



**H.F. Lee Energy Complex
Section 404/401 Individual Permit
H.F. Lee Energy Complex
Haul Road and Haul Road Extension Permit Support**

Prepared for



**H.F. Lee Energy Complex Plant
Goldsboro, North Carolina**

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LIST OF ABBREVIATIONS AND ACRONYMS

CAMA	Coal Ash Management Act of 2014
CEQ	Council on Environmental Quality
CFR	Cod of Federal Regulations
CWA	Clean Water Act
dB	decibels
dBA	A-weighted decibels
DFIRM	Digital Flood Insurance Rate Map
ECOS	Environmental Conservation Online System
EO	Executive Order
ESA	Endangered Species Act
E&SC	Erosion & Sediment Control
FEMA	Federal Emergency Management Agency
FR	Federal Register
HUC	Hydrologic Unit Code
IP	Individual Permit
IPaC	Information for Planning and Conservation
JD	Jurisdictional Determination
Ldn	Day/Night Levels
MW	megawatt
NAAQS	National Ambient Air Quality Standards
NCAC	North Carolina Administrative Code
NCDEQ	North Carolina Department of Environmental Quality
NCDWR	North Carolina Division of Water Resources
NCGS	North Carolina Geologic Survey
NCNHP	North Carolina Natural Heritage Program
NC SAM	North Carolina Stream Assessment Method
NCSHPO	North Carolina State Historic Preservation Office
NC WAM	North Carolina Wetlands Assessment Method
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
%	percent
PM2.5	fine particulate matter
PM10	particulate matter
SR	State Road
USACE	US Army Corps of Engineers
USC	US Code
USCB	US Census Bureau
USEPA	US Environmental Protection Agency
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey
WS	Water Supply

EXECUTIVE SUMMARY

The H.F. Lee Steam Station was a coal-fired 382-megawatt (MW) three-unit coal-fired power generating facility. The site currently is comprised of the H.F. Lee Energy Complex, located to the west of Goldsboro in central Wayne County (**Figures 1 and 2**). The existing 920-MW H.F. Lee Energy Complex comprises a natural gas-fired combined cycle plant and four Wayne County oil-fueled combustion turbine units replaced the former H.F. Lee Steam Station. The Neuse River dissects the northern portion of the property and abuts the eastern and southern boundaries of the Plant. The plant property is accessed from the north by Old Smithfield Road, or from the south by Black Jack Church Road.

On August 20, 2014, the North Carolina General Assembly passed S 729, the Coal Ash Management Act of 2014 (CAMA), requiring Duke Energy to phase out wet ash handling. Under CAMA, all coal ash in the state will be covered by North Carolina's solid waste laws. Further, when coal ash is used as fill to build up land for large construction projects, measures like groundwater monitoring and liners will be required. In addition, on July 14, 2016, the North Carolina General Assembly passed SL 2016-95 (also known as HB 630), as an amendment to the Coal Ash Management Act. "§ 130A-309.216. Ash beneficiation projects.

With the passage of CAMA and the referenced amendment [§North Carolina General Statutes §130A-309.214(a)(4)], Duke Energy is following a timetable to close all its coal ash ponds. Duke Energy is committed to safely dismantling its existing older plants as part of a complex, multiyear process known as "decommissioning and demolition". By the end of 2013, Duke Energy retired units at nine coal-fired generation sites in North Carolina and South Carolina (Duke Energy 2017). The long-term vision for sites with retired coal units across the system is to demolish the structures and return them to a more natural state through grading and revegetation. During the early stages of the decommissioning and demolition strategy, the company will remove chemicals and other materials, salvage what equipment it can, recycle and repurpose at other sites, and sell the scrap material. In the demolition and restoration phases, Duke Energy will safely remove the powerhouse, chimneys, and auxiliary structures that are no longer needed. Following this procedure, Duke Energy will fill, grade, and vegetate disturbed areas (Duke Energy 2017). This approach is best suited to ensure continued safety, security, and environmental compliance at the sites in the future, both for the company and the community. Duke Energy will continue to own and steward these properties, and some will become facilities for other types of power generation. The decommissioning project also extends to some of the company's older natural gas-combustion turbine units across the generation fleet, as they will move through a similar decommissioning process.

At the former H.F. Lee Steam Station, Duke Energy has initiated the planning of closing the ash basins. The procedure of processing the ash will require the construction of a processing facility on the company owned property adjacent to the natural gas-powered station which came on line in December of 2012. In addition, haul roads will be constructed between the existing ash basins and the proposed processing facility.

The purpose of the IP Application is based on the following need:

- Address the North Carolina regulatory requirements related to beneficial reuse of coal ash as detailed in North Carolina General Statutes §130A-309.216 - Ash beneficiation projects.
- Duke Energy requests that this individual permit be granted for ten years from the date of approval.

The processing of coal ash from within the existing basins will be performed to ensure compliance with the applicable sections of State Law and facilitate future ash basin closure activities at the H.F. Lee Energy Complex. Specifically, the coal ash will be excavated from the existing ash basins and transported to the proposed facility for processing to make it useable as a partial replacement for cement in ready-mixed concrete. The processing facility is scheduled to be operational by the end of 2020. The necessary haul roads will need to be constructed in advance of the processing facility becoming operational in order to meet the regulatory requirements.

The primary component of the project will be construction of the new H.F. Lee Haul Road. The new haul road will consist a two-lane asphalt road extending from the Neuse River south and south west approximately one mile to its terminus at the private access road to the Wayne County CT Site. A secondary component of this project will be improvement to the existing road leading to the 1982 Active Basin. The 1982 Ash Basin Haul Road improvements will include a wheel wash station and a truck scale station. Future components associated with ash removal include a new haul road to access Inactive Ash Basins 1, 2, and 3.

Wetlands E, F, K, BB, PP, RR, WWB, and WWWA and Streams 5, 9, and 19, the Neuse River, and the Discharge Canal occur within the Haul Road and Haul Road Extension project areas. Western portions of Wetland E will be affected by construction of the haul road. No impacts to wetlands or streams are proposed for the Haul Road Extension project.

Compensatory mitigation for the proposed impacts is required under the Section 404 Individual Permit (IP). Appropriate avoidance and practicable minimization efforts have been conducted through the analysis of alternative Haul Road locations. However, unavoidable impacts to on-site waters of the US are necessary to complete the proposed action.

Mitigation requirements for the existing H.F. Lee Energy Complex Haul Road and Haul Road Extension projects will be satisfied by the purchase of mitigation credits from the private mitigation banker Wildlands Holdings III, LLC (Wildlands Holdings). Based on the review of the mitigation options available, it was determined that credit purchase from a private mitigation banker was necessary because there are private mitigation banks offering wetlands and stream

credits in the Neuse River basin at this time. On-site mitigation and off-site mitigation opportunities were not explored because the mitigation bank option was already available.

Construction of the Haul Road and Haul Road Extension will have no effect on federally protected species; is not expected to influence cultural resources or historic properties; should have no effect on environmental justice for the surrounding residential communities; is not expected to impact noise-sensitive land uses; and is not expected to impact air quality locally or regionally.

As a component of the alternatives analysis, the off-site alternative would entail the transport of CCR materials from the H.F. Lee Energy Complex, via off-site haul road(s), to another Duke Energy facility or other approved location. This alternative was dismissed after the consideration of numerous constraints to project logistics, cost, and safety from the construction of the off-site haul road(s) and/or the modification of existing roadway to function as a haul road. The constraints to implementation include the following:

- Increased opportunities for human labor accidents during construction operations (site safety concerns)
- Increased opportunities for vehicular accidents among haul trucks and local traffic (including transportation level of service concerns)
- Increased impacts to local air quality (fugitive dust) and increased sound disturbance
- Potential to impact jurisdictional wetlands and streams, cultural resources, and protected species from the construction of the new haul road(s) (expanded footprint)
- A natural disaster or catastrophic event beyond the control of Duke Energy (i.e., versus the opportunity for some control by Duke Energy if the event occurred on-site) could temporarily shut down project construction, which in turn would affect project schedule/completion date
- Increased project construction costs

At the former H.F. Lee Steam Station, Duke Energy has initiated the planning for closing the ash basins. The procedure of processing the ash will require the construction of a processing facility on the company owned property adjacent to the natural gas-powered station which came on line in December of 2012. In addition, haul roads will be constructed between the existing ash basins and the proposed processing facility.

The ash processing facility would be comprised of the proposed STAR® (Staged Turbulent Air Reactor) Technology, which is a patented thermal beneficiation process to transform coal ash from surface impoundments or ponds into a high-quality, sustainable product for the concrete industry. The STAR® Process can also remove all the carbon in fly ash so that the purified mineral material can be used as raw feed material in other products and processes that historically have been unable to use fly ash as raw feed material because of the deleterious effect of residual carbon in fly ash.

Improvements to the existing bridge over the Neuse River and the construction of a new bridge over the Discharge Canal were previously permitted under a Nationwide Permit (NWP) 18 (Action ID: SAW-2018-02093 issued November 14, 2018). The Neuse River bridge

improvements and the new Discharge Canal bridge are complete projects with independent utility separate from the haul road and haul road extension project. The bridge projects are required because the weight ratings of the Neuse River bridge and the existing Discharge Canal bridge have decreased, therefore significantly restricting the load weights that may travel across these bridges. The bridge projects are required to provide access for equipment during emergency situations as well as routine equipment maintenance and replacement. The Neuse River bridge improvements and construction of the new Discharge Canal bridge would occur regardless of the proposed coal ash activities and haul road construction.

Duke Energy is also requesting a Section 10 permit to construct a new overhead electric utility line (powerline) across the Neuse River. The proposed powerline is to provide power to support the Ash Basin Excavation project. Pumps, a wheel wash station and a water hose are proposed for this project. The proposed powerline will be a perpendicular crossing of the Neuse River east of the existing Neuse River Bridge. The lowest portion of the proposed powerline will be 42.3 feet above the ordinary high water mark (OHWM) level of the Neuse River. The powerline construction includes a 30-foot right-of-way that will be maintained in an herbaceous state. Construction of the powerline right-of-way will result in 0.039 acre of a forested wetland converted to an herbaceous wetland. No permanent impacts resulting from fill placed in wetland areas is proposed. The 30-foot perpendicular overhead powerline is consider an Exempt Use in the Neuse River Riparian Buffer Rule Table of Uses.

1.0 INTRODUCTION

1.1 BACKGROUND

The H.F. Lee Steam Station was a coal-fired 382-megawatt (MW) three-unit coal-fired power generating facility. The site currently is comprised of the H.F. Lee Energy Complex, located to the west of Goldsboro in central Wayne County (**Figures 1 and 2**). The existing 920-MW H.F. Lee Energy Complex comprises a natural gas-fired combined cycle plant and four Wayne County oil-fueled combustion turbine units replaced the former H.F. Lee Steam Station. The Neuse River dissects the northern portion of the property and abuts the eastern and southern boundaries of the Plant. The plant property is accessed from the north by Old Smithfield Road, or from the south by Black Jack Church Road.

On August 20, 2014, the North Carolina General Assembly passed S 729, the Coal Ash Management Act of 2014 (CAMA), requiring Duke Energy to phase out wet ash handling. Under CAMA, all coal ash in the state is covered by North Carolina's solid waste laws. Further, when coal ash is used as fill to build up land for large construction projects, measures such as groundwater monitoring and liners are required. In addition, on July 14, 2016, the North Carolina General Assembly passed SL 2016-95 (also known as HB 630), as an amendment to the Coal Ash Management Act, which created "§ 130A-309.216 for ash beneficiation projects.

