Dominion Resources Services, Inc.
5000 Dominion Boulevard,
Glen Allen, VA 23060

Dominion™

September 15, 2015

BY OVERNIGHT (OR EXPRESS) MAIL

RECEIVED
SEP 16 2015
MARINE RESOURCES COMMISSION

Mr. Tony Watkinson
Virginia Marine Resources Commission
Habitat Management Division
2600 Washington Avenue, 3rd Floor
Newport News, VA 23607-0756

Re: Dominion Transmission, Inc., Atlantic Coast Pipeline
Virginia Joint Permit Application serving as Pre-construction Notification for Authorization under Section 10 and Section 408 of the Rivers and Harbors Act, Section 404 of the Clean Water Act for Nationwide Permit 12 (Utility Line Activities), Virginia Water Quality Certificate under Section 401 of the Clean Water Act, Virginia Water Protection Permit, Stream Crossing Permit, and the Tidal Wetland Permit.

Dear Mr. Watkinson:

Atlantic Coast Pipeline, LLC (Atlantic) is a company formed by four major U.S. energy companies – Dominion, Duke Energy, Piedmont Natural Gas, and AGL Resources. The company was created to develop, own, and operate the proposed Atlantic Coast Pipeline (ACP), an approximately 564.1-mile-long, interstate natural gas transmission pipeline system designed to meet growing energy needs in Virginia and North Carolina. For more information about the ACP, visit the company's website at www.dom.com/acpipeline. Atlantic has contracted with Dominion Transmission, Inc. (DTI), a subsidiary of Dominion, to seek authorization from the Federal Energy Regulatory Commission under Section 7(c) of the Natural Gas Act to construct, own, operate, and maintain the ACP on behalf of Atlantic. Approximately 285.9 miles of the project will be located within the U.S. Army Corps of Engineers (COE) – Norfolk District.

Atlantic is submitting the enclosed Joint Permit Application, serving as a pre-construction notification (PCN) in accordance with the requirements of Nationwide Permit (NWP) 12 – Utility Line Activities for proposed wetland and waterbody crossings associated with ACP within the Norfolk District. The materials included conform to the requirements of NWP general condition 31 for PCNs as well as applicable regional conditions. In addition, Atlantic is requesting a preliminary jurisdictional determination for wetlands and waterbodies crossed

within the COE – Norfolk District. Three complete copies of this permit application have been sent to Mr. Steve Gibson at the (COE) – Norfolk District
Dominion looks forward to coordinating with you on this project. Please contact Mr. William A. Scarpinato at (804) 273-3019 or William.A.Scarpinato@dom.com, if there are questions regarding this submittal.

Please direct written responses to:

William A. Scarpinato
Dominion Resources Services, Inc.
5000 Dominion Boulevard
Glen Allen, Virginia 23060

Sincerely,

Robert M. Bisha

Robert M. Bisha
Project Director, Atlantic Coast Pipeline
Dominion Environmental Services

cc: Justine Woodward, VMRC
William Scarpinato, Dominion

Attachments: Standard Joint Permit Application for the Commonwealth of Virginia
Joint Permit Application Supplemental Materials, including Wetland & Waterbody Report and Datasheets

PLEASE PRINT OR TYPE ALL ANSWERS. If a question does not apply to your project, please print N/A (not applicable) in the space provided. ***If additional space is needed, attach extra 8 ½ x 11 inch sheets of paper.***

CHECK ONE, if applicable:	Pre-Construction Notification (PCN) ☒ *(For Nationwide Permits ONLY)*	SPGP ☐

1. PROJECT LOCATION INFORMATION
(Attach a copy of a detailed map, such as a USGS topographic map or street map showing the site location and project boundary, so that it may be located for inspection. Include an arrow indicating the north direction.)

Street Address	City/County/Zipcode
See Supplement Document Section 1.0	Project covers multilple Counties and Zip Codes
Subdivision	Lot/Block/Parcel #
N/A	N/A

Name of water body(ies) within project boundaries and drainage area (acres or square miles)
See Appendix B, waterbody and wetland tables crossed by the Atlantic Coast Pipeline in Virginia.

Tributary(ies) to: See Appendix B, waterbody and wetland tables crossed.
Basin: See Appendix B Subbasin: See Appendix B
(*Example: Basin: James River Subbasin: Middle James River*)

Special Standards (based on DEQ Water Quality Standards 9VAC25-260 et seq.): See Table B-7 in Appendix B

Project type (check one) ____ Single user (private, non-commercial, residential)
__x__ Multi-user (community, commercial, industrial, government)

Latitude and longitude at center of project site: See Appendix B ____-____-____/____-____-____

USGS topographic map name: See table 1-1 for a list of USGS Quadrangle maps

8- digit USGS Hydrologic Unit Code (HUC) for your project site (See http://cfpub.epa.gov/surf/locate/index.cfm): See Appendix B
If known, indicate the 10-digit and 12-digit USGS HUCs (see *http://dswcapps.dcr.virginia.gov/htdocs/maps/HUExplorer.htm* :
_____ _____

Name of your project (*Example: Water Creek driveway crossing*) Atlantic Coast Pipeline (ACP)

Is there an access road to the project? X Yes __ No. If yes, check all that apply: X public X private X improved X unimproved

Provide driving directions to your site, giving distances from the best and nearest visible landmarks or major intersections:
The project crosses through multiple counties and cities in Virginia, public roads are intersected in numerous locations. See table Table 1-1 and Maps in Appendix D for location information for the ACP in Virginia.

Does your project site cross boundaries of two or more localities (i.e. cities/counties/towns)? X Yes __ No
If so, name those localities: See maps in Appendix D

FOR AGENCY USE ONLY

	Notes:
JPA# 15-1353	

RECEIVED
SEP 16 2015
MARINE RESOURCES COMMISSION

REVISED: March 2014

2. APPLICANT, AGENT, PROPERTY OWNER, AND CONTRACTOR INFORMATION

The applicant(s) is/are the legal entity to which the permit may be issued. The applicant(s) can either be the property owner(s) or the person/people/company(ies) that intend(s) to undertake the activity. The agent is the person or company that is representing the applicant(s). If a company, please use the company name that is registered with the State Corporation Commission (SCC), or indicate no registration with the SCC.

Applicant(s) (For a company, use SCC-registered name) **See table 2-1 in Section 2.0 of Supplement Document**			Agent (if applicable) (For a company, use SCC-registered name) **See table 2-1 in Section 2.0 of Supplement Document**		
Mailing address **See table 2-1 in Section 2.0 of Supplement Document**			Mailing address **See table 2-1 in Section 2.0 of Supplement Document**		
City	State	Zip Code	City	State	Zip Code
Phone number w/area code	Fax		Phone number w/area code	Fax	
Mobile/pager	E-mail		Mobile/pager	E-mail	
State Corporation Commission ID number (if applicable)			State Corporation Commission ID number (if applicable)		

Certain permits or permit authorizations may be provided via electronic mail. If the applicant wishes to receive their permit via electronic mail, please provide an e-mail address here: _____

Property owner(s), if different from applicant (For a company, use SCC-registered name)			Contractor, if known (For a company, use SCC-registered name)		
Mailing address See Landowner List in Appendix [Insert appendix ID]			Mailing address No Contractor has been selected as of the date of application		
City	State	Zip code	City	State	Zip code
Phone number w/area code	Fax		Phone number w/area code	Fax	
Mobile/pager	E-mail		Mobile/pager	E-mail	
State Corporation Commission ID number (if applicable)			State Corporation Commission ID number (if applicable)		

3. PROVIDE A DESCRIPTION OF THE PROJECT, PROJECT PRIMARY AND SECONDARY PURPOSES, PROJECT NEED, INTENDED USE, AND ALTERNATIVES CONSIDERED (Attach additional sheets if necessary)

- The purpose must include any new development or expansion of an existing land use and/or proposed future use of residual land
- Describe the physical alteration of surface waters
- Include a description of alternatives considered to avoid or minimize impacts to surface waters, including wetlands, to the maximum extent practicable. Include factors such as, but not limited to, alternative construction technologies, alternative project layout and design, alternative locations, local land use regulations, and existing infrastructure
- For utility crossings, include both alternative routes and alternative construction methodologies considered
- For major surface water withdrawals, public surface water supply withdrawals, or projects that will alter in-stream flows, include the water supply issues that form the basis of the proposed project.

