBA	59.0 dBA	59.3 dBA	14.3 dBA
HDD #12 (Exit)	670 ft. (west)	45.0 dBA	50.0 dBA	52.0 dBA	7.0 dBA
HDD #13 (Entry)	1,950 ft. (SE)	45.0 dBA	49.0 dBA	51.0 dBA	6.0 dBA
HDD #14 (Entry)	725 ft. (NE)	45.0 dBA	59.0 dBA	59.3 dBA	14.3 dBA
HDD #14 (Exit)	420 ft. (SW)	45.0 dBA	50.0 dBA	52.0 dBA	7.0 dBA

TABLE 9.3-11

Preliminary Noise Quality Analysis for the HDD Sites with NSAs within ½ Mile of Site (assumes Standard Rig Employed)

HDD Segment (Entry or Exit Site)	Distance and Direction of the Closest NSA to HDD Site Center	Existing Ambient L_{dn} (dBA) a/	Calculated L_{dn} of the HDD Operations (dBA)	L_{dn} of HDD Operations + Ambient L_{dn} (dBA)	Potential Change in the Ambient Noise
HDD #15 (Entry)	930 ft. (ESE)	45.0 dBA	59.0 dBA	59.3 dBA	14.3 dBA
HDD #15 (Exit)	160 ft. (north)	45.0 dBA	58.0 dBA	58.5 dBA	13.5 dBA
HDD #17 (Entry)	1,349 ft. (east)	45.0 dBA	54.0 dBA	55.0 dBA	10.0 dBA
HDD #17 (Exit)	440 ft. (NE)	45.0 dBA	50.0 dBA	52.0 dBA	7.0 dBA
HDD #18 (Entry)	120 ft. (north)	45.0 dBA	76.0 dBA	76.0 dBA	31.0 dBA
HDD #18 (Exit)	260 ft. (SE)	45.0 dBA	54.0 dBA	55.0 dBA	10.0 dBA
HDD #19 (Entry)	500 ft. (NE)	45.0 dBA	65.0 dBA	65.5 dBA	20.5 dBA
HDD #19 (Exit)	630 ft. (north)	45.0 dBA	50.0 dBA	52.0 dBA	7.0 dBA
HDD #20 (Entry)	380 ft. (WNW)	45.0 dBA	68.0 dBA	69.0 dBA	24.0 dBA
HDD #20 (Exit)	1,200 ft. (SSW)	45.0 dBA	45.0 dBA	48.0 dBA	3.0 dBA

Notes:
a/ Ambient noise level (L_{dn}) at the NSA will be measured. This is the estimated ambient level until the ambient sound survey is conducted at the site.

NSA = noise sensitive area
L_{dn} = L_{dn} is an energy average of the measured daytime L_{eq} (i.e., L_d) and the measured nighttime L_{eq} (i.e., L_n) plus 10 dB. The 10 dB adjustment to the L_n is intended to compensate for nighttime sensitivity.
L_d = daytime equivalent sound level.
L_n = nighttime equivalent sound level.
dB = decibels
dBA = A-weighted decibels

TABLE 9.3-12

Noise Quality Analysis for the Potential HDD Sites with NSAs within ½ Mile of Site (assumes Additional Noise Mitigation Measures employed to meet the Sound Criterion/Guideline)

HDD Segment (Entry or Exit Site)	Distance and Direction of the Closest NSA to HDD Site Center	Existing Ambient L_{dn} (dBA) a/	Calculated L_{dn} of the HDD Operations (dBA)	L_{dn} of HDD Operations + Ambient L_{dn} (dBA)	Potential Change in the Ambient Noise
HDD #3 (Entry)	1,080 ft. (WSW)	45.0 dBA	50.0 dBA	52.0 dBA	7.0 dBA
HDD #8 (Entry)	400 ft. (east)	45.0 dBA	53.0 dBA	54.0 dBA	9.0 dBA
HDD #11 (Entry)	820 ft. (NW)	45.0 dBA	52.0 dBA	53.0 dBA	8.0 dBA
HDD #12 (Entry)	1,000 ft. (west)	45.0 dBA	50.0 dBA	52.0 dBA	7.0 dBA
HDD #14 (Entry)	725 ft. (NE)	45.0 dBA	52.0 dBA	53.0 dBA	8.0 dBA
HDD #15 (Entry)	930 ft. (ESE)	45.0 dBA	50.0 dBA	52.0 dBA	7.0 dBA
HDD #15 (Exit)	160 ft. (north)	45.0 dBA	52.0 dBA	53.0 dBA	8.0 dBA
HDD #18 (Entry)	120 ft. (north)	45.0 dBA	53.0 dBA	54.0 dBA	9.0 dBA
HDD #19 (Entry)	500 ft. (NE)	45.0 dBA	53.0 dBA	54.0 dBA	9.0 dBA
HDD #20 (Entry)	380 ft. (WNW)	45.0 dBA	53.0 dBA	54.0 dBA	9.0 dBA

Notes:
a/ Ambient noise level (L_{dn}) at the NSA will be measured. This is the estimated ambient level until the ambient sound survey is conducted at the site.

NSA = noise sensitive area
L_{dn} = L_{dn} is an energy average of the measured daytime L_{eq} (i.e., L_d) and the measured nighttime L_{eq} (i.e., L_n) plus 10 dB. The 10 dB adjustment to the L_n is intended to compensate for nighttime sensitivity.
L_d = daytime equivalent sound level.
L_n = nighttime equivalent sound level.
dB = decibels
dBA = A-weighted decibels

APPENDIX 9A

Compressor Station Air Permit Applications and Emission Calculations

[To be provided with the Project Application]

APPENDIX 9B

Construction Emission Calculations

[To be provided with the Project Application]

APPENDIX 9C

Results of the Ambient Sound Survey and Acoustical Analysis for each Compressor Station Associated with the Sabal Trail Project

[To be provided with the Project Application]

APPENDIX 9D

Acoustical Assessment of M&R Stations Associated with the Sabal Trail Project Requiring Acoustical Analysis

[To be provided with the Project Application]

APPENDIX 9E

Acoustical Assessment of Planned HDDs for the New Natural Gas Pipeline associated with the Sabal Trail Project

[To be provided with the Project Application]