With the passage of CAMA and the referenced amendment [§North Carolina General Statutes §130A-309.214(a)(4)], Duke Energy is following a timetable to close all its coal ash ponds. Duke Energy is committed to safely dismantling its existing older plants as part of a complex, multiyear process known as "decommissioning and demolition". By the end of 2013, Duke Energy retired units at nine coal-fired generation sites in North Carolina and South Carolina (Duke Energy 2017). The long-term vision for sites with retired coal units across the system is to demolish the structures and return them to a more natural state through grading and revegetation. During the early stages of the decommissioning and demolition, the company will remove chemicals and other materials, salvage what equipment it can, recycle and repurpose at other sites, and sell the scrap material. In the demolition and restoration phases, Duke Energy will safely remove the powerhouse, chimneys, and auxiliary structures no longer needed. Following this procedure, Duke Energy will fill, grade, and vegetate disturbed areas (Duke Energy 2017). This approach is best suited to ensure continued safety, security, and environmental compliance at the sites in the future, both for the company and the community. Duke Energy will continue to own and steward these properties, and some will become facilities for other types of power generation. The decommissioning project also extends to some of the company's older natural gas-combustion turbine units across the generation fleet, as they will move through a similar decommissioning process.

Most of the coal ash generated by Duke Energy is already being managed as dry ash and stored in on-site, lined landfills. Prior to the promulgation of CAMA, engineering work was underway to close ash basins at the retired coal plants. The company has accelerated that work to include closing all ash basins across its six-state service area, both at retired and operating coal plants. Duke Energy has conducted inspections at its facilities to ensure basins continue operating safely and reliably until closure. There are several options for

closing ash basins. The company's strategy is that site-specific engineering should help improve the methods used and may include a combination of:

- Excavating and relocating ash to a fully-lined structural fill location
- Excavating and relocating the ash to a lined landfill (on or off-site)
- Excavating and processing the ash for beneficial re-use
- Capping the ash with an engineered synthetic barrier system, either in place or after being consolidated to a smaller area on site

Schedules for closing ash basins depend significantly on a variety of factors, including state requirements, the amount of ash at the site, whether plant system conversions are needed, and whether new storage facilities will need to be designed, permitted, and constructed.

At the former H.F. Lee Steam Station, Duke Energy has initiated the planning for closing the ash basins. The procedure of processing the ash will require the construction of a processing facility on the company owned property adjacent to the natural gas-powered station which came on line in December of 2012. In addition, haul roads will be constructed between the existing ash basins and the proposed processing facility.

The ash processing facility would be comprised of the proposed STAR® (Staged Turbulent Air Reactor) Technology, which is a patented thermal beneficiation process to transform coal ash from surface impoundments or ponds into a high-quality, sustainable product for the concrete industry. The STAR® Process can also remove all the carbon in fly ash so that the purified mineral material can be used as raw feed material in other products and processes that historically have been unable to use fly ash as raw feed material because of the deleterious effect of residual carbon in fly ash.

Improvements to the existing bridge over the Neuse River and construction of a new bridge over the Discharge Canal were previously permitted under a Nationwide Permit (NWP) 18 (Action ID: SAW-2018-02093 issued November 14, 2018). The Neuse River bridge improvements and the new Discharge Canal bridge are complete projects with independent utility separate from the haul road and haul road extension project. The bridge projects are required because the weight ratings of the Neuse River bridge and the existing Discharge Canal bridge have decreased therefore significantly restricting the load weights that may travel across these bridges. The bridge projects are required to provide access for equipment during emergency situations as well as routine equipment maintenance and replacement. The Neuse River bridge improvements and construction of the new Discharge Canal bridge would occur regardless of the proposed coal ash activities and haul road construction.

Duke Energy is also requesting a Section 10 permit to construct a new overhead electric utility line (powerline) across the Neuse River. The proposed powerline is to provide power to support the Ash Basin Excavation project. Pumps, a wheel wash station and a water hose are proposed

for this project. The proposed powerline will be a perpendicular crossing of the Neuse River east of the existing Neuse River Bridge. The lowest portion of the proposed powerline will be 42.3 feet above the ordinary high water mark (OHWM) level of the Neuse River. The powerline construction includes a 30-foot right-of-way that will be maintained in an herbaceous state. Construction of the powerline right-of-way will result in 0.018 acre of a forested wetland converted to an herbaceous wetland. No permanent impacts resulting from fill placed in wetland areas is proposed. The 30-foot perpendicular overhead powerline is considered an Exempt Use in the Neuse River Riparian Buffer Rule Table of Uses.

1.2 PURPOSE AND OBJECTIVE

The discharge of dredged or fill material into waters of the U.S. and most categories of work in navigable water bodies require U.S. Army Corps of Engineers (USACE) authorization under Section 404 of the Clean Water Act (CWA). This Wetland Master Plan (WMP) is to provide the Wilmington District of the USACE with a basis to evaluate and issue an Individual Permit (IP) and associated certifications for the proposed action. The project is identified as the H.F. Lee Beneficial Reuse Project (Project) in this WMP. The impetus for the alternatives analysis is the need for the construction of the haul roads to transport the ash from the existing basins to the processing facility to be in compliance with CAMA as amended in 2016.

The purpose of this WMP is to serve as a source of supplemental information for the Section 404 IP application. The WMP provides documentation of the current ecological and physical condition of jurisdictional waters and other resources that occur within the project site. Further, this document describes the approach to wetland mitigation outlined in the CWA Section 404 (b)(1) guidelines and followed by the State of North Carolina, to include avoidance, minimization, and compensation. The specific objective of this investigation and the WMP document is to provide the USACE Wilmington District, the North Carolina Department of Environmental Quality (NCDEQ), and other commenting and reviewing agencies a basis to evaluate and issue a Section 404 IP and associated certifications for the proposed action.

2.0 PROJECT PURPOSE AND NEED

2.1 PROJECT PURPOSE

The purpose of the Project (proposed action) is to allow for the transportation of coal ash from the existing ash basins to the ash processing unit to be constructed adjacent to the gas-fired power station and facilitate future ash basin closure activities within the H.F. Lee Energy Complex. The proposed haul roads will cross existing water bodies including the Neuse River, the former station Discharge Canal, and at least one unnamed tributary of the Neuse River. The details of the Project are discussed in Section 3.0 - Proposed Project Development.

2.2 PROJECT NEED

The purpose of the IP application is based on the following need:

- Address the North Carolina regulatory requirements related to beneficial reuse of coal ash as detailed in North Carolina General Statutes §130A-309.216 - Ash beneficiation projects
- Duke Energy requests that this individual permit be granted for ten years from the date of approval.

3.0 PROPOSED PROJECT DEVELOPMENT

3.1 PROJECT OVERVIEW

The processing of coal ash from within the existing basins will be performed to ensure compliance with the applicable sections of State Law and facilitate future ash basin closure activities at the H.F. Lee Energy Complex. Specifically, the coal ash will be excavated from the existing ash basins and transported to the proposed Beneficial Reuse facility for processing to make it useable as a partial replacement for cement in ready-mixed concrete. The processing facility is scheduled to be operational by the end of 2020. The necessary haul roads will need to be constructed in advance of the processing facility becoming operational to meet the regulatory requirements.

3.2 PROJECT COMPONENTS

The primary driver for the schedule and sequence of the Project components is to meet CAMA requirements to divert concentrated stormwater flow from the ash basin on or before December 31, 2019, specifically:

Per General Statute §130A-309.208(d), on or after December 31, 2019, the discharge of stormwater into a coal combustion surface impoundment at an electric generating facility where the coal-fired generating units are actively producing coal combustion residuals is prohibited.

The primary component of the project will be construction of the new H.F. Lee Haul Road. The new haul road will consist of a two-lane asphalt road extending from the Neuse River south and south west approximately one mile to its terminus at the private access road to the Wayne County CT Site. A secondary component of this project will be improvement to the existing road leading to the 1982 Active Basin. The 1982 Ash Basin Haul Road improvements will include a wheel wash station and a truck scale station. Future components associated with ash removal include a new haul road to access Inactive Ash Basins 1 and 2.

Duke Energy proposes to construct a new overhead electric utility line (powerline) across the Neuse River. The proposed powerline is to provide power to support the Ash Basin Excavation project. Pumps, a wheel wash station and a water hose are proposed for this project. The proposed powerline will be a perpendicular crossing of the Neuse River east of the existing Neuse River Bridge. The lowest portion of the proposed powerline will be 42.3 feet above the ordinary high water mark (OHWM) level of the Neuse River. The powerline construction includes a 30-foot right-of-way that will be maintained in an herbaceous state. Construction of the powerline right-of-way will result in 0.039 acre of a forested wetland converted to an herbaceous wetland. No permanent impacts resulting from fill placed in wetland areas is proposed. The 30-foot perpendicular overhead powerline is consider an Exempt Use in the Neuse River Riparian Buffer Rule Table of Uses.

4.0 ALTERNATIVES ANALYSIS

4.1 BACKGROUND INFORMATION

The Beneficial Reuse Project is a significant element of the overall process to ensure the long-term integrity of CCR materials and facilitate future ash basin closure activities at the H.F. Lee Energy Complex. The excavation and removal of CCR materials is a function of the promulgation of CAMA. Therefore, the impetus for the alternatives analysis is linked to this process. The ash haul route road is one component of the H.F. Lee Energy Complex associated with the Beneficial Reuse Project and is the component under evaluation within this WMP. The off-site alternative is presented in Section 4.3.3; i.e., the action alternative to transport CCR materials from the H.F. Lee Energy Complex, via off-site haul road(s), to another Duke Energy facility or other approved location.

The alternatives analysis herein comprises one action alternative for construction of the roadway within the H.F. Lee Energy Complex for the ultimate removal of CCR materials; i.e., the ash haul route project alternative. The No-Build Alternative (No Action Alternative) is also presented in Section 4.3.2.

4.2 REGULATORY AUTHORITY

In the evaluation of CWA Section 404 permit applications to discharge dredged or fill material into waters of the US including wetlands, the USACE is required to analyze alternatives that could achieve purpose and need. The USACE conducts this analysis pursuant to two main requirements:

1) National Environmental Policy Act of 1969 (NEPA)

NEPA requires federal agencies to consider environmental impacts of the proposed actions and a range of reasonable alternatives to those actions. Reasonable alternatives do not require consideration of every conceivable variation of an alternative (40 CFR §1502.14) and must be capable of achieving the basic project goal. The Council on Environmental Quality (CEQ) describes “reasonable” alternatives as those that are practical or feasible from the technical or economic standpoint and use common sense rather than simply desirable from the standpoint of the applicant (CEQ 1981). For alternatives eliminated from further study, a project’s environmental documentation must “briefly discuss the reasons for having been eliminated” (CEQ 1981).

2) CWA Section 404(b)(1) Guidelines

CWA Section 404(b)(1) Guidelines state “no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences” (40 CFR § 230.10a). Practicable means available and capable of being done after taking into consideration cost, existing technology, and logistics considering the overall project purpose.

The foremost objective of the CWA is to restore and maintain the chemical, biological, and physical integrity of the nation’s waters through the elimination of discharges of pollutants (33

U.S. Code [USC] § 466 *et seq.*). Pollutants include dredged and fill materials [40 CFR 230.3(o)], while the nation's waters, or waters of the U.S., include wetlands [40 CFR 230.3(s) (7)]. The U.S. Environmental Protection Agency (USEPA) 404(b)(1) Guidelines (40 CFR 230) provide the criteria that are used in reviewing USACE permit applications, with respect to the authorization of discharge of dredged or fill material into waters of the U.S., including wetlands. Under the USEPA Guidelines, the principal screening action to assess the necessity of permitting a discharge of dredged or fill material into waters of the U.S. is the analysis of practicable alternatives [40 CFR 230.10(a)].

According to 40 CFR Section 230.10(a), a discharge of dredged or fill material will be permitted by the USACE if no practical alternatives to the proposed discharge will have less adverse impact on the aquatic ecosystem and there are no other significant adverse environmental consequences. Under 40 CFR Section 230.10(a)(2), a practicable alternative is an alternative site that is available and capable of being developed after considering costs, existing technology, and logistics considering overall project purposes. The permit applicant is only required to evaluate alternatives that are considered practicable based on costs, technical factors, or logistical factors that are capable of achieving the overall purpose of the proposed activity.