See Supplement Document Section 3.0 (for a detailed description of the purpose and need for the ACP, as well as a discussion of alternatives.

3. PROVIDE A DESCRIPTION OF THE PROJECT (Continued)

Date of proposed commencement of work (MM/DD/YYYY) October 2016	Date of proposed completion of work (MM/DD/YYYY) December 2018
Are you submitting this application at the direction of any State, local, or Federal agency? _____Yes __X__No	Has any work commenced or has any portion of the project for which you are seeking a permit been completed? _____ Yes __X__ No

If you answered "yes" to either question above, give details stating when the work was completed and/or when it commenced, who performed the work, and which agency (if any) directed you to submit this application. In addition, you will need to clearly differentiate between completed work and proposed work on your project drawings.

Are you aware of any unresolved violations of environmental law or litigation involving the property? _____Yes __X__No
(If yes, please explain)

4. PREVIOUS SITE VISITS AND/OR PERMITS RELATED TO THE PROPOSED WORK (Include all Federal, State, and Local pre-application coordination or previous permits)

Agency	Activity	Permit/Project number, and explanation of non-reporting Nationwide permits previously used	Action taken ** and Date of Action	If denied, give reason for denial
	See Section 4.0			

** Issued, denied, site visit

5. PROJECT COSTS

Approximate cost of the entire project, including materials and labor: $ 1,400,000,000.00

Approximate cost of only the portion of the project affecting State waters (below mean low water in tidal areas and below ordinary high water mark in nontidal areas): $ See Section 5.0 of Supplement Document

6. PUBLIC NOTIFICATION (Attach additional sheets if necessary)

- Complete information for all property owners adjacent to the project site and across the waterway, if the waterway is less than 500 feet in width. If your project is located within a cove, you will need to provide names and mailing addresses for all property owners within the cove.
- If you own the adjacent lot, provide the requested information for the first adjacent parcel beyond your property line.

Property owner's name	Mailing address	City	State	Zip code
See Landowner List in Appendix E				

Name of newspaper having general circulation in the area of the project: See Table [Insert table ID]
Address and phone number (including area code) of newspaper See Table 6-1 in Section 6.0 of the Supplement Document

Have adjacent property owners been notified with forms in Appendix A? _____Yes __X__No (attach copies of distributed forms)

7. THREATENED AND ENDANGERED SPECIES INFORMATION

Please provide any information concerning the potential for your project to impact state and/or federally threatened and endangered species (listed or proposed). Attach correspondence from agencies and/or reference materials that address potential impacts, such as database search results or your Corps' waters and wetlands delineation confirmation. Contact information for the Virginia Department of Game and Inland Fisheries and the Virginia Department of Conservation and Recreation, Division of Natural Heritage can be found on page 4 of this package.

See Section 7.0 of Supplement Document

8. HISTORIC RESOURCES INFORMATION

Note: Historic properties include but are not limited to archeological sites, battlefields, Civil War earthworks, graveyards, buildings, bridges, canals, etc. Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant.

See Section 8.0 of Supplement Document

Are any historic properties located within or adjacent to the project site? ____Yes ____ No _____ Uncertain
If Yes, please provide a map showing the location of the historic property within or adjacent to the project site.

Are there any buildings or structures 50 years old or older located on the project site? ____Yes ____ No _____ Uncertain
If Yes, please provide a map showing the location of these buildings or structures on the project site.

Is your project located within a historic district? ____ Yes ____ No ____ Uncertain
If Yes, please indicate which district: _____

8. HISTORIC RESOURCES INFORMATION (Continued)

Has a survey to locate archeological sites and/or historic structures been carried out on the property?
___ Yes ___ No ___ Uncertain

If Yes, please provide the following information: Date of Survey: _____

Name of firm: _____

Is there a report on file with the Virginia Department of Historic Resources? ____ Yes ____ No ___ Uncertain

Title of Cultural Resources Management (CRM) report: _____

Was any historic property located? ____ Yes ____ No __ Uncertain

9. WETLANDS, WATERS, AND DUNES/BEACHES IMPACT INFORMATION

Report each impact site in a separate column. If needed, attach additional sheets using a similar table format. Please ensure that the associated project drawings clearly depict the location and footprint of each numbered impact site. For dredging, mining, and excavating projects, use Section 18.

	Impact site number 1	Impact site number 2	Impact site number 3
Impact description (use all that apply): F=fill EX=excavation S=Structure T=tidal NT=non-tidal TE=temporary PE=permanent PR=perennial IN=intermittent SB=subaqueous bottom DB=dune/beach IS=hydrologically isolated V=vegetated NV=non-vegetated MC=Mechanized Clearing of PFO *(Example: F, NT, PE, V)*	See Section 9.0 of the Supplement Document and the tables in Appendix B		
Wetland/waters impact area (square feet)			
Dune/beach impact area (square feet)			
Stream dimensions at impact site (length and average width in linear feet, and area in square feet)			
Volume of fill below Mean High Water or Ordinary High Water (cubic yards)			
Cowardin classification of impacted wetland/water or geomorphological classification of stream *Example wetland: PFO;* *Example stream: wide; bank eroding; braided channel;* *Example stream: 'C' channel*			
Average stream flow at site (flow rate under normal rainfall conditions in cubic feet per second)			
Contributing drainage area (acres or square miles)			

9. WETLANDS/WATERS IMPACT INFORMATION (Continued)

DEQ classification of impacted resource(s):			
Estuarine Class II Non-tidal waters Class III Mountainous zone waters Class IV Stockable trout waters Class V			
Natural trout waters Class VI Wetlands Class VII			

For DEQ permitting purposes, also submit as part of this section a wetland and waters boundary delineation map[4] – see the Footnotes section in the form instructions. See Map sets in Appendix D of the Supplement Document

For DEQ permitting purposes, also submit as part of this section a written disclosure of all wetlands, open water, or streams that are located within the proposed project or compensation areas that are also under a deed restriction, conservation easement, restrictive covenant, or other land-use protective instrument. See Data Sheets in Appendix M in the Supplement Document

10. APPLICANT, AGENT, OWNER, AND CONTRACTOR CERTIFICATIONS

If the Applicant(s), Agent(s), Owner(s), or Contractor(s) is/are a company, please use the company name(s) that is/are registered with the State Corporation Commission (SCC).

READ ALL OF THE FOLLOWING CAREFULLY BEFORE SIGNING

PRIVACY ACT STATEMENT: The Department of the Army permit program is authorized by Section 10 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, and Section 103 of the Marine Protection Research and Sanctuaries Act of 1972. These laws require that individuals obtain permits that authorize structures and work in or affecting navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters prior to undertaking the activity. Information provided in the Joint Permit Application will be used in the permit review process and is a matter of public record once the application is filed. Disclosure of the requested information is voluntary, but it may not be possible to evaluate the permit application or to issue a permit if the information requested is not provided.

CERTIFICATION: I am hereby applying for permits typically issued by the DEQ, VMRC, U.S. Army Corps of Engineers, and/or Local Wetlands Boards for the activities I have described herein. I agree to allow the duly authorized representatives of any regulatory or advisory agency to enter upon the premises of the project site at reasonable times to inspect and photograph site conditions, both in reviewing a proposal to issue a permit and after permit issuance to determine compliance with the permit.

In addition, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Is/Are the Applicant(s) and Owner(s) the same? ___ *Yes* ___ *No*

Applicant's name & title (printed or typed) Leslie Hartz	Second applicant's name & title, if applicable (printed or typed)
Applicant's signature	Second applicant's signature
Date 9/11/15	Date
(Required for VMRC permit actions only) Property owner's name, if different from Applicant	*(Required for VMRC permit actions only)* Second property owner's name, if applicable
Owner's signature, if different from Applicant	Second owner's signature
Date	Date

10. APPLICANT, AGENT, OWNER, AND CONTRACTOR CERTIFICATIONS (Continued)

If the Applicant(s), Agent(s), Owner(s), or Contractor(s) is/are a company, please use the company name(s) that is/are registered with the State Corporation Commission (SCC).

CERTIFICATION OF AUTHORIZATION TO ALLOW AGENT(S) TO ACT ON APPLICANT'S(S') BEHALF (IF APPLICABLE)

I (we), Leslie Hartz (and) _____,
APPLICANT'S NAME(S) – *complete the second blank if more than one Applicant*

hereby certify that I (we) have authorized William Scarpinato (and) _____
AGENT'S NAME(S) – *complete the second blank if more than one Agent*

to act on my (our) behalf and take all actions necessary to the processing, issuance, and acceptance of this permit and any and all standard and special conditions attached. I (we) hereby certify that the information submitted in this application is true and accurate to the best of my (our) knowledge.

Applicant's signature	Second applicant's signature, if applicable
Date 9/15/15	Date
Agent's signature and title Environmental Manager	Second agent's signature and title, if applicable
Date 9/15/15	Date

CONTRACTOR ACKNOWLEDGEMENT (IF APPLICABLE)

I (we), _____ (and) _____,
APPLICANT'S NAME(S) – *complete the second blank if more than one Applicant*

have contracted _____ (and) _____
CONTRACTOR'S NAME(S) – *complete the second blank if more than one Contractor*

to perform the work described in this Joint Permit Application, signed and dated _____.

I (we) will read and abide by all conditions as set forth in all Federal, State, and Local permits as required for this project. I (we) understand that failure to follow the conditions of the permits may constitute a violation of applicable Federal, State, and Local statutes and that we will be liable for any civil and/or criminal penalties imposed by these statutes.

In addition, I (we) agree to make available a copy of any permit to any regulatory representative visiting the project site to ensure permit compliance. If I (we) fail to provide the applicable permit upon request, I (we) understand that the representative will have the option of stopping our operation until it has been determined that we have a properly signed and executed permit and are in full compliance with all of the terms and conditions.

Contractor's name or name of firm (printed/typed) No Contractor has been selected as of the date of application	Contractor's or firm's mailing address	
Contractor's signature and title	Contractor's license number	Date
Applicant's signature	Second applicant's signature, if applicable	
Date	Date	

STOP

END OF GENERAL INFORMATION

The following sections are activity-specific. Fill out only the sections that apply to your particular project.

20. NONTIDAL STREAM CHANNEL MODIFICATIONS (Continued)

Will low-flow channels be maintained in the modified stream channel? _ _Yes _ _No.
Describe how:

Will any structure(s) be placed in the stream to create riffles, pools, meanders, etc.? _____Yes _ _No
If yes, please explain:

21. UTILITY CROSSINGS

Type of crossing: _ _overhead _X_trenched _X_directionally-drilled

Method of clearing corridor of vegetation (check all that apply): _X_ mechanized land clearing that disturbs the soil surface
_____ cutting vegetation above the soil surface

Describe the materials to be used in the installation of the utility line (including gravel bedding for trenched installations, bentonite slurries used during direction-drilling, etc.) and a sequence of events to detail how the installation will be accomplished (including methods used for in-stream and dry crossings).

See Section 3.5 and Section 21 of Supplement Information.

For overhead crossings over navigable waterways (including all tidal waterways), please indicate the height of other overhead crossings or bridges over the waterway relative to mean high water, mean low water, or ordinary high water mark:

Not Applicable

Nominal system voltage, if project involves power lines: Not Applicable

Will there be an excess of excavated material? _ _Yes _X_No
If so, describe the method that will be undertaken to dispose of, and transport, the material to its permanent disposal location and give that location:

Vegetation and woody debris will be removed from wetland and waterbody areas and disposed of in upland areas. Pre-construction contours will be restored in wetlands and bed and banks will be restored to pre-construction contours in waterbodies.

Will any excess material be stockpiled in wetlands? _X_Yes _ _No
If so, will the stockpiled material be placed on filter fabric or some other type of impervious surface? _X_Yes _____No

See Section 21.0 of Supplemental Information for details on temporary stockpiling. Pre-construction contours will be restored.

21. UTILITY CROSSINGS (Continued)

Will permanent access roads be placed through wetlands/streams? ____Yes __X__No
If yes, will the roads be _____at grade or _____above grade (check one)?

Will the utility line through wetlands/waters be continually maintained (e.g. via mowing or herbicide)? ____Yes _____No

If maintained, what is the maximum width? ____10____feet

22. ROAD CROSSINGS

Have you conducted hydraulic studies to verify the adequacy of the culverts? _____Yes __X__No
If so, please attach a copy of the hydraulic study/report.
Virginia Department of Transportation (VDOT) standards require that the backwater for a 100 year storm not exceed 1 foot for all road, culvert, and bridge projects within FEMA-designated floodplains.

Will the culverts be countersunk below the stream bottom? __X__Yes _____No. If no, explain: _____

If the project entails a bridged crossing and there are similar crossings in the area, what is the vertical distance above mean high water, mean low water, or ordinary high water mark of those similar structures? _____feet above _____
For all bridges proposed over navigable waterways (including all tidal water bodies), you will be required to contact the U.S. Coast Guard to determine if a permit is required of their agency. See Section 22.0 of Supplement Document

On separate sheets of paper, describe the materials to be used, the method of construction (including the use of cofferdams), and the sequence of construction events. Include cross sections and profile plans of the culvert crossings including wing walls or rip rap.
See Section 22.0 of Supplement Document

23. PRIVATE AND COMMERCIAL AQUACULTURE ACTIVITIES

Please review VMRC regulations related to aquaculture activities if you are completing this section. An abbreviated application is available for certain private oyster gardening activities by a riparian owner. Also, separate information is required by the VMRC Fisheries Management Division for the review of commercial projects that may qualify for the Virginia Marine Resources Commission General Permit #4 FOR TEMPORARY PROTECTIVE ENCLOSURES FOR SHELLFISH. The VMRC aquaculture regulations can be found on the agency web page at: http://www.mrc.state.va.us/regulations/regindex.shtm.
Please see regulations 4 VAC 20-335-10 et seq., 4 VAC 20-336-10 et seq., and 4 VAC 20-1130-10 et seq.

Briefly describe your proposed aquaculture activity from the time of acquisition (seed, fingerlings, etc.) to time of harvest, and indicate which species you intend to culture. Attach additional sheets if needed.