According to the *Army Corps of Engineers Standard Operating Procedures for the Regulatory Program* (SOP), dated October 15, 1999, the amount of information needed, and the level of scrutiny required by the USEPA 404(b)(1) Guidelines is commensurate with the severity of the environmental impact and the scope/cost of the project. The SOP provides that the compliance evaluation procedures under the USEPA 404(b)(1) Guidelines vary to reflect the degree of potential for adverse impacts on the aquatic ecosystems. The alternatives that were considered for the proposed action at the H.F. Lee Energy Complex were evaluated pursuant to the SOP.

4.3 ACTION ALTERNATIVES

Biologists and engineers, with input from Duke Energy, examined the action plan (ash haul route project alternative) to accomplish the eventual excavation and removal of Coal Combustion Product materials within the active and inactive ash basins at the H.F. Lee Energy Complex. This alternative was examined with respect to project practicability limits and the need to avoid and/or minimize impacts to waters of the U.S. Wetland and stream impacts were calculated using geographic information system (GIS) applications and overlaying the action alternative footprint onto the database of surveyed waters of the U.S. boundaries. These surveyed jurisdictional boundaries were based on the results of the Verification of Jurisdictional Determination conducted by the USACE Washington Regulatory Field Office.

4.3.1 Ash Haul Route Project

The overall Project components of the Ash Haul Route option includes the construction and improvement of onsite haul roads in three separate installments (refer to Figure 2). Based on the review of the resources, features, and attributes of analysis in the Project area(s), the only resources impacted by the implementation of the ash haul route alternative would be waters of the U.S. The impacts to waters of the U.S. are discussed in Section 6.0 (Proposed Waters of the U.S. Impacts).

4.3.2 No-Build Alternative

Under the No-Build Alternative, construction of the roadway would not occur; therefore, there would be no impacts to waters of the US. However, under this alternative the coal ash currently located within the active and inactive ash basins would not be excavated and removed resulting in Duke Energy's noncompliance to CAMA at the H.F. Lee Energy Complex.

4.3.3 Off-site Alternative

The off-site alternative would entail the transport of CCR materials from the H.F. Lee Energy Complex, via off-site haul road(s), to another Duke Energy facility or other approved location. This alternative was dismissed after the consideration of numerous constraints to project logistics, safety from the construction of the off-site haul road(s) and/or the modification of existing roadway to function as a haul road, and cost. The constraints to implementation include the following:

- Increased opportunities for human labor accidents during construction operations (site safety concerns)
- Increased opportunities for vehicular accidents among haul trucks and local traffic (including transportation level of service concerns)
- Increased impacts to local roads
- Increased impacts to local air quality (fugitive dust) and increased sound disturbance
- Potential to impact jurisdictional wetlands and streams, cultural resources, and protected species from the construction of the new haul road(s) (expanded footprint)
- A natural disaster or catastrophic event beyond the control of Duke Energy (i.e., versus the opportunity for some control by Duke Energy if the event occurred on-site) could temporarily shut down project construction, which in turn would affect project schedule/completion date
- Increased project construction costs

4.4 AVOIDANCE AND MINIMIZATION OF IMPACTS

Appropriate and practicable steps to minimize potential adverse impacts to wetlands and streams were considered through analysis of the development concepts during project planning for the ash haul route at H.F. Lee Energy Complex. The complete avoidance of waters of the US is not practicable for the necessary construction and improvements to the existing onsite road. The haul road construction is necessary to allow for the ultimate excavation and disposal of CCR materials at the H.F. Lee Energy Complex.

All development projects in North Carolina that disturb an acre or greater of land require an approved Erosion & Sediment Control (E&SC) Plan. E&SC Plans must be produced in accordance with the *North Carolina Erosion and Sediment Control Planning and Design Manual*, dated May 2013. This manual includes best management practices (BMPs) for reducing erosion and sedimentation during construction. This requires proper site preparation techniques, surface stabilization, runoff control measures, diffuse flow through the riparian buffer, inlet and outlet protection, and stream protection. Wayne County relies upon the NCDEQ Raleigh Regional Office to oversee and enforce their federal soil and erosion control

requirements for new construction. The ash haul route project at the H.F. Lee Energy Complex Plant will be completed in accordance with the NCDEQ Raleigh Regional Office water quality rules and regulations.

The proposed STAR[®] Technology located at the terminus of the haul has been designed to be constructed entirely in uplands therefore completely avoiding impacts to jurisdictional wetlands and/or and streams.

The proposed haul road design to access the inactive ash basins is in the preliminary phase and is currently a conceptual design. No impacts to jurisdictional wetlands and/or streams in the vicinity of the inactive ash basins are anticipated for the inactive basins haul road.

The proposed powerline construction includes a 30-foot right-of-way that will be maintained in an herbaceous state. Construction of the powerline right-of-way will result in 0.039 acre of a forested wetland converted to an herbaceous wetland. No permanent impacts resulting from fill placed in wetland areas is proposed.

5.0 WATERS OF THE UNITED STATES

5.1 OVERVIEW

The construction of the Haul Road project area will result in impacts to waters of the US (jurisdictional wetlands and streams) within the affected environment of the H.F. Lee Energy Complex. The waters of the US within the affected environment of the H.F. Lee Energy Complex are discussed in this section. In addition, relevant background information is presented and includes natural resources and physical features that occur within the plant property and the affected environment. The topics include land use, geology and topography, soils, terrestrial communities, wetlands, streams, riparian buffers, open waters, floodplains, surface waters, and groundwater.

5.2 RELEVANT BACKGROUND INFORMATION

5.2.1 Land Use

The 920-MW H.F. Lee Energy Complex comprises a natural gas-fired combined cycle plant and four Wayne County oil-fueled combustion turbine units. The plant property comprises the following features: power generation plant and associated operations buildings, trailers, sheds, and parking areas; electrical power transmission line corridors; paved and unpaved roadways; materials and equipment yard; cooling lake, also known as Quaker Neck Lake; three inactive ash basins; the 1982 active ash basin, to be abandoned; maintained areas, grassed and/or landscaped; natural vegetated areas, including forested uplands and wetlands, as well as shrub and brushland; stream features; and a manmade Discharge Canal. Forested areas abut portions of the property boundaries. The Neuse River passes through the property from west to east, and borders the eastern-southeastern property boundary. Surrounding land use includes low-density residential and agriculture (improved pasture and row crops). The plant property is accessed from the north by Old Smithfield Road, or from the south by Black Jack Church Road.

Affected Environment

The Haul Road and Haul Road Extension project areas encompasses forested upland areas, shrub and brushland, utility rights-of-way, open areas, roadway, forested wetland areas, streams, and a manmade Discharge Canal.

5.2.2 Geology and Topography

The H.F. Lee Energy Complex is in the Inner Coastal Plain Physiographic Region of North Carolina, and generally lies within the Southeastern Floodplains and Low Terraces Level IV Ecoregion of North Carolina. With respect to geologic formations, the plant property is in the Pre-Mesozoic Basement (sedimentary rock), which dates from the Cretaceous Period and Mesozoic Era, and primarily encompasses the Cape Fear Formation (sandstone and sandy mudstone) and the Black Creek Formation (lignitic sand and clay) (North Carolina Geologic Survey [NCGS] 1985). The Black Creek Formation is limited to the eastern half of the property. Felsic metavolcanic rock (Eastern Slate Belt) also occurs within the central portion of the property. Topography across the plant property ranges from approximately 75 to 120 feet above mean sea level.

Affected Environment

The Haul Road and Haul Road Extension project areas lie between approximately 65 to 100 feet above mean sea level. The Project will have no effect on the local geologic features of the property but will alter the topography as contours will be redesigned to complete the proposed site activities. These alterations to site topography are not presumed to be substantial as the area of affect encompasses previously disturbed topography.

5.2.3 Soils

Figure 3 depicts the soil types (map units) occurring within the Haul Road and Haul Road Extension project areas of the H.F. Lee Energy Complex. The soil types are presented in **Table 1** below. Among the eleven soil types that occur within the project areas (excluding water classification), eight are listed as hydric map units (NRCS 2018a). The non-hydric soil types are Goldsboro loamy sand (Go), Norfolk loamy sand, 0 to 2 percent slopes (NoA), and Ruston loamy sand, 0 to 2 percent slopes (RuA).

Table 1. Soil Types Occurring within the Haul Road and Haul Road Extension Project Areas, H.F. Lee Energy Complex, Wayne County, North Carolina.

Soil Type	Map Unit Symbol	Hydric / Non-hydric
Haul Road Project Area		
Chewacla loam	Ch	Hydric
Coxville loam	Co	Hydric
Goldsboro loamy sand	Go	Non-hydric
Johns sandy loam	Jo	Hydric
Kinston loam	Kn	Hydric
Leaf loam	Le	Hydric
Myatt very fine sandy loam	My	Hydric
Norfolk loamy sand, 0 to 2 percent slopes	NoA	Non-hydric
Ruston loamy sand, 0 to 2 percent slopes	RuA	Non-hydric
Ruston loamy sand, 2 to 6 percent slopes, eroded	RyB2	Hydric
Water	W	---
Haul Road Extension Project Area		

Chewacla loam	Ch	Hydric
Kalmia loamy sand, 2 to 6 percent slopes	KaB	Hydric
Kinston loam	Kn	Hydric
Johns sandy loam	Jo	Hydric

Affected Environment

Hydric soils encompass the majority of the Haul Road project area and all of the Haul Road Extension project area (see **Figure 3** and **Table 1**). The non-hydric soil types, Ruston loamy sand (RuA), Goldsboro loamy sand (Go), and Norfolk loamy sand (NoA) occur within the southern half of the Haul Road project area.

5.2.4 Terrestrial Communities

The dominant, forested, terrestrial communities on the H.F. Lee Energy Complex are upland hardwood forest and mixed pine-hardwood upland forest. Forested wetland communities include bottomland hardwood forest, riverine swamp forest, headwater forest, hardwood flat, and basin wetland. Shrub and brushland and herbaceous areas also occur on the property, which encompass disturbed/alterd land within the plant property, particularly electrical power transmission line corridors. Open areas include maintained areas, which are typically grassed and/or landscaped. Information on the terrestrial communities and species composition within the Haul Road and Haul Road Extension project areas is discussed below.

Affected Environment

The forested upland terrestrial communities within the Haul Road and Haul Road Extension project areas include upland hardwood forest and/or mixed pine-hardwood upland forest. The canopy stratum of the upland hardwood forest includes sweetgum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), willow oak (*Quercus phellos*), water oak (*Quercus nigra*), yellow poplar (*Liriodendron tulipifera*), and sugarberry (*Celtis laevigata*). The shrub stratum consists of American holly (*Ilex opaca*), sourwood (*Oxydendrum arboreum*), blueberry (*Vaccinium* sp.), and saplings of red maple and sweetgum. The groundstory vegetation comprises common greenbrier (*Smilax rotundifolia*), muscadine (*Vitis rotundifolia*), Virginia creeper (*Parthenocissus quinquefolia*), poison ivy (*Toxicodendron radicans*), Japanese honeysuckle (*Lonicera japonica*), Christmas fern (*Polystichum acrostichoides*), and hardwood seedlings. The mixed pine-hardwood upland forest includes plant species that are common to the upland hardwood forest, with the addition of loblolly pine (*Pinus taeda*) in the canopy and midstory. The shrub and brushland and herbaceous areas essentially encompass the electrical power transmission line corridors that traverse the project areas. The vegetation consists of a moderate assemblage of species, including common greenbrier, muscadine, Virginia creeper, poison ivy, Japanese honeysuckle, lespedeza (*Lespedeza* sp.), blackberry (*Rubus* sp.), dogfennel (*Eupatorium capillifolium*), panic grasses (*Panicum* spp.), partridge-pea (*Chamaecrista* sp.), rattlebox (*Sesbania* sp.), thoroughwort (*Eupatorium* sp.), vervain (*Verbena* sp.), and croton (*Croton* sp.),

and hardwood seedlings. Botanical taxonomic nomenclature is in accordance with Weakley (Weakley 2015).