Source of the animals/plants that you want to culture: _____

Note: VMRC Regulation 4VAC 20-754 et seq. "Pertaining to the Importation of Fish, Shellfish or Crustacea" sets forth the requirements for importing organisms from out of state.

Describe below the number, type, and dimensions of the structures that will be used (e.g., 4' x 2' x 18" floats, 3' x 3' x 1' bottom cages, etc.) and the overall dimensions of the area to be occupied by the aquaculture structures (e.g., two 40-foot by 10-foot bottom plots).

APPENDIX C

Chesapeake Bay Preservation Act Information

Please answer the following questions to determine if your project is subject to the requirements of the Bay Act Regulations:

1. Is your project located within Tidewater Virginia? X Yes ____ No (See map on next page) - If the answer is "no", the Bay Act requirements do not apply; if "yes", then please continue to question #2.

2. Please indicate if the project proposes to impact any of the following Resource Protection Area (RPA) features:

   ____ Tidal wetlands,

   X Nontidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow,

   ____ Tidal shores,

   ____ Other lands considered by the local government to meet the provisions of subsection A of § 9VAC 25-830-80 and to be necessary to protect the quality of state waters (contact the local government for specific information),

   X A buffer area not less than 100 feet in width located adjacent to and landward of the components listed above, and along both sides of any water body with perennial flow.

If the answer to question #1 was "yes" and any of the features listed under question #2 will be impacted, compliance with the Chesapeake Bay Preservation Area Designation and Management Regulations is required. **The Chesapeake Bay Preservation Area Designation and Management Regulations** are enforced through locally adopted ordinances based on the Chesapeake Bay Preservation Act (CBPA) program. Compliance with state and local CBPA requirements mandates the submission of a ***Water Quality Impact Assessment (WQIA)*** for the review and approval of the local government. Contact the appropriate local government office to determine if a WQIA is required for the proposed activity(ies).

The individual localities, not the DEQ, USACE, or the Local Wetlands Boards, are responsible for enforcing the CBPA requirements and, therefore, local permits for land disturbance are not issued through this JPA process. **Approval of this wetlands permit does not constitute compliance with the CBPA regulations nor does it guarantee that the local government will issue land-disturbing permits for this project.**

Notes for all projects in RPAs

Development, construction, land disturbance, or placement of fill within the RPA features listed above *requires a review from the locality and may require an exception or variance from the local Bay Act program or zoning ordinance*. Please contact the appropriate local government to determine the types of development or land uses that are permitted within RPAs.

Pursuant to § 9VAC 25-830-110, *on-site delineation of the RPA is required for all projects in CBPAs.* Because USGS maps are not always indicative of actual "in-field" conditions, they may not be used to determine the site-specific boundaries of the RPA.

Notes for shoreline erosion control projects in RPAs

Re-establishment of woody vegetation in the buffer may be required to mitigate for the removal or disturbance of buffer vegetation associated with your proposed project. Please contact the local government to determine the mitigation requirements for impacts to the 100-foot RPA buffer.

Pursuant to § 9VAC 25-830-140.5.a(4), § 9VAC 25-830-140.1, and § 9VAC 25-830-130 of the Virginia Administrative Code, the locality will use the information provided in this Appendix and in the project drawings, along with other information in this permit application and a WQIA, to make a determination that:

1. Any proposed shoreline erosion control measure is necessary and consistent with the nature of the erosion occurring on the site, and the measures have employed the "best available technical advice"
2. Indigenous vegetation will be preserved to the maximum extent practicable
3. Proposed land disturbance has been minimized
4. Appropriate mitigation plantings will provide the required water quality functions of the buffer (§ 9VAC 25-830-140.3)
5. The project is consistent with the locality's comprehensive plan
6. Access to the project will be provided with the minimum disturbance necessary.

ATLANTIC COAST PIPELINE

Joint Permit Application:

United States Army Corps of Engineers – Norfolk District, Virginia Department of Environmental Quality, and Virginia Marine Resources Commission

Supplemental Information

Prepared by

NATURAL RESOURCE GROUP

an ERM Group company

September 2015

Atlantic Coast Pipeline Project
Joint Permit Application
U.S. Army Corps of Engineers – Norfolk District

TABLE OF CONTENTS

(Note to Reviewer: Section Numbers Match Application Form Sections)

APPLICATION SUPPLEMENTAL INFORMATION DESIGN 1
INTRODUCTION 1
1.0 PROJECT LOCATION INFORMATION 4
1.1 PROJECT LOCATION SUMMARY 4
1.2 WATERBODY AND WETLAND RESOURCES SUMMARY 4
2.0 APPLICANT, AGENT, PROPERTY OWNER, AND CONTRACTOR INFORMATION 5
3.0 DESCRIPTION OF PROJECT, PURPOSES, NEED, USE, AND ALTERNATIVES 6
3.1 PROJECT DESCRIPTION 6
3.2 PIPELINE FACILITIES 6
3.3 ABOVEGROUND FACILITIES 8
3.4 PURPOSE AND NEED 10
3.5 FERC NEPA PROJECT PURPOSE STATEMENT 11
3.6 PIPELINE RIGHTS-OF-WAY 13
3.7 GENERAL CONSTRUCTION PROCEDURES 15
3.7.1 Survey and Staking 17
3.7.2 Clearing and Grading 17
3.7.3 Erosion Control Device Installation 18
3.7.4 Trenching 18
3.7.5 Pipe Stringing, Bending, and Welding 19
3.7.6 Lowering-in and Backfilling 19
3.7.7 Hydrostatic Testing 19
3.7.8 Cleanup and Restoration 20
3.8 SPECIAL CONSTRUCTION TECHNIQUES 20
3.8.1 Wetland Crossings 21
3.8.2 Waterbody Crossings 22
3.9 ALTERNATIVES 30
3.10 NO ACTION ALTERNATIVE 31
3.11 ALTERNATIVE ENERGY SOURCES 31
3.12 ENERGY CONSERVATION 32
3.13 SYSTEM ALTERNATIVES 32
3.14 ROUTE ALTERNATIVES AND ROUTE ADJUSTMENTS 33
3.15 CONSTRUCTION METHODS AND BEST MANAGEMENT PRACTICES 36
4.0 PREVIOUS SITE VISITS AND/OR PERMITS RELATED TO THE PROPOSED WORK 37
5.0 PROJECT COSTS 39
6.0 PUBLIC NOTIFICATION 40

7.0 THREATENED AND ENDANGERED SPECIES INFORMATION 40
7.1 FEDERALLY LISTED SPECIES 40
7.2 ESSENTIAL FISH HABITAT 44
8.0 HISTORIC RESOURCES INFORMATION 45
9.0 WETLANDS, WATERS, AND DUNES/BEACHES IMPACT INFORMATION 45
9.1 CUMULATIVE IMPACTS 46
9.2 WATERBODY IMPACTS 48
9.3 DITCHES 51
9.4 WETLAND IMPACTS 51
10.0 APPLICANT, AGENT, OWNER AND CONTRACTOR CERTIFICATIONS 56
21.0 UTILITY CROSSINGS 56
22.0 ROAD CROSSINGS 57

LIST OF TABLES

Table 1-1 Counties Crossed by the Atlantic Coast Pipeline within the Norfolk District.. 4
Table 1-2 Section 10 Navigable Waters Crossed by the Atlantic Coast Pipeline within the Norfolk District 5
Table 2-1 Applicant Information 5
Table 3-1 Proposed Pipeline Facilities in Virginia for the Atlantic Coast Pipeline 7
Table 3-2 Proposed Aboveground Facilities in Virginia for the Atlantic Coast Pipeline. 9
Table 3-3 Metering and Regulating Stations in Virginia for the Atlantic Coast Pipeline10
Table 3-4 Route Alternatives, Variations, and Adjustments Incorporated into the Proposed Atlantic Coast Pipeline Route 35
Table 8 Route Optimization Locations to Avoid Wetlands 36
Table 4-1 Permit Table for the Atlantic Coast Pipeline for Permits Required in Virginia 38
Table 4-2 Previous Site Visits and Permits related to Proposed Work 39
Table 6-1 Newspapers in the Vicinity of the Project Area 40
Table 7-1 Federally Listed Species and Species Proposed for Federal Listing within the U.S. Army Corps of Engineers – Norfolk District 42
Table 7-2 Commonwealth-listed Endangered and Threatened Species Potentially Occurring in the Atlantic Coast Pipeline Area 43
Table 9-1 Non-tidal Ditches in Virginia 52

LIST OF APPENDICES

Appendix A	General and Regional Condition Checklist
Appendix B	Wetland and Waterbody Crossing and Impact Tables
Appendix C	Site-Specific Construction Plans for Section 10 Navigable Waters Crossings
Appendix D	Figures – Project Overview, Topographic, Aerial, and FEMA Floodplain Route Maps
Appendix E	Land Owner List for Properties Adjacent to Subaqueous Land Crossings (Perennial Waterbodies with Over 5 Square Mile Drainage)
Appendix F	Spill Prevention, Control, and Countermeasures Plan
Appendix G	Horizontal Directional Drill Fluid Monitoring, Operations, and Contingency Plan
Appendix H	Plan for Unanticipated Discovery of Historic Properties or Human Remains during Construction
Appendix I	Restoration and Rehabilitation Plan
Appendix J	Construction Typical Drawings
Appendix K	T&E Species Consultations
Appendix L	Wetland and Waterbody Survey Report

LIST OF ACRONYMS AND ABBREVIATIONS

ACP	Atlantic Coast Pipeline
AGL	AGL Resources, Inc.
APE	Area of Potential Effect
API	American Petroleum Institute
Atlantic	Atlantic Coast Pipeline, LLC
ATWS	additional temporary workspace
BA	biological assessment
bcf/d	billion cubic feet per day
BMP	best management practices
CFR	Code of Federal Regulations
Columbia	Columbia Gas Transmission, LLC
DE	District Engineer
DOE	U.S. Department of Energy
Dominion	Dominion Resources, Inc.
dth/d	dekatherms per day
DTI	Dominion Transmission, Inc.
Duke Energy	Duke Energy Corporation
DVP	Dominion Virginia Power
East Tennessee	East Tennessee Natural Gas, LLC
ECD	erosion control devices
EFH	Essential Fish Habitat
EIA	U.S. Energy Information Administration
EIS	Environmental Impact Statement
ESA	Endangered Species Act
ESFO	Fish and Wildlife Service Ecological Services Field Office
FBE	fusion-bonded epoxy
FERC	Federal Energy Regulatory Commission
FWS	Fish and Wildlife Service
GIS	geographic information system
HAPC	Habitat Area of Particular Concern
HDD Plan	Horizontal Directional Drill Fluid Monitoring, Operations, and Contingency Plan
HDD	Horizontal Directional Drill
hp	horsepower
HUC	Hydrologic Unit Code
JPA	Standard Joint Permit Application
LDC	local distribution companies
LWB	Local Wetlands Boards
M&R	metering and regulating
MMDth/d	million dekatherms per day
Mountain Valley	Mountain Valley, LLC
MP	milepost
MVP	Mountain Valley Pipeline
NEPA	National Environmental Policy Act

NHD	National Hydrography Dataset
NHI	National Heritage Inventory
NHP	Natural Heritage Program
NOAA	National Oceanic and Atmospheric Administration
NWP	Nationwide Permit
PEM	Palustrine System Emergent Wetland Class
PFO	Palustrine System Forested Wetland Class
Piedmont	Piedmont Natural Gas Co.
Plan	*Upland Erosion Control, Revegetation, and Maintenance Plan*
Procedures	*Wetland and Waterbody Construction and Mitigation Procedures*
Project	Atlantic Coast Pipeline
PSS	Palustrine System Scrub-Shrub Wetland Class
SHP	Supply Header Project
SHPO	State Historic Preservation Office
SPCC	Spill Prevention, Control, and Countermeasures Plan
Transco	Transcontinental Gas Pipe Line Company, LLC
USACE	United States Army Corps of Engineers
USDOT	U.S. Department of Transportation
USGS	United States Geological Survey
VAC	Virginia Administrative Code
VDCR	Virginia Department of Conservation and Recreation
VDEQ	Virginia Department of Environmental Quality
VDGIF	Virginia Department of Game and Inland Fisheries
VMRC	Virginia Marine Resources Commission

APPLICATION SUPPLEMENTAL INFORMATION DESIGN

Section numbering has been incorporated into this supplemental information document to match the appropriate section of the Standard Joint Permit Application (JPA) (REVISED: March 2014) in the Commonwealth of Virginia used jointly by the U.S. Army Corps of Engineers (USACE), Virginia Marine Resources Commission (VMRC), and Virginia Department of Environmental Quality (VDEQ). Any omitted section numbers would correspond to sections of the JPA that are not applicable to the Atlantic Coast Pipeline (ACP). In addition to the information requested in the JPA, a table outlining compliance with each of the regional and general conditions related to Nationwide Permit 12 is contained in Appendix A. The ACP is a Federal Energy Regulatory Commission (FERC) 7c regulated project and the USACE has agreed to participate in the pre-filing National Environmental Policy Act (NEPA) process as a cooperating agency.

INTRODUCTION

Atlantic Coast Pipeline, LLC (Atlantic) is a company formed by four major U.S. energy companies – Dominion Resources, Inc. (Dominion), Duke Energy Corporation (Duke Energy), Piedmont Natural Gas Co., Inc. (Piedmont), and AGL Resources, Inc. (AGL). The company was created to develop, own, and operate the proposed Atlantic Coast Pipeline (ACP), an approximately 564.1-mile-long, interstate natural gas transmission pipeline system designed to meet growing energy needs in Virginia and North Carolina. The ACP will be capable of delivering up to 1.5 million dekatherms per day (MMDth/d) of natural gas to be used to generate electricity, heat homes, and run local businesses. The underground pipeline will facilitate cleaner air, increase the reliability and security of natural gas supplies, and provide a significant economic boost in West Virginia, Virginia, and North Carolina. More information is provided at the company's website at www.dom.com/acpipeline. Atlantic has contracted with Dominion Transmission, Inc. (DTI), a subsidiary of Dominion, to permit, build, and operate the ACP on behalf of Atlantic. [1]

Atlantic has prepared the following supplemental information document to accompany the JPA form used by the USACE, VMRC, VDEQ, and the Local Wetlands Boards (LWB) for permitting purposes involving water, wetlands, and dune/beach resources, including, but not limited to, *major* water supply and water withdrawals projects (as defined in VDEQ Regulation 9 Virginia Administrative Code [VAC] 25-210).

Request for USACE NWP 12 for Single and Complete Crossings of Waters of the U.S.