The forested wetland communities within the Haul Road and Haul Road Extension project areas include a low to moderate assemblage of species. The canopy stratum includes red maple, sweetgum, river birch (*Betula nigra*), sweetbay (*Magnolia virginiana*), water oak, willow oak, yellow poplar, sycamore (*Platanus occidentalis*), black gum (*Nyssa sylvatica*), and/or black willow (*Salix nigra*). Loblolly pine (scattered occurrences) is present in some of the wetlands. The shrub stratum consists of highbush blueberry (*Vaccinium corymbosum*), American holly, horseshoe (*Symplocos tinctoria*), and/or saplings of the aforementioned hardwood species. The groundstory vegetation comprises of sedges (*Carex* spp.), spikegrass (*Chasmanthium sessiliflorum*), switchcane (*Arundinaria tecta*), coastal white-alder (*Clethra alnifolia*), maiden fern (*Thelypteris* sp.), common greenbrier, muscadine, poison ivy, Japanese honeysuckle, and/or hardwood seedlings. Within the wetter wetland areas (including electrical power transmission line corridors), the vegetation additionally includes soft rush (*Juncus effusus*), lizard's-tail (*Saururus cernuus*), false-nettle (*Boehmeria cylindrica*), broadleaf arrowhead (*Sagittaria latifolia*), climbing hempweed (*Mikania scandens*), meadow-beauty (*Rhexia mariana*), and woolgrass (*Scirpus cyperinus*).

5.2.5 Wetlands

Waters of the US, including ponds, streams, and wetlands, are defined by 33 CFR Part 328.3 *et al.* and are protected by Section 404 and other applicable sections of the CWA (33 US Code [USC] 1344). Impacts to regulated resources under Section 404 of the CWA are administered and enforced by the USACE Wilmington District.

On September 29, October 1 and 2, and December 11 and 12, 2014, and from April 14 through April 17, April 20 through April 24, and May 12 through May 15, 2015, on-site evaluations for the presence of potentially jurisdictional surface waters within the H.F. Lee Energy Complex were conducted. Potentially jurisdictional wetland areas were delineated (flagged) using the Routine On-Site Determination Method as defined in the USACE Wetland Delineation Manual¹ and the Eastern Mountains and Piedmont regional supplement². This technique uses a multi-parameter approach which requires positive evidence of three criteria: hydrophytic vegetation, hydric soils, and wetland hydrology. Areas exhibiting wetland characteristics within the station boundary were considered potentially jurisdictional waters. The landward limits of wetlands were subsequently marked in the field with labeled survey tape tied to vegetation or stakes. The location of each flag point was acquired by a Global Positioning System device.

As part of the 2015 jurisdictional waters evaluation, an in-house review of the US Department of Agriculture's Natural Resources Conservation Service (NRCS) Wayne County Soil Survey GIS data (**Figure 3**) (NRCS 2018), and the US Geological Survey (USGS) digital 7.5' topography (**Figure 5**); Northwest and Southwest Goldsboro, North Carolina Quadrangles) (USGS 2018).

¹ Environmental Laboratory. 1987. "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1. US Army Engineer Waterways Experiment Station. Vicksburg, MS.

² Environmental Laboratory. 2012. "Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0)," Technical Report ERDC/EL TR-12-9. US Army Engineer Waterways Experiment Station. Vicksburg, MS.

These maps were used to direct the on-site investigation and highlight areas having listed hydric soils or topographic configurations suggesting the presence of wetlands or streams.

A request for Verification of Jurisdictional Determination (JD) was submitted to the USACE Washington Regulatory Field Office for the delineated wetland areas within the H.F. Lee Energy Complex. This request for Verification of JD included the work areas within the Project area. Mr. Chet Bigelow and Mr. Bill Biddlecombe of the USACE conducted a site inspection of the H.F. Lee Energy Complex on April 1 and 21, 2015. Mr. Gary Beecher of the USACE conducted site inspections on March 22, July 20, and September 20, 2016. The USACE has not issued an Approved JD at this time. The landward limits of the jurisdictional wetlands (flag points) within the property were surveyed by McKim & Creed, a registered Professional Land Surveyor.

Based on the field approved jurisdictional feature delineation, four jurisdictional wetland areas occurred within or adjacent to the Haul Road project area and four jurisdictional wetland areas occurred within or adjacent to the Haul Road Extension project area. (**Figure 4**). Three of these wetlands were classified as headwater forest wetlands, three were classified as bottomland hardwood forest wetlands, one was classified as a hardwood flat, and one wetland was classified as a basin wetland. The classifications of these wetlands were based on the North Carolina Wetland Assessment Method (NC WAM) per the methodology outlined in the NC WAM *User Manual*³ (Version 5), effective February 2016. The level of function of each on site wetland (relative to reference condition) was assessed using NC WAM on August 22, 2018. Information on the size, NC WAM classification, and riparian nature of the wetlands within the project areas is presented in **Table 2**. The USACE Atlantic and Gulf Coastal Plain Region Wetland Determination Data Forms for these wetland areas were included in the Verification of JD request package previously submitted to the USACE. The NC WAM Wetland Assessment Forms for wetlands proposed to be impacted are in **Appendix B**.

Table 2. Wetlands within the Haul Road and Haul Road Extension Project Areas, H.F. Lee Energy Complex, Wayne County, North Carolina.

Wetland ID	NC WAM Classification	Size (acres)	Riparian / Non-riparian
Haul Road Wetland Areas			
Wetland E	Hardwood Flat	33.08	Non-riparian
Wetland F	Basin	1.42	Non-riparian
Wetland PP	Bottomland Hardwood Forest	3.44	Riparian
Wetland RR	Headwater Forest	0.75	Riparian
Haul Road Extension Wetland Areas			
Wetland K	Bottomland Hardwood Forest	13.03	Riparian

³ N.C. Wetland Functional Assessment Team. 2010. "N.C. Wetland Assessment Method (NC WAM) User Manual, Version 4.1". North Carolina Wetland Functional Assessment Team. Raleigh, NC.

Wetland ID	NC WAM Classification	Size (acres)	Riparian / Non-riparian
Wetland BB	Bottomland Hardwood Forest	0.73	Riparian
Wetland WWB	Headwater Forest	0.03	Riparian
Wetland WWAA	Headwater Forest	0.41	Riparian
Total Acreage		52.89	

5.2.6 Streams

Potential jurisdictional streams on the H.F. Lee Energy Complex were evaluated during the on-site wetland evaluation timeframe using the NCDEQ Division of Water Resources (NCDWR) *Methodology for Identification of Intermittent and Perennial Streams and Their Origins*⁴ (Version 4.11), effective September 1, 2010. The extents of these streams were delineated and included in the request for Verification of JD to the USACE Raleigh Washington Field Office. The USACE has not issued an Approved JD at the time of this report. The landward limits of the jurisdictional streams (flag points) within the station property were surveyed by McKim & Creed.

Based on the field approved jurisdictional feature delineation, three jurisdictional streams occurred within or adjacent to the Haul Road project area and two jurisdictional streams occur within or adjacent to the Haul Road Extension project area. (**Figure 4**). The NCDWR Stream Identification scores and classifications and the USACE Stream Quality Assessment Worksheet scores are presented in **Table 3** for these 5 streams.

Affected Environment

Based on the field approved jurisdictional feature delineation, the Haul Road project area included two perennial streams (the Neuse River and the Discharge Canal) and one intermittent stream (Stream 19). The Haul Road Extension project area includes one perennial stream (Streams 5) and one intermittent stream (Streams 9) (as shown on **Figure 4**). The level of function of each stream (relative to reference condition) was assessed on July 17, 2018 and August 22, 2018 by Wood using the North Carolina Stream Assessment Method (NC SAM) per the methodology outlined in the NC SAM *Draft User Manual*⁵, effective March 2013. Information on the reach length, NCDWR Stream Identification score and classification of these streams is presented in **Table 3**. The NCDWR Stream Identification Forms for these streams were included in the Verification of JD request package previously submitted to the USACE. The NC SAM Stream Assessment Forms for the streams are in **Appendix B**.

⁴ North Carolina Division of Water Quality. 2010. "Methodology for Identification of Intermittent and Perennial Streams and their Origins, Version 4.11". North Carolina Department of Environment and Natural Resources, Division of Water Quality. Raleigh, NC.

⁵ N.C. Stream Functional Assessment Team. 2013. "N.C. Stream Assessment Method (NC SAM) Draft User Manual". North Carolina Stream Functional Assessment Team. Raleigh, NC.

Table 3. Streams within the Haul Road and Haul Road Extension Project Areas, H.F. Lee Energy Complex, Wayne County, North Carolina.

Stream ID	NCDWR Stream Score ¹	NCDWR Stream Classification ¹
Neuse River	----	Perennial
Discharge Canal	----	Perennial
Stream 5	31	Perennial
Stream 9	----	Intermittent
Stream 19	23	Intermittent

¹ NCDWR scoring: <19= ephemeral; 19 to <30 = intermittent; ≥30 = perennial

Streams 5 and 9 flow into the Neuse River. Stream 19 flows into the wetland RR. The USGS digital 7.5' topography map (**Figure 5**) depicts the Neuse River and the Discharge Canal. The NRCS Wayne County Soil Survey (hardcopy version) (NRCS 1974) depicts the Neuse River and the Discharge Canal. The H.F. Lee Energy Complex is located within the Neuse River Basin (Hydrologic Unit Code [HUC] 03020201).

5.2.7 Riparian Buffers

The H.F. Lee Energy Complex is in the Neuse River Basin and, therefore, is subject to the NCDEQ Neuse River Riparian Buffer Rules. The Rules are published in the State's administrative code at 15A NCAC 2B .0233. The Rules establish a 50-foot wide riparian buffer adjacent to surface waters in the Neuse River Basin (intermittent streams, perennial streams, lakes, ponds, and estuaries), excluding wetlands. For the purpose of the Rules, a surface water shall be present if the feature is approximately shown on either the most recent version of the soil survey map prepared by the NRCS or the most recent version of the 1:24,000 scale (7.5 minute) quadrangle topographic maps prepared by the USGS. Riparian buffers adjacent to surface waters that do not appear on either of the maps may not be subject to the Rules.

According to Section 78-95 (Protecting Riparian Buffers) of the Wayne County Code of Ordinances (Wayne County 2018), riparian areas must be protected on new developments in accordance with the Riparian Buffer Rules (15A NCAC 2B .0233). The county rule requires protecting and maintaining the 50-foot riparian buffers on all sides of intermittent and perennial streams, ponds, lakes, and estuaries in the Neuse River Basin. The county will refrain from issuing local approvals for new development activity that is proposed to take place within the first 50 feet adjacent to an affected water body, unless:

- (1) The person requesting the approval does not propose to impact the riparian buffer of a surface water indicated on the NRCS or USGS maps or

(2) The property owner had received approval by NCDWR. NCDWR approval could be:

- a. an on-site determination from NCDWR that surface waters are not present;
- b. an authorization certificate for a use designated as allowable;
- c. an authorization certificate and approval of a mitigation plan for a use designated as allowable with mitigation; or
- d. a variance.

Affected Environment

There will be no Neuse River Riparian Buffer impacts within the Haul Road and Haul Road Extension project areas. The Neuse River Intake and Power Line Crossing for Dust Control Facilities will impact areas of the Neuse River Riparian Buffers.

Table 4. Proposed Impacts to Riparian Buffers within the Haul Road project, H.F. Lee Energy Complex Plant, Wayne County, North Carolina.