While some of the following is not applicable to USACE's permitting effort, Atlantic is providing the following information as background information regarding the ACP to assist the USACE in understanding the overall project being permitted and authorized through FERC. Atlantic understands that the USACE is a cooperating agency on the NEPA evaluation being conducted by FERC, including preparation of an Environmental Impact Statement (EIS), but provides the following information to the USACE to provide context and understanding regarding the location of the multiple single and complete crossings proposed for authorization

[1] As described in this report, DTI actions associated with the ACP are on behalf of Atlantic.

under Nationwide Permit (NWP) 12. The background information provided from the FERC process below is intended to assist the USACE in documenting that verification of the single and complete crossings of this linear project under NWP 12 is appropriate and fully consistent with USACE regulations on scope of analysis and the NWP Program. In particular, the following background information is intended to provide the necessary basis for the USACE to determine that the avoidance of impacts to waters of the United States, mitigation for unavoidable conversion of forested wetlands to scrub-shrub and/or emergent wetlands and scrub-shrub wetlands to emergent wetlands, results in no more than minimal impact at each single and complete crossing. Furthermore, the information provided below demonstrates that the cumulative impacts to waters of the United States, after considering compensatory mitigation consistent with the USACE NWP Program, is minimal based on evaluating impacts within 8-digit Hydrologic Unit Code (HUC 8) watersheds.

Contextual information is provided in this supplement on the overall project to provide a basis for the USACE's minimal impact determinations, understanding that the USACE's scope of analysis under the NWP 12 is limited to the single and complete crossings and the uplands in the immediate vicinity of the single and complete crossings that impact the location of such crossings of waters of the United States. Only approximately 14 percent of the overall pipeline length is located within waters of the United States.

Under relevant USACE precedent (including without limitation, USACE regulations, NEPA implementation procedures, 2012 NWPs and Memorandum of Understanding with FERC), the "build/no build" decision and the overall project alignment is determined through the FERC NEPA process. The USACE serves as cooperating agency on the FERC EIS through which the USACE can coordinate with FERC to ensure that the overall pipeline alignment properly considers avoidance of impacts to waters of the United States. Moreover, the FERC licensing process includes a number of required policies and procedures designed to ensure that impacts to waters of the United States are avoided and minimized to the extent practicable. Section 3.14 Route Alternatives and Route Adjustments provides a summary of the extensive avoidance and minimization that has occurred to date for the proposed project.

As with any linear project, waters of the United States cannot be completely avoided because of the extensive and reticulated nature of the aquatic resource. The USACE evaluation under NWP 12 ensures that the unavoidable impacts to waters of the United States at each single and complete crossing are mitigated in order to ensure no more than minimal individual and cumulative impacts to waters of the United States, after considering the required compensatory mitigation. Atlantic has worked with the USACE field staff to provide minor relocations of the pipeline route to avoid waters of the United States with special ecological value.

PROJECT SUPPLEMENTAL INFORMATION ON PROPOSED FACILITIES

Atlantic is seeking authorization to construct, own, operate, and maintain the following proposed facilities for the ACP:

Mainline Pipeline Facilities:

- AP-1: approximately 300.1 miles of 42-inch outside diameter natural gas transmission pipeline in Harrison, Lewis, Upshur, Randolph, and Pocahontas Counties, West Virginia; Highland, Augusta, Nelson, Buckingham, Cumberland, Prince Edward, Nottoway, Dinwiddie, Brunswick, and Greensville Counties, Virginia; and Northampton County, North Carolina.
- AP-2: approximately 183.0 miles of 36-inch outside diameter natural gas transmission pipeline in Northampton, Halifax, Nash, Wilson, Johnston, Sampson, Cumberland, and Robeson Counties, North Carolina.

Lateral Pipeline Facilities:

- AP-3: approximately 79.3 miles of 20-inch outside diameter natural gas lateral pipeline in Northampton County, North Carolina; and Greensville and Southampton Counties and the Cities of Suffolk and Chesapeake, Virginia.
- AP-4: approximately 0.6 mile of 16-inch outside diameter natural gas lateral pipeline in Brunswick County, Virginia.
- AP-5: approximately 1.1 miles of 16-inch outside diameter natural gas lateral pipeline in Greensville County, Virginia.

Compressor Station Facilities:

- Compressor Station 1: a new, natural gas-fired compressor station approximately at milepost [2] (MP) 7.6 of the AP-1 mainline in Lewis County, West Virginia.
- Compressor Station 2: a new, natural gas-fired compressor station approximately at MP 191.5 of the AP-1 mainline in Buckingham County, Virginia.
- Compressor Station 3: a new natural gas-fired compressor station approximately at MP 300.1 of the AP-1 mainline and MP 0.0 of the AP-2 mainline and MP 0.0 of the AP-3 lateral in Northampton County, North Carolina.

Other Aboveground Facilities:

- Nine new metering and regulating (M&R) stations at receipt and/or delivery points along the new pipelines (including one at Compressor Station 1 and one at Compressor Station 2).
- Thirty valve sites at select points along the new pipelines at intervals specified by U.S. Department of Transportation (USDOT) regulations at Title 49 Code of Federal Regulations (CFR) Part 192.

[2] The mileposts used in this report are based on three-dimensional changes in topography (elevation) along the proposed pipeline routes. Therefore, the strait-line distance between two mileposts depicted on two-dimensional maps and figures of the routes may be greater than 5,280 feet.

- Eight sets of pig launcher and/or receiver sites at 11 points along the new pipelines (including launcher/receiver sites at Compressor Stations 2 and 3).
- A network of 29 microwave towers to facilitate system communications during operation of the ACP.

1.0 PROJECT LOCATION INFORMATION

This section includes summary information to satisfy the Project Location Information section of the JPA.

1.1 PROJECT LOCATION SUMMARY

Due to the linear nature of the project, no street address is provided. Table 1-1 provides a list of counties, U.S. Geological Survey (USGS) topographic quadrangle maps, and USGS HUC 8, sub-basins within which the ACP will occur.

TABLE 1-1

Counties Crossed by the Atlantic Coast Pipeline within the Norfolk District

Project Facility	County/City	USGS Topographic Map Name(s)	USGS Hydrologic Unit Code(s)
AP-1	Highland	Hightown, Monterey, Monterey SE, McDowell	Upper James (02080201)
	Augusta	McDowell, West Augusta, Stokesville, Churchville, Greenville, Stuarts Draft, Waynesboro West, Sherando	Upper James (02080201) South Fork Shanandoah (02070005)
	Nelson	Sherando, Horseshoe Mountain, Lovingston, Shipman, Howardsville	Middle James-Buffalo (02080203)
	Buckingham	Howardsville, Saint Joy, Buckingham, Andersonville, Willis Mountain	Middle James-Buffalo (02080203) Middle James-Willis (02080205)
	Cumberland	Willis Mountain, Farmville, Rice	Middle James-Willis (02080205) Appomattox (02080207)
	Prince Edward	Rice, Deatonville	Appomattox (02080207)
	Nottoway	Deatonville, Crewe West, Crewe East, Wellville, Blackstone East	Appomattox (02080207) Nottoway (03010201)
	Dinwiddie	Blackstone East, Darvills, Warfield	Nottoway (03010201)
	Brunswick	Warfield, McKenney, Smoky Ordinary, Ante	Nottoway (03010201) Meherrin (03010204)
	Greensville	Ante, Emporia, Skippers,	Meherrin (03010204)
AP-3	Greensville	Margarettsville	Meherrin (03010204)
	Southampton	Margarettsville, Boykins, Capron, Courtland, Franklin,	Meherrin (03010204) Nottoway (03010201) Blackwater (03010202)
	Suffolk	Franklin, Holland, Buckhorn, Suffolk, Chuckatuck, Bowers Hill	Blackwater (03010202) Chowan (03010203) Hampton Roads (02080208) Albemarle (03020105)
	Chesapeake	Bowers Hill, Norfolk South	Hampton Roads (02080208)

1.2 WATERBODY AND WETLAND RESOURCES SUMMARY

The ACP pipeline facilities and aboveground facilities cross a total of 520 wetlands and 563 waterbodies in Virginia, as detailed in the tables in Appendix B. These tables include details on wetlands (Tables B-1 and B-3) that include location information, HUC 8 codes, wetland type

classifications, and an analysis of the impacts that are proposed (after avoidance and minimization), and details on waterbodies (Tables B-2 and B-4) that include location information, HUC 8 codes, state special designations, tributary information, and an analysis of the impacts that are proposed (after avoidance and minimization). Table B-2 of Appendix B contains a list of waters crossed by the ACP that have special standards based on VDEQ Water Quality Standards 9VAC25-260 et seq.

Sixty-six waterbodies crossed by ACP in Virginia have been evaluated and determined to be subject to the subaqueous land crossing license administered by the VMRC (perennial waters with a five square mile or greater watershed). These waterbodies are listed in table B-2.

Table 1-2 below identifies Section 10 Navigable Waters crossed by the project within the Norfolk District. Cross sectional views of Section 10 navigable crossings are located in Appendix C. Maps in Appendix D depict the location of project facilities on topographic and aerial maps.

Due to the linear nature of the project, overview maps in Appendix D include major roads to facilitate access to the Project and detailed topographic and aerial photography route maps provide more accurate location information.

TABLE 1-2

Section 10 Navigable Waters Crossed by the Atlantic Coast Pipeline within the Norfolk District

Facility	Unique ID	Milepost	Waterbody Name	Latitude	Longitude	Construction Method
AP-1	sbup015	184.8	James River	37.66138	-78.71839	Horizontal Directional Drill
AP-1	scuk011	220.8	Appomattox River	37.32187	-78.30574	Cofferdam
AP-3	ssol015	32.6	Nottoway River	36.63421	-76.99071	Horizontal Directional Drill
AP-3	ssoa010	38.6	Blackwater River	36.63054	-76.89126	Horizontal Directional Drill
AP-3	DKOB_VA_004	78.4	Southern Branch Elizabeth River	36.77454	-76.29541	Horizontal Directional Drill

2.0 APPLICANT, AGENT, PROPERTY OWNER, AND CONTRACTOR INFORMATION

TABLE 2-1

Applicant Information

Applicant: Leslie Hartz, Atlantic Coast Pipeline, LLC	Agent **William Scarpinato, Jr., Dominion Resources Services, Inc.**
Mailing Address 707 E Main Street, 19th Floor	Mailing Address 5000 Dominion Blvd
City/State/Zip Richmond, VA 23219	City/State/Zip Glen Allen, VA 23060
Phone (804) 771-4468	Phone (804) 273-3019
Fax	Fax
Mobile	Mobile
Email leslie.hartz@dom.com	Email William.A.Scarpinato@dom.com
State Corporation Commission ID Number	State Corporation Commission ID Number

A list of property owners adjacent to subaqueous lands crossings is provided in Appendix E. Contractors for the ACP have not been selected at the time of the application submittal

3.0 DESCRIPTION OF PROJECT, PURPOSES, NEED, USE, AND ALTERNATIVES

3.1 PROJECT DESCRIPTION

The project description for purposes of USACE NWP 12 verification is to construct single and complete crossings of waters of the United States that result in no more than minimal individual and cumulative impacts to the aquatic environment. The overall ACP project construction and operation to be authorized by FERC is a proposed 564.1-mile-long interstate natural gas transmission pipeline that will serve the growing energy needs of multiple public utilities and local distribution companies in Virginia and North Carolina. The natural gas transported by the ACP will be used as a fuel to generate electricity for industrial, commercial, and residential uses. The natural gas will also be used directly for residential, commercial, and industrial uses. By providing access to additional low-cost natural gas supplies, the ACP will increase the reliability and security of natural gas supplies in Virginia and North Carolina. Project facilities in Virginia are described below. Construction of the pipelines is expected to occur over approximately a 2-year period beginning in October 2016.

3.2 PIPELINE FACILITIES

Atlantic proposes to construct approximately 564.1 miles of natural gas transmission pipelines in West Virginia, Virginia, and North Carolina. This includes two new mainline pipelines (AP-1 and AP-2) and three new lateral pipelines (AP-3, AP-4, and AP-5). Detailed route overview maps depicting the locations of these facilities are provided in Appendix D. AP- 1 is partially located in Virginia along with the majority of AP-3 and the entirety of AP-4 and AP-5. AP-2 is entirely located within North Carolina and will not be discussed further in this application. Table 3-1 provides summary information on the crossing length of each pipeline by County/City in Virginia.

The AP-1 mainline, which will consist of 42-inch outside diameter pipeline, will originate at a new interconnect with DTI facilities in Lewis County, West Virginia. From this point, the pipeline will extend approximately 83 miles to the southeast through West Virginia. After entering Virginia, the pipeline will continue for approximately 167 miles to the southeast, crossing through Highland, Augusta, Nelson, Buckingham, Cumberland, Prince Edward, and Nottoway Counties, and entering Dinwiddie County. In Augusta County, the pipeline will pass west and south of the Cities of Staunton and Waynesboro, and in Cumberland and Prince Edward Counties, the pipeline will pass north and east of the town of Farmville. In Dinwiddie County, near the Fort Picket Military Reservation, the pipeline will turn to the south/southeast and continue for approximately 50 miles to the Commonwealth of Virginia/State of North Carolina (Commonwealth/State) line, crossing through Brunswick and Greensville Counties. The pipeline will terminate approximately 200 feet south of the Commonwealth/State line in Northampton County, North Carolina at proposed Compressor Station 3.

The AP-3 lateral, which will consist of 20-inch outside diameter pipeline, will originate at Compressor Station 3 in Northampton County, North Carolina, just south of the

(Commonwealth/State) line. From this point, the pipeline will extend east/northeast for approximately 79 miles crossing through Northampton County, North Carolina; Greensville and Southampton Counties, Virginia; and the Cities of Suffolk and Chesapeake, Virginia. The pipeline will pass south of the City of Franklin in Southampton County, and south of the City of Portsmouth in Chesapeake. The pipeline will generally parallel the south side of United States Highway 58W through the City of Suffolk. It will terminate at a new interconnect with an existing Virginia Natural Gas pipeline on the east side of the Southern Branch Elizabeth River in the City of Chesapeake.

The AP-4 pipeline lateral, which will consist of 16-inch outside diameter pipeline, will originate approximately at MP 279.6of the AP-1 mainline near Lawrenceville in Brunswick County, Virginia. The lateral will extend approximately 3 miles due west to a new interconnect with a Dominion Virginia Power (DVP) electric generating facility currently under construction.

The AP-5 pipeline lateral, which will consist of 16-inch outside diameter pipeline, will originate approximately at MP 284.4 of the AP-1 mainline in Greensville County, Virginia. The pipeline will extend approximately 1 mile to the south/southwest to an interconnection with a proposed DVP electric generating facility.