Stream Name *	Reason for Impact *	Buffer Mitigation Required (Yes/No)	Zone 1 Impact (Acres)	Zone 1 Impact (Sq. Feet)	Zone 2 Impact (Acres)	Zone 2 Impact (Sq. Feet)	Z1+Z2 Total Impact (Acres)	Z1+Z2 Total Impact (Sq. Feet)
Powerline Crossing and Intake Pipe for Dust Control Facilities								
Neuse River	Powerline Crossing	No	0.123	5,358	0.082	3,572	0.205	8,390
Neuse River	Intake Pipe	No	0.034	1,481	0.019	828	0.053	2,309

5.2.8 Open Waters

No jurisdictional ponds or lakes were delineated within the H.F. Lee Energy Complex. The cooling lake (Quaker Neck Lake) is covered under the plant's National Pollutant Discharge Elimination System (NPDES) permit. Waterbodies are shown on the USGS topographic map and include the 1982 active ash basin, the cooling lake, and features within the inactive ash basins (**Figure 5**). However, these waterbodies occur outside the working limits of the Haul Road and Haul Road Extension project areas. The cooling lake and an ash sluice pond are depicted within the H.F. Lee Energy Complex on the NRCS Wayne County Soil Survey (hardcopy version).

Affected Environment

Since no USACE (CWA Section 404) jurisdictional ponds or lakes are located within the H.F. Lee Energy Complex, there will be no open water impacts within the Haul Road and Haul Road Extension project areas.

5.2.9 Floodplains

Floodplain Management is conducted in compliance with Executive Order 11988. The National Flood Insurance Program (NFIP) was created in 1968 to protect lives and property and to reduce the financial burden of providing disaster assistance. The NFIP is administered by the Federal Emergency Management Agency (FEMA). In partnership with FEMA, the State of North Carolina has produced flood maps in accordance with FEMA standards. Wood reviewed Digital Flood Insurance Rate Maps (DFIRM) to determine whether any portion of the H.F. Lee Energy Complex lies within the regulatory 100-year floodplain (Flood Insurance Rate Map [FIRM] Panels 3720256800K and 3720258800K (effective date June 20, 2018, for both panels) (FEMA 2018). Based on this review, the majority of the plant property is within the regulated 100-year floodplain, except for the central portion of the site around the combustion turbine facilities (**Figure 6**).

Affected Environment

The review of the FEMA DFIRM delineated flood boundaries identified that jurisdictional waters within the Haul Road project area lie within the 100-year flood zone (**Figure 6**). These jurisdictional waters include the Neuse River, the Discharge Canal, and Stream 19. Wetlands PP and RR lie within the 100-year flood zone, while Wetlands E and F do not. The southern half of the Haul Road project area does not lie within the 100-year flood zone. All of the Haul Road Extension project area, including Streams 5 and 9 and Wetlands K, BB, WWB, and WWAA, lie within the 100-year flood zone.

Wood also reviewed the Wayne County Code of Ordinances for local government requirements for work in floodplains (Wayne County 2018). A Floodplain Development Permit is typically required under the provisions of Chapter 38 (Flood Prevention) of the Code of Ordinances prior to the commencement of any development activities within Special Flood Hazard Areas determined in accordance with the provisions of the ordinance (Wayne County 2018). The application for the Floodplain Development Permit must be submitted for review by the county before development activity begins. Work conducted within the 100-year floodplain requires review/consultation with the Wayne County Floodplain Administrator. Consultation between Wayne County regulatory staff and the permit applicant would confirm whether a Floodplain Development Permit would be required for work conducted within and limited to the Haul Road and Haul Road Extension project areas.

5.2.10 Surface Waters

Surface waters include streams, rivers, lakes, and reservoirs. The H.F. Lee Energy Complex is located entirely within the Neuse River Basin (NCDEQ 2018a) and the Inner Coastal Plain Physiographic Region. Quaker Neck Lake occurs within the eastern half of the plant property. The Neuse River passes through the property from west to east and borders the eastern-southeastern property boundary. The surface water classification listed for the Neuse River on

the most recent NCDEQ surface water data (NCDEQ 2018b), as it occurs within the H.F. Lee Energy Complex, is “WS-IV (Water Supply IV), NSW (Nutrient Sensitive Waters)”. The WS-IV classification includes waters used as sources of water supply for drinking, culinary, or food processing purposes where a WS-I, II or III classification is not feasible. These waters are also protected for Class C uses. WS-IV waters are generally in moderately to highly developed watersheds or Protected Areas. This classification of the Neuse River encompasses the portion of the river that extends from Richardson Bridge Road (State Route 1201) to a point 0.8 mile upstream of Little River. The NSW classification is a supplemental classification intended for waters needing additional nutrient management due to being subject to excessive growth of microscopic or macroscopic vegetation. The manmade Discharge Canal is also classified as WS-IV, NSW. The portion of the Neuse River that occurs within the H.F. Lee Energy Complex is not listed as impaired; i.e., it is not included on the “2016 Final 303(d) List” of impaired waters (NCDEQ 2018c).

Affected Environment

Surface waters within the Haul Road project area include the Neuse River, the Discharge Canal, and Stream 19. The Discharge Canal is confluent with the Neuse River at the northern and southern reaches of the river within the H.F. Lee Energy Complex. Stream 19 flows into Wetland RR. Surface waters within the Haul Road Extension project area include Streams 5 and 9. Both streams flow into the Neuse River.

5.2.11 Groundwater

Groundwater refers to subsurface hydrologic resources that are used for domestic, agricultural, and industrial purposes. Groundwater is stored in natural geologic formations called aquifers. In the Piedmont Physiographic Region of North Carolina, two major aquifer systems exist and usually interact with one another (NCDEQ 2018d) [unconfined aquifer and surficial aquifer]. The surficial materials or regolith of these provinces form the unconfined aquifer. The fractured rock beneath is the unconfined, to semi-confined, bedrock aquifer. The surficial aquifer typically feeds the fractures in the bedrock aquifer. These two aquifers are further described below (NCDEQ 2018d).

Surficial aquifer: This aquifer is widely used throughout the state for individual home wells. The surficial aquifer is the shallowest and most susceptible to contamination from septic tank systems and other pollution sources. The surficial aquifer is also sensitive to variations in rainfall amounts; i.e., they are the first to go dry in a drought.

Fractured bedrock aquifer: This aquifer is widely used for home water supply. Usually six-inch wells are drilled to intercept water bearing fractures which are more common in valleys or draws.

Affected Environment

The proposed action will not draw water from subsurface/groundwater sources. Therefore, the construction of the Haul Road and Haul Road Extension projects should have no pronounced effect on the surficial aquifer or the fractured bedrock aquifer.

6.0 PROPOSED IMPACTS TO WATERS OF THE UNITED STATES

6.1 EXTENT OF IMPACTS

Wetlands E, F, K, BB, PP, RR, WWB, and WWWA and Streams 5, 9, and 19, the Neuse River, and the Discharge Canal occur within the Haul Road and Haul Road Extension project areas. Western portions of Wetland E will be affected by construction of the haul road. Eastern portions of Wetland BB will be affected by construction of the powerline for the Neuse River Water Intake. This impact consists of permanent conversion of forested wetland to emergent wetland for the proposed powerline corridor. Western portions of Wetland BB will temporarily impacted by the placement of temporary timber matting necessary to provide access for tree removal. No permanent fill impacts to Wetland BB are proposed. No impacts to wetlands or streams are proposed for the Haul Road Extension project. Impacts to waters of the US from the H.F. Lee Haul Road construction operations are classified herein as permanent. **Tables 5A and 5B** present acreage values of the proposed impacts to jurisdictional wetlands within the Project areas. The permitdrawings of the Haul Road and Neuse River Water Intake and Powerline Crossing, including the work areas where the impacts to waters of the US will occur, are provided in **Appendix A**.

Table 5A. Proposed Impacts to Jurisdictional Wetlands for the Haul Road project, H.F. Lee Energy Complex Plant, Wayne County, North Carolina.

Resource Type	Proposed Impacts	
	Wetlands (acres)	NCWAM Overall Rating
Wetland E	0.583	High
Total	0.583	

Table 5B. Proposed Impacts to Jurisdictional Wetlands for the Neuse River Water Intake and Powerline Crossing for Dust Control Facilities, H.F. Lee Energy Complex Plant, Wayne County, North Carolina.

Resource Type	Proposed Impacts		
	Permanent Wetland Conversion (acres)	Temporary Wetland Impacts (acres)	NCWAM Overall Rating
Wetland BB	0.039	0.012	Low
Total	0.039	0.012	

6.2 CUMULATIVE IMPACTS

The USACE is required to determine both potential short-term and long-term effects of a proposed discharge of dredge and fill material on the physical, chemical, and biological components of an aquatic environment, including the effects of cumulative impacts. A review of potential cumulative impacts to waters of the US because of the construction of the Haul Road and Haul Road Extension indicates that the proposed discharge would have no significant adverse effects on the aquatic ecosystem. The rationale for this presumption is based on the following considerations:

- No contact water (i.e., water containing CCR materials) will be discharged into waters of the US (wetlands and streams); therefore, the water quality of downstream receiving waters, specifically H.F. Lee Energy Complex Lake, will not be impaired.
- The proposed impacts to the waters of the US from the Haul Road and Haul Road Extension construction should have no cumulative effect on the quality of other jurisdictional waters occurring within the H.F. Lee Energy Complex Plant or beyond the station property. This presumption is based on the review of environmental documentation regarding known current and past federal and non-federal actions at the steam station. Projects in the planning phase were also considered, including reasonably foreseeable (rather than speculative) actions that have the potential to interact with the proposed action. To have reasonable assurances that there would be cumulative effects to projects when considered together or incrementally, the projects need to occur within similar time frames and within a geographic area coinciding with the proposed action.

7.0 COMPENSATORY MITIGATION

7.1 MITIGATION REQUIREMENTS

On April 10, 2008, the Department of Defense, in conjunction with the EPA, issued Compensatory Mitigation for Losses of Aquatic Resources; Final Rule (33 CFR Parts 325 and 332; 40 CFR Part 230). This mitigation rule is designed to improve planning and management of compensatory mitigation projects for impacts which are authorized under Department of the Army permits. The rule stresses a watershed approach to mitigation project locations and requires ecological performance standards and annual monitoring of an implemented mitigation plan.

7.2 MITIGATION PLAN

Compensatory mitigation for the proposed impacts is required under the Section 404 IP. Appropriate avoidance and practicable minimization efforts have been conducted through the analysis of alternative stormwater redirection plan concepts. However, unavoidable impacts to on-site waters of the US are necessary to complete the proposed action. The details of the proposed compensatory mitigation plan for these unavoidable impacts are presented below for the preferred gravity flow alternative.

The compensatory mitigation options evaluated for the proposed action included: (1) credit purchase from an approved private mitigation bank or (2) credit purchase through the North Carolina Division of Mitigation Services In-Lieu Fee Program. Based on the review of the mitigation options available, it was determined that credit purchase through a private mitigation bank is necessary because private banks currently offer wetland credits with HUC 03020201 of the Neuse River Basin. On-site mitigation and off-site mitigation opportunities were not explored because the mitigation bank option was already available.

Wetland and stream mitigation credits are currently available through the private mitigation banker Wildland Holdings III, LLC (Wildlands Holdings). The H.F. Lee Energy Complex Plant occurs within HUC 03020201. **Table 6** presents the Wildlands Holdings mitigation costs for impacts to jurisdictional riparian wetlands. Fees for wetlands are calculated in tenth-acre increments. Mitigation ratios were applied as follows (final mitigation ratios will need to be confirmed by the USACE):

- A mitigation ratio of 1:1 was applied for riparian and non-riparian wetlands with a NC WAM overall rating of low or medium.
- A mitigation ratio of 2:1 was applied for riparian and non-riparian wetlands with a NC WAM overall rating of high.
- A mitigation ratio of 1:1 was applied for intermittent streams with a NC SAM overall rating of low or medium.

As the H.F. Lee Energy Complex is within the Neuse River Basin watershed where Riparian Buffer Rules are administered by the State of North Carolina. The proposed buffer impacts do not require mitigation based on the Neuse River Riparian Buffer Rule Table of Uses. Therefore, mitigation is not included in **Table 6** for impacts to riparian buffers. The cost estimates



presented below are preliminary estimates based on mitigation ratios that have not been verified by the USACE.

Table 6. Potential Mitigation Costs for Impacts to Waters of the US, Haul Road and Haul Road Extension Project Areas, H.F. Lee Energy Complex, Wayne County, North Carolina.

Fee Category	Features	Impact Total	Wildlands Holdings Unit Cost	Total Cost ¹
Riparian and Non-Riparian Wetland (Neuse HUC 03020201)	Wetland E (NC WAM High Rating)	0.583 acre (2:1 ratio; 1.2-acre level)	\$75,000	\$90,000
Total				\$90,000

¹ Total cost not approved by the USACE or NCDWR as of this draft.

8.0 PROTECTED SPECIES

8.1 BACKGROUND

Certain plant and animal species are protected by the Federal Endangered Species Act (ESA) of 1973 (16 USC 1531-1544, December 28, 1973, as amended 1976–1982, 1984, and 1988), which is administered and enforced by the US Fish and Wildlife Service (USFWS), Region 4. USACE IP and Nationwide Permit General Condition 11 require that projects authorized by the USACE do not adversely affect federally protected species. Should a finding of adverse effect be presumed by the USACE, coordination with the USFWS is typically required to avoid impacts or minimize impacts to the practicable extent (Section 7 Consultation).

A records search was conducted to identify documented federally protected species (threatened or endangered) and federal Species of Concern which have elemental occurrences in Wayne County. As specifically related to the North Carolina Natural Heritage Program (NCNHP) database search, the query of elemental occurrences encompassed a one-mile radius of the Haul Road and Haul Road Extension project areas. Both federal and state databases were reviewed:

- NCNHP database query request (NCNHP 2018)
- USFWS Information for Planning and Conservation (IPaC) database (USFWS 2018a)
- USFWS Environmental Conservation Online System (ECOS) (USFWS 2018b)
- Raleigh Ecological Services Field Office website (USFWS 2018c)

The purpose of the records search was to determine whether federally listed plant and animal species or designated critical habitat may be near the H.F. Lee Energy Complex and, specifically, near the Haul Road and Haul Road Extension project areas. **Table 7** presents the results of the records search for Wayne County. Known habitats used by the species listed in **Table 7** were compared with the habitats occurring within the Project area to determine the potential for occurrence for each species and the potential for effect that the implementation of the proposed site activities would have on these species. Specifically, the potential for effect that the site activities would have on the species listed in **Table 7** was based on the following factors:

- A comparison of the known habitat uses by these species
- The habitats (if present) within the plant property
- The quantity, quality, and proximity of these habitats
- Observations of these species or their sign during field reconnaissance
- The proposed site activities (construction materials and equipment)

Table 7. Potential for Effect for Federally Listed Animal and Plant Species within the Haul Road and Haul Road Extension project areas, H.F. Lee Energy Complex, Wayne County, North Carolina.

Common Name (<i>Scientific Name</i>)	Federal Status	General Habitat Description	Potential for Effect
Birds			
Bald eagle (<i>Haliaeetus leucocephalus</i>)	BGEPA	Forested habitats for nesting and roosting, and expanses of shallow fresh or salt water for foraging. Nesting habitat generally consists of densely forested areas of mature trees that are isolated from human disturbance.	May affect, but not likely to adversely affect
Red-cockaded woodpecker (RCW) (<i>Picoides borealis</i>)	E	Mature pine forests, specifically those with longleaf pines (<i>Pinus palustris</i>) averaging 80 to 120 years old and loblolly pines (<i>Pinus taeda</i>) averaging 70 to 100 years old. Pine trees with red-heart disease are preferred for cavity nesting. Suitable foraging habitat typically exhibits sparse understory (minimal hardwood regeneration). Fire (control burning) is important in maintaining suitable foraging and nesting habitat.	No Effect
Mollusks			
Tar River spiny mussel (<i>Parvaspina steinstansana</i>)	E	Relatively silt-free un-compacted gravel and/or coarse sand in fast-flowing, well oxygenated stream reaches.	No Effect
Yellow lance (<i>Elliptio lanceolata</i>)	T	Clean, moderate flowing water with high dissolved oxygen content in riverine or larger creek environments.	No Effect

Sources: NCNHP List of Rare Species of North Carolina; USFWS IPaC; USFWS Environmental Conservation Online System - Species Profiles; County list (USFWS Raleigh Ecological Services); NatureServe Explorer.
Codes: E = Endangered; T = Threatened; BGEPA = Bald and Golden Eagle Protection Act.

8.2 AFFECTED ENVIRONMENT

Wood conducted a general field reconnaissance of the Haul Road and Haul Road Extension project areas on August 22, 2018. No federally species for Wayne County were observed during the field reconnaissance. There were no reported elemental occurrences of federally listed species within the Project area based on the results of the NCNHP database query (August 5, 2018). The NCNHP report is included in **Appendix C**. The results of the August 22, 2018 query of the USFWS IPaC database are also included in **Appendix C**.

Although no longer afforded protection by the ESA as of June 29, 2007, the bald eagle is still protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act, both of which protect bald eagles by prohibiting killing, selling or otherwise disturbing eagles, their nests, or eggs. Habitats include riparian areas along the coast and near major rivers,

wetlands, and reservoirs. Bald eagles typically nest in large, tall, open-topped pines near open waters. They feed primarily on fish, but will also take a variety of birds, mammals, and turtles. The cooling lake (Quaker Neck Lake) and the Neuse River, located along the southern edge of the 1982 active ash pond and the eastern edge of the inactive ash basins, provide suitable foraging habitat, and large pine trees within the forested habitat could provide suitable roosting or nesting habitat. No eagle nests are known to occur, or have been observed, within the Project area, however. With these considerations, the potential for effect for the bald eagle within the Project area was determined to be “may affect, but not likely to adversely affect”.

Red-cockaded woodpecker (RCW) habitat includes forests with trees old enough for roosting, generally at least 60 to 120 years old, depending on species of pine. For nesting and roosting habitat, the RCW needs open stands of pine containing trees 60 years old and older. The species uses live, large older pines in which to excavate their cavities. Longleaf pines are preferred, but other species of southern pine are also acceptable. Dense stands (stands that are primarily hardwoods, or that have a dense hardwood understory) are avoided. Foraging habitat is provided in pine and pine-hardwood stands 30 years old or older with foraging preference for pine trees 10 inches or larger in diameter. In good, moderately-stocked, pine habitat, sufficient foraging substrate can be provided on 80 to 125 acres. Roosting cavities are excavated in living pines, and usually in those which are infected with a fungus known as red-heart disease. Hardwood midstory encroachment substantially lowers the potential for roosting opportunities. Prescribed burning is the most efficient and ecologically beneficial method to accomplish hardwood midstory control. The quality of the existing habitat within, and surrounding, the Project area is substantially less than suitable, or not present, for the RCW. The forested habitat includes upland hardwood forest, mixed pine-hardwood upland forest, and wetland communities. Very few large pines exist, and a moderately dense hardwood canopy and understory are present. Therefore, the potential for occurrence of the RCW (i.e., foraging or roosting) is presumed to be unlikely. With these considerations, the potential for effect for the RCW within the Project area was determined to be “no effect”.

The Tar River spiny mussel prefers relatively silt-free un-compacted gravel and/or coarse sand in fast-flowing, well oxygenated stream reaches. The species is found in association with other mussels, but it is never very numerous. It feeds by syphoning and filtering small food particles that are suspended in the water. There are no streams within the Project area that could be considered suitable habitat for this mussel species. The stream habitat limiting factors include stream length and stream quality. Because of the limited stream size, and the inherent low quality of the stream substrate, it is presumed that the streams within the Project area cannot support reproductive populations of the species. The substrate of the stream reaches within the Project area is sand and/or silt, and the waters are not fast-flowing. Finally, the Neuse River will not be impacted under the proposed action. With these considerations, the potential for effect for the Tar River spiny mussel within the Project area was determined to be “no effect”.

The yellow lance is typically found in clean, coarse to medium sand and sometimes migrating with shifting sands, although it has also been found in gravel substrates. Additionally, the species is often found in sand at the downstream end of stable sand/gravel bars, and sometimes near the edge of water within inches of exposed substrate. The species is dependent on clean (i.e., not polluted), moderate flowing water with high dissolved oxygen content in riverine or larger creek environments. There are no streams within the Project area that could be considered suitable habitat for this mussel species. The stream habitat limiting

factors include stream length and stream quality. Because of the limited stream size, and the inherent low quality of the stream substrate, it is presumed that the streams within the Project area cannot support reproductive populations of the species. The substrate of the stream reaches within the Project area is fine sand and/or silt, with no gravel. Finally, the Neuse River will not be impacted under the proposed action. With these considerations, the potential for effect for the yellow lance within the Project area was determined to be “no effect”.

9.0 CULTURAL RESOURCES

9.1 BACKGROUND

Section 404 of the CWA requires that projects authorized by the USACE do not adversely affect historical properties which are listed or eligible for listing on the National Register of Historic Places (NRHP). Cultural resources are protected by Section 106 of the National Historic Preservation Act.

The Section 106 process consists of consultation with state and federal agencies, consultation with Native American tribes by the lead federal agency, and the identification and evaluation of cultural resources for inclusion in the NRHP. Section 106 of the National Historic Preservation Act, 36 CFR Part 800 (as amended), requires that impacts to cultural resources (archaeological sites and historic structures/properties) be considered during a federal undertaking or when a federal permit is needed for a project. Impacts to cultural resources are regulated by the lead federal agency in cooperation with the North Carolina State Historic Preservation Office (NCSHPO). For a cultural resource to be listed on the National Register of Historic Places (NRHP), it must meet at least one of the following four criteria for significance:

- Associated with events that have made a significant contribution to broad patterns of history
- Associated with the lives of persons significant in our past
- Embodies the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction
- Have yielded, or may be likely to yield, information important in prehistory or history

Wood conducted a cultural resource screening to assess the presence/absence of known cultural resources and NRHP-listed resources within a half-mile search radius of the Duke H.F. Lee Energy Complex Haul Road and Haul Road Extension project areas. The research included a review of the online NCSHPO Web GIS Service (NCSHPO 2018) (<http://gis.ncdcr.gov/hpoweb/>). The investigation did not include field efforts to identify or verify cultural resources identified by the online NCSHPO Web GIS Service, and no visits to the NCSHPO office or formal coordination with the NCSHPO office was included in this review. The May 26, 2015 Natural Resources Technical Report prepared by Wood for the H.F. Lee Energy Complex included both a review of archaeological files at the NCSHPO office and the online NCSHPO Web GIS Service (<http://gis.ncdcr.gov/hpoweb/>).

According to the North Carolina Office of State Archaeology records reviewed during a visit to the NCHPO office for the previously mentioned 2015 report, the study area has not been formally surveyed for archaeological resources. Three sites have been identified within the H.F. Lee Complex. As a part of the permit process, required and routine consultation with the NCSHPO under Section 106 of the CWA will be undertaken by the USACE Wilmington District.

9.2 AFFECTED ENVIRONMENT

A 2018 review of the state files for architectural resources available online demonstrated that eighteen sites were identified as being near or within one half mile of the H.F. Lee Energy Complex Haul Road and Haul Road Extension project areas. Please see **Figure 7** and **Table 8**. According to the NCSHPO office's GIS Services web site, three architectural sites are located within a 2.5-mile radius of the project area. WY 0365 is the Neuse Quaker Meeting House. It is a circa 1800 frame Quaker church. It has been surveyed but has no status. The Lafayette Sasser House is listed as WY 0034 in the NCSHPO records. It has been surveyed but has no status. Just north of this site is WY 0595, identified as a house. It has been surveyed but has no status.

These three sites are outside the Area of Potential Effect for the Project areas due to distance from the Project areas. If federal permits are required as part of future project plans, required consultation with the NCSHPO may result in a request for a Phase IA archaeological survey for portions of the Project areas not previously surveyed.

According to the North Carolina Office of State Archaeology records consulted in 2015 for the above referenced Natural Resources Technical Report, the H.F. Lee Energy Complex has three identified sites. Sites WY300, WY301 and WY464 are identified as prehistoric and historic sites and a cemetery. These sites have been assessed and are not eligible for the NRHP due to low density of artifacts and soil disturbance. The implementation of the H.F. Lee Energy Complex Ash Haul Road operations is not expected to affect NRHP cultural resources or historical properties. Federal permits shall be sought for the project. Consultation with NCSHPO may be a necessary part of the USACE IP process.

Table 8. Identified Cultural Resource Sites Within a Half Mile Radius.

Site ID	Name	Address	Eligible for the National Register?
ER-12-2016	Unknown	One tenth mile north of project site	Unassessed
JT0873	Massey Farm # 1	West site of State Route 2372, 0.7 miles north of junction with State Route 1007 in the Boon Hill Township	Surveyed only

Site ID	Name	Address	Eligible for the National Register?
JT0874	Massey Farm # 2	West side of State Route 2372, 0.6 miles north of junction with State Route 1007 in the Boon Hill Township	Surveyed only
WY0015	William Atkinson House	Northeast corner of the junction of State Route 1007 and State Route 1126	State Listed Individual Entry
WY0034	Lafayette Sasser House	South side State Route 1007, 0.05 miles west of junction of North Carolina 581	Surveyed only
WY0103	New Chapel Primitive Baptist Church (gone or misplaced)	North side of US Route 70, 0.5 miles east of junction with North Carolina 581	Surveyed only (gone)
WY0149	Thompson Family farm Complex	North side US 70 West, 0.5 miles east of junction with NC 581	Surveyed only
WY0300	Prehistoric and historic artifact scatter	Project site	Not eligible
WY0301	Prehistoric and historic artifact scatter	Project site	Not eligible
WY0365	Neuse Quaker Meeting House	North side SR 1008 at northeastern corner with State Route 1223, Goldsboro vicinity	State Listed Individual Entry
WY0366	House	South side of State Route 1008, 0.75 miles west of junction with State Route 1223	Surveyed only
WY0367	J. W. Hollowell House	0.2 miles east of junction with State Route 1214	Surveyed only
WY0368	Stevens Mill Grocery	Southwest corner of the junction with State Route 1008 and State Route 1214	Surveyed only

Site ID	Name	Address	Eligible for the National Register?
WY0369	Tenant House	East side State Route 1214, 0.4 miles south of the junction with State Route 1008	Surveyed only
WY0370	Stevens Mill, Gin and Grist Mill	35.342507 N; - 78.125570 W	Both State Listed and Determined Eligible
WY0374	Porter House (gone)	North side of State Route 0216, 0.55 miles	Surveyed only (gone)
WY0390	Old Waynesborough Village	West side of US 117-138, 0.6 miles north of Neuse River	Surveyed only
WY0464	Cemetery	Project site	Unknown
WY0492	Prehistoric and historic artifact scatter	One tenth mile north of project site	Unassessed
WY0495	Prehistoric and historic artifact scatter	One tenth mile north of project site	Unassessed
WY496	Prehistoric and historic artifact scatter	One eighth mile north of project site	Unassessed
WY0505	Lightner Cemetery (approximate site)	State Route 1222 Bryan Boulevard, Goldsboro vicinity	Surveyed only
WY0510	Prehistoric Isolated Find	One tenth mile north of project site	Not eligible
WY0594	Log Barn	East side of State Route 1232, 0.8 miles south of US Route 70 junction	Surveyed only
WY0595	House	East Side NC State Route 581, 0.05 mile northeast of State Route 1007 junction	Surveyed only
WY0596	House	West side of NC State Route 581, 0.2 miles south of State Route 1236 junction	Surveyed only
WY0597	Rosewood School	Junction of NC 581 at State Route 1236	Surveyed only



Site ID	Name	Address	Eligible for the National Register?
WY0598	Barnes Chapel (gone)	North side of State Route 1236, 0.7 miles west of North Carolina 581 junction	Surveyed only; gone
WY0599	Cherry Psychiatric Hospital	Southwest and northwest sides of North Carolina 581, 0.3 miles east of State Route 1008 junction	Surveyed only
WY0600	Grantham House (replaced?)	South side State Route 1227, 0.3 miles east of State Route 1226 junction	Surveyed only
WY0601	House	North side of State Route 1227, 0.4 mile west of State Route 1220 junction	Surveyed only
WY0809	Gas Station	South side State Route 1008, 0.08 miles west of Falling Creek, Stevens Mill	Surveyed only; Ineligible
WY0968	Elmwood Cemetery	South side Carver Boulevard, west of South George Street, Goldsboro	Surveyed only; Ineligible

10.0 ENVIRONMENTAL JUSTICE

10.1 BACKGROUND

Environmental justice considers sensitive minority and low-income populations in the community to determine whether a proposed action and its alternatives may have a disproportionately high and adverse human health or environmental effect on those populations. Environmental Justice analysis is conducted in compliance with Executive Order (EO) 12898 (59 Federal Register [FR] 7629), *Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations*. Based on guidance from the CEQ, minority populations should be identified where either (a) the minority population of the area exceeds 50 percent (%), or (b) the minority population percentage of the affected area is substantially greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (CEQ 1997). Hispanic or Latino populations are not defined as a racial designation, but rather an ethnic population. Hispanics or Latinos may be white, black or any race. According to the US Census definitions contained in the *2010 Census Summary File 1*, origin can be viewed as the heritage, nationality group, lineage, or country of birth of the person or the person's parents or ancestors before their arrival in the United States. The origin of Hispanics or Latinos is generally regarded as Spanish speaking countries in Central or South America, Spain or the Dominican Republic. Low-income populations are defined as those below the federal poverty thresholds identified using statistical poverty thresholds from the US Census. EPA guidance states, "The composition of the population should be compared to the characteristics of the population, e.g., percentage of minority populations residing near a proposed project versus the percentage of minority populations located within a single or multiple-county area surrounding the proposed project" (EPA 1998). Applying this methodology, the percentage of low-income and minority populations near the H.F. Lee Energy Complex (Wayne County) is compared to the percentage of low-income and minority populations located within North Carolina. A low-income or minority population is identified when an area has a poverty rate or minority population percentage that is substantially greater than the state.

To summarize, EO 12898 instructs federal agencies to identify and address, within the scope of the proposed programs, policies and activities that may have disproportionately high adverse effects on human health or environmental effects on minority and low-income populations. Furthermore, according to CEQ guidelines, US Census Bureau (USCB) data are typically used to determine minority and low-income population percentages in the affected area of a project to conduct a qualitative assessment of potential environmental justice impacts.

10.2 AFFECTED ENVIRONMENT

Wood examined 2010, 2016 and 2017 USCB data to determine minority and low-income population percentages in the affected area of the Project to facilitate the qualitative assessment of potential environmental justice impacts. The avoidance of adverse impacts upon minority and/or low-income communities is an important component of the H.F. Lee Energy Complex Haul Route project. The data used in this analysis is a combination of USCB Census 2010, along with 2016 and 2017 estimated populations. The H.F. Lee Energy Complex is in Census Tract 0901, zip code 27530.

The population of Census Tract 0901 is 5,024, approximately 48% of which is Caucasian or white and 28% is African-American or black. The percentage of Hispanic or Latino in this Census Tract is 18%. The percentage of Asians in this Census Tract is 2%. The percentage of Native American or Alaskan native is 0%. The percentage of Mixed is 4%, and the percentage of Other is 0%. The percentage of African-American, or black, is 31% for Wayne County, which is higher than the state of North Carolina value of 21%. The percentage of Caucasian or white in this Census Tract is lower than, but not substantially lower than, the county percentage (54%) and substantially lower than the state percentage (63%) as reported in the 2016 Census. The percentage of all minorities (including Hispanic or Latino) for the Census Tract according to the USCB 2016 data is 52%, a higher percentage of minorities than the county average of 46% and higher than the state percentage of 37%.

The total population for Wayne County is 124,150, according to the July 2016 Census estimated data. For Wayne County, the percentage of the population that is Caucasian or white is 54%, and the percentage of African-American or black is 31%. The approximate Hispanic or Latino population within the county is 11%.

The number of seniors (persons over 65 years of age) (597) is 13% which is slightly less than the county percentage of 14% (16,078 in Wayne County). The percentage of seniors statewide is 15.9% (2,629,995), similar to the Census Tract 9201 and Wayne County percentages. The percentage of children, who are defined as persons under the age of 18 in the Census Tract, is 25% (1,256) and for Wayne County, 24% (7,151). The percentage of the population under 18 is slightly less in North Carolina as compared to Wayne County. For the state it is 23%, or 2,333,761 persons, according to the 2017 estimated U.S. Census data.

The number of persons living in poverty in Census Tract 0901 is 29.7% (1,486). For Wayne County it is 21.8% (26,475), close to the rate for the Census Tract studied. This percentage is lower than the rate for the county (22%) and higher than that of North Carolina (16.9%, or 275,990). Median per capita income according to July 2016 Census data for the Tract is \$18,280. The median adult income for the county is \$21,674 and for the state of North Carolina the median adult income is \$25,909.

The percentage of children living in poverty in the Census Tract is 46%. This is greater than the percentage of children living in poverty for Wayne County (35%). The percentage for the Census Tract is approximately 29.1% higher than the rate for children living in poverty in the state of North Carolina (16.9%). The percentage of seniors living in poverty in the Census Tract 0901 is 10%, the same as in Wayne County (10%). This is the rate for North Carolina as well (10%). The median home price in the Census Block where Census Tract 0901 is located is \$65,600.00. This is less than the county median home price of \$108,000 and significantly less than the state median home price of \$157,100. A statistical testing tool is available from the U.S. Bureau of Census and was applied to Census Tract 0901 rankings for home prices to ascertain statistical significance of variations in home price.

Combining the data for a seventeen-year span, it is observed that the Census Tract 0901 does have a higher percentage of children under the age of 18 living in poverty and nearly the same percentage of adults aged 65 and over living in poverty in comparison to the county and the state data. The percentages for minority populations are higher in this Census Tract as

compared to both the county and the state. Based upon the large percentage of children living in poverty and the higher percentages of minority populations in the Census Tract, the criteria for an environmental justice community are met in Census Tract 0901.

The other nearest Census Tract, also located in Wayne County and to the north of Census Tract 0901, is Census Tract 0011.01. The population of Census Tract 0011.01 is 7,301 people, approximately 77% of which is Caucasian or white and 16% of which is African-American or black. The percentage of Hispanic or Latino in this Census Tract is 6%. The percentage of Asians in this Census Tract is 0%. The percentage of Native Americans or Alaskan natives is 1%. The percentage of Mixed is 1%, and the percentage of Other is 0%. The percentage of Caucasian or white in this Census Tract is higher than the county and state percentages of 54% and 63%, respectively, as reported in the 2016 Census.

As discussed in the section on Census Tract 0901 above, the percentage of African-American, or black, is 31% for Wayne County, which is higher than the state of North Carolina of 21%. The percentage of all minorities (including Hispanic or Latino) for the Census Tract according to the USCB 2016 data is 23%, a lower percentage of minorities than the county average of 46% and a lower percentage than the state percentage of 37%.

The number of persons in Census Tract 0011.01 who are defined as children (18 years of age and under) is 1,533 (21%) which is less than the county percentage of 24% (29,796). For the state it is 23%, or 2,333,761 persons according to the estimated 2017 U.S. Census data.

The number of seniors, defined as persons over 65 years of age (1,095) is 15%, which is slightly more than the county percentage of 14% (16,078 in Wayne). The percentage of seniors statewide is 15.9% (2,629,995), similar to the Census Tract 0011.01 and Wayne County percentages.

The number of persons living in poverty in Census Tract 0011.01 is 22.5% (1,606). For the county, the percentage living in poverty is 21.8% (26,475). For the state of North Carolina 16.9% (or 275,990 people) of its total population live in poverty. Median per capita income according to July 2016 Census data for Census Tract 0011.01 is \$18,755. The median adult income for Wayne County is \$21,674 and for the state of North Carolina is \$25,909. The income levels for Census Tract 0011.01 are lower than those of the county and state.

The percentage of children living in poverty in Census Tract 0011.01 is 46%. This is greater than the percentage of children living in poverty for Wayne County (35%). The percentage for the Census Tract is approximately 29.1% higher than the rate for children living in poverty in the state of North Carolina (16.9%). The percentage of seniors living in poverty in the Census Tract is 10%, similar to the percentage in Wayne County (10%) and the percentage for the state of North Carolina (10%). The median home price for this Census Tract is \$124,000, comparable to the county median home price of \$108,000 and less than the state median home price of \$157,100.

A statistical testing tool is available from the U. S. Bureau of Census and was applied to Census Tract 0011.01 rankings for home prices to ascertain statistical significance of variations in home price.

Combining the data for a seventeen-year span, it is observed that Census Tract 0011.01 has a higher number of children 18 and under living in poverty as compared to the county and state percentages, and a comparable number of adults aged 65 and over are living in poverty in comparison to county and state data. The percentages of Caucasian, or white, are higher than the percentages for the county and state. Based upon the significantly higher percentage of children living in poverty as compared to county and state percentages, the USCB criteria for an environmental justice community is met within Census Tract 0011.01 in Wayne County.

The proposed project actions will occur entirely within the property of the H.F. Lee Energy Complex and will not occur within these communities and no impacts to vehicular, bicycle or foot traffic access to medical facilities, school or employment are anticipated, nor are access to food and fiber production or firewood (fuel) to be impacted. No disproportionately high adverse impacts to human health or environment of minority or low-income populations is expected. No conflicts with known (documented) residential communities are anticipated.

11.0 NOISE

11.1 BACKGROUND

Noise is sound that is produced at levels that can be harmful and may be considered unwanted by the surrounding community, properties, and residences. The Noise Control Act of 1972 (PL 92-574) and EO 12088 require that federal agencies assess the impact of noise to the environment (EPA 2018). Guidelines for noise have been established by the EPA based on a calculation of noise by the daytime and nighttime averages, referred to as the Day/Night Levels (Ldn) (EPA 1974). The Ldn is reported as A-weighted decibels (dBA) that occur within a 24-hour period. **Table 9** presents EPA standard noise levels for various community types. Noise levels can vary depending on setting, built environment, and distance to the noise source. Noise levels by environment can be variable with levels at 40 decibels (dB) for wilderness areas and 90 dB for urban areas. Rural communities typically have lower dB than their urban counterparts with rural communities around 50 dB or less. The EPA has calculated that an individual exposed to a noise level of 73 dB for eight hours a day for 40 years would have a hearing loss smaller than 5 dB for 96% of the population.

Table 9. EPA Standard Noise Levels for Various Community Types.

Community	Day/Night Average (Ldn-dBa)
Rural	30 to 55
Quiet Suburb	50
Normal Suburb	55
Urban Residential	60
Noisy Urban	65
Very Noisy Urban	70

11.2 AFFECTED ENVIRONMENT

Grading operations are the noisiest activities with equipment generating noise levels as high as 70 to 95 dBA within 50 feet of their operation. Distance would rapidly attenuate noise, and it is not anticipated that the haul road construction will occur close enough to existing residential areas to the north of the Project areas to cause disturbances. In addition, these operations would occur during daytime hours when residents are away from their homes; therefore, those living near the H.F. Lee Energy Complex are not likely to be affected by noise generated by the Projects. Noise impacts will be generally localized at the vicinity of the Project areas. Earth-moving equipment and other construction machinery and vehicles will create localized increases in noise levels. These temporary noise impacts should not disrupt normal H.F. Lee Energy Complex operations. Noise levels generally dissipate as distance from their origin increases. Distance from the Project areas must be considered when evaluating potential noise impacts to land uses adjacent to or near the Project area. The H.F. Lee Haul Road Route and Haul Road Extension projects will take place entirely within the property boundaries of the H.F. Lee Energy



Complex. A mature pine/mixed hardwood stand occurs between the northern plant boundary and residential properties. This woodland buffer would reduce noise exposure to off-site residents during project activities. Because of the woodland buffer between the Project areas, the Projects are not expected to impact noise-sensitive land uses.

12.0 AIR QUALITY

12.1 BACKGROUND

The U.S. Environmental Protection Agency (EPA) classifies source emitted air pollutants that cause health, environmental, and property damage as “criteria air pollutants”, as the agency has developed criteria (science-based guidelines) as the basis for setting permissible levels in ambient air. One set of limits (primary standard) protects human health; another set of limits (secondary standard) protects human welfare by preventing environmental and property damage.

The EPA has established National Ambient Air Quality Standards (NAAQS) in 40 CFR 50 for the following criteria pollutants: sulfur dioxide (SO₂), particulate matter (with an aerodynamic diameter of less than 10 microns) (PM₁₀), fine particulate matter (with an aerodynamic diameter of less than 2.5 microns) (PM_{2.5}), carbon monoxide (CO), ozone (O₃), nitrogen dioxide (NO₂), and lead. A geographic area that meets or is better than the primary NAAQS is classified as an attainment area; areas that do not meet the primary NAAQS are classified as nonattainment areas. Areas that were originally designated as nonattainment, but which have improved their air quality sufficiently to have been re-designated to attainment, are classified as maintenance areas.

In addition to the federal NAAQS for criteria pollutants, the North Carolina Department of Environmental Quality (NCDEQ) has adopted ambient air quality standards in North Carolina Administrative Code (NCAC) Title 15A Subchapter 2D Section 0400. Regulations that limit air pollution emissions from stationary sources located within North Carolina are codified under NCAC Title 15A - Environment and Natural Resources, Chapter 02 – Environmental Management, Subchapter 02D - Air Pollution Control Requirements (15A NCAC 02D). Stationary source air quality permitting procedures are codified under Subchapter 02Q – Air Quality Permit Procedures (15A NCAC 02Q) (NCDEQ 2013).

12.2 AFFECTED ENVIRONMENT

The entirety of the H.F. Lee Energy Complex is located in Wayne County, North Carolina, approximately 5 miles east of the Goldsboro metropolitan area. The area is part of the Coastal Plain physiographic region, where regional climate is impacted by a variety of influences, from the Appalachian Mountains to the west and the Atlantic Ocean to the east, including the Gulf Stream. The Bermuda High is a predominant climatological feature during the summer months, providing calm winds and clear conditions that can result in a degradation of air quality. Winds are predominantly from the west in North Carolina, which can result in pollution transport from upwind states (North Carolina Climate Office).

12.3 FEDERAL REGULATORY REQUIREMENTS FOR AIR QUALITY

EPA promulgated two sets of regulations to implement Section 176(c) of the 1990 Clean Air Act Amendments. The two regulations, the Transportation Conformity Regulations and the General Conformity Regulations, were established to ensure that federal actions and projects conform with applicable State Implementation Plans (SIP) in nonattainment or maintenance areas; thus, not adversely impacting the area’s progress toward attaining NAAQS standards.

12.3.1 TRANSPORTATION CONFORMITY

The Transportation Conformity rule is codified in 40 CFR Part 51, Subpart T and Part 93, Subpart A. The rule is applicable to transportation plans, improvement projects, and highway and transit projects funded or approved by the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA). Conformity is required for areas that do not currently meet, or previously did not meet, air quality standards for O₃, CO, particulate matter, or NO₂. The Transportation Conformity rule can be summarized as consisting of three parts: applicability, procedure, and analysis. Applicability is an assessment of whether a proposed action is subject to the Transportation Conformity rule.

As the proposed H.F. Lee Energy Complex project is not a transportation project funded by FHWA or FTA, the Transportation Conformity rule is not applicable, and a Transportation Conformity demonstration is not required for the project.

12.3.2 GENERAL CONFORMITY

The General Conformity rule is codified in 40 CFR Part 51, Subpart W and Part 93, Subpart B, "Determining Conformity of General Federal Actions to State or Federal Implementation Plans" ("General Conformity Rule"). General Conformity is applicable to most federally funded or approved actions that are not applicable to Clean Air Act Transportation Conformity regulations, and covers direct and indirect emissions of criteria pollutants, or their precursors, caused by the action. The General Conformity rule can be summarized as consisting of three parts: applicability, procedure, and analysis. Applicability is an assessment of whether a proposed action is subject to the General Conformity rule.

Wayne County is not currently, nor has previously been, designated as nonattainment for any criteria pollutants. As the proposed H.F. Lee Energy Complex project is not located in an area designated as nonattainment or maintenance for any criteria pollutant, as of August 31, 2018, the General Conformity rule is not applicable, and a General Conformity Determination is not required for the project.

12.4 STATE REGULATORY REQUIREMENTS FOR AIR QUALITY

The H.F. Lee Energy Complex currently operates under North Carolina Air Quality Title V Permit No. 01812T42, effective from September 8, 2016 until June 30, 2020. The active permit specifies emissions activities determined to be insignificant per 15A NCAC 02Q .0503(8), based on the facility Air Quality Permit Application informational "ATTACHMENT". The informational "ATTACHMENT" includes Emission Source I-20, "*Fugitive emissions from plant parking lots, paved roads, unpaved roads, and ash pond*" as an Insignificant Activity. Per Section 3.H.3 of the active permit, "*the Permittee may make changes in the operation or emissions without revising the permit if: the change affects only insignificant activities and the activities remain insignificant after the change*", pursuant to 15A NCAC 02Q .0523(b).

The proposed H.F. Lee Energy Complex project consists of expanding the paved and unpaved road from the ash pond an estimated 5,000 feet and is expected to only contribute fugitive dust emissions during construction and vehicle traffic. "Fugitive dust emissions" refers to particulate matter that does not pass through a process stack or vent and that is generated within plant

property boundaries from activities such as unloading and loading areas, process areas, stockpiles, stock pile working, plant parking lots, and plant roads (including access roads and haul roads).

Due to the short distance of the proposed additional haul road, the proposed activity is not expected to significantly impact fugitive dust emissions, and therefore does not affect maintenance of Emission Source I-20 as an Insignificant Activity. As an Insignificant Activity, the proposed project does not require revising the existing permit.

At the state level, Wayne County is part of the Washington Air Monitoring Region. Air quality monitoring stations in Wayne County include a PM_{2.5} monitoring station 37-191-0005 at Dillard Middle School in Goldsboro. In the most recent data available (2011 Ambient Air Quality Report) Site 37-191-0005 reported a 98th percentile concentration of 24-hour values, averaged over the three-year period from 2009-2011 of 22.3 µg/m³, and an annual mean, averaged over the same three-year period, of 9.39 µg/m³. Both values are below NAAQS standards of 35.0 µg/m³ and 15.0 µg/m³, respectively, achieving attainment.

As NCDEQ's general conformity rules, codified in 15A NCAC Subchapter 02D Section 1600, expired on February 1, 2016, pursuant to G.S. 150B-21.3A, a state general conformity analysis is not required for the H.F. Lee Energy Complex ash basin project.

12.5 PROPOSED MITIGATION MEASURES

During the project construction phase, additional emissions control measures will include the suppression of fugitive dust emissions. Frequent water spraying on roadways will serve as the primary suppression method to ensure that vehicle traffic does not spread dust.

As the project is not located in a nonattainment or maintenance area for any criteria pollutants, and given the fugitive dust mitigation measures, operations associated with the H.F. Lee Energy Complex Haul Road and Haul Road Extension projects are not expected to impact air quality, either locally or regionally.

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