TABLE 3-1

Proposed Pipeline Facilities in Virginia for the Atlantic Coast Pipeline[a]

Pipeline Facility	County/City and (Commonwealth)	Begin Milepost	End Milepost	Length (miles)
AP-1	Highland County, VA	83.1	109.8	26.7
	Augusta County, VA	109.8	158.2	48.4
	Nelson County, VA	158.2	184.7	26.5
	Buckingham County, VA	184.7	211.9	27.2
	Cumberland County, VA	211.9	220.8	8.9
	Prince Edward County, VA	220.8	225.9	5.1
	Nottoway County, VA	225.9	249.0	23.1
	Dinwiddie County, VA	249.0	260.7	11.7
	Brunswick County, VA	260.7	283.0	22.3
	Greensville County, VA	283.0	300.1	17.1
	Highland County, VA	83.1	109.8	26.7
Subtotal				**217.0**
AP-3				
	Greensville County, VA	12.1	12.4	0.3
	Southampton, County VA	12.4	38.6	26.2
	City of Suffolk, VA	38.6	68.1	29.5
	City of Chesapeake, VA	68.1	79.3	11.2
Subtotal				**67.2**
AP-4	Brunswick County, VA	0.0	0.6	0.6
Subtotal				**0.6**
AP-5	Greensville County, VA	0.0	1.1	1.1
Subtotal				**1.1**
ACP Total in VA		–	–	**285.9**

[a] The numbers in this table have been rounded for presentation purposes. As a result, the totals may not reflect the sum of the addends.

The design factor and wall thickness for each pipeline will adhere to USDOT requirements. The pipe will be manufactured in accordance with American Petroleum Institute (API) Standards and all applicable Federal and Commonwealth regulations for design, permitting, construction, operation, and maintenance. A corrosion protection external coating will be applied to each pipeline and all buried facilities, and cathodic protection will be provided by an impressed current system on each pipeline.

As proposed, the capacity of the new pipeline system will be up to 1.5 billion cubic feet per day (bcf/d) of natural gas. The maximum allowable operating pressure of the pipelines will be 1,440 pounds per square inch gauge.

Atlantic plans to collocate the proposed pipeline facilities with existing infrastructure to the maximum extent practicable. The majority of the proposed pipeline facilities will be constructed along a new (greenfield) corridor generally due to a lack of existing pipeline infrastructure in West Virginia, Virginia, and North Carolina between the proposed receipt and delivery points required for the ACP. In some places, there are existing electric transmission lines in the vicinity of the pipeline routes, but these span terrain features, such as steep side slopes, which cannot safely be crossed by a buried pipeline. In total, approximately 49.0 miles (17.1 percent) of the proposed pipelines within the Norfolk District are parallel to existing linear corridor facilities, including pipelines, electric transmission lines, roads, and railroads; the remainder (263.9 miles; 82.9 percent) is greenfield.

3.3 ABOVEGROUND FACILITIES

In addition to the proposed pipeline facilities, the ACP will require construction of three compressor stations, nine M&R stations, 30 valves, eight sets of pig launcher and receiver sites, and associated appurtenances. One of the compressor stations, 4 of the M&R stations, 13 valves, and 7 sets of pig launchers and receivers occur in Virginia. The approximate locations of these facilities in Virginia are depicted in the route maps provided as Appendix D. The location of each facility by milepost and County/City is listed in Table 3-2.

The above ground facilities located within Virginia are described below.

Compressor Station 2 will be built at approximately MP 186.0 in Buckingham County, Virginia, where the AP-1 mainline will intersect existing Transcontinental Gas Pipe Line Company, LLC (Transco) transmission pipelines. The station will take natural gas from both the AP-1 mainline and the existing Transco pipelines. The station will be bi-directional with the ability to discharge into the AP-1 mainline downstream of the compressor station as well as the existing Transco pipelines. The station will contain four gas-driven turbines, which combined will provide approximately 40,645 horsepower (hp) of compression. The station will include approximately six structures (e.g., compressor, auxiliary, office, utility gas, drum storage, and storage building(s)), with a chain-link security fence installed around the periphery of the site. Equipment at the station will include gas filter/separators, gas coolers, inlet air filters, exhaust silencers, tanks, blowdown silencers, heaters, and auxiliary generators.

Atlantic will construct four M&R stations in Virginia at the locations identified in Table 3-3. The Woods Corner M&R Station will be built on the same site and within the same

fenceline as Compressor Station 2. The other three M&R stations will be built at receipt or delivery points along the pipelines. Table 3-3 identifies the receipt and delivery volumes for each station.

In general, each M&R station will contain two dekatherm buildings (used to house equipment such as gas chromatographs, communications equipment, etc.), a regulation building, and possibly a meter building. Equipment at each station will include gas filter/separators, gas meters, and regulators, and may include gas heaters and/or odorization equipment. Each station will be surrounded by a chain-link security fence.

Thirteen valves will be installed along the proposed pipelines in Virginia at the locations identified in Table 3-2. The valves will be installed below grade with aboveground valve operators, risers, blowdown valves, and crossover piping connected on each side of the valve. A chain-link security fence will be installed around the periphery of each valve site. The valves will allow Atlantic to segment the pipelines for safety, operations, and maintenance purposes.

TABLE 3-2

Proposed Aboveground Facilities in Virginia for the Atlantic Coast Pipeline

Aboveground Facility	County/City and Commonwealth	Approximate Milepost
Compressor Stations		
AP-1 Mainline		
Compressor Station 2	Buckingham County, VA	191.5
Metering and Regulating Stations		
AP-1 Mainline		
Woods Corner M&R Station	Buckingham County, VA	191.5
AP-3 Lateral		
Elizabeth River M&R Station	City of Chesapeake, VA	79.3
AP-4 Lateral		
Brunswick M&R Station	Brunswick County, VA	0.6
AP-5 Lateral		
Greensville M&R Station	Greensville County, VA	1.1
Valves [a]		
AP-1 Mainline		
Valve Site 6	Augusta County, VA	113.2
Valve Site 7	Augusta County, VA	130.8
Valve Site 8	Augusta County, VA	142.9
Valve Site 9	Nelson County, VA	149.7
Valve Site 10	Nelson County, VA	164.0
Valve Site 10B		178.4
Valve Site 11	Buckingham County, VA	206.0
Valve Site 12	Nottoway County, VA	225.8
Valve Site 13	Dinwiddie County, VA	245.2
Valve Site 14	Brunswick County, VA	264.8
AP-3 Lateral		
Valve Site 26	Southampton County, VA	19.5
Valve Site 27	City of Suffolk, VA	39.1
Valve Site 28	City of Suffolk, VA	56.3
Valve Site 29	City of Chesapeake, VA	64.7

TABLE 3-2 (cont'd)

Proposed Aboveground Facilities in Virginia for the Atlantic Coast Pipeline

Aboveground Facility	County/City and Commonwealth	Approximate Milepost
Pig Launcher/Receiver Sites		
AP-1 Mainline		
Site 2 (launcher/receiver)	Highland County, VA	93.7
Site 3 (launcher/receiver)	Buckingham County, VA	191.5
AP-3 Lateral		
Site 7 (receiver)	City of Chesapeake, VA	79.3
AP-4 Lateral		
Site 8 (launcher)	Brunswick County, VA	0.0
Site 9 (receiver)	Brunswick County, VA	0.6
AP-5 Lateral		
Site 10 (launcher)	Greensville County, VA	0.0
Site 11 (receiver)	Greensville County, VA	1.1

[a] There are no valves along the AP-4 and AP-5 pipeline laterals.

The seven pig launchers and/or receivers in Virginia are identified in Table 3-2. The pig launchers/receivers will be used to run pipeline inspection tools, called pigs, through the pipeline system.

TABLE 3-3

Metering and Regulating Stations in Virginia for the Atlantic Coast Pipeline

Station	Description	Receipt Volume (bcf/d) [a, b]	Delivery Volume (bcf/d) [a]	Bi-Directional
Woods Corner M&R Station	This station will take natural gas from the proposed AP-1 mainline and the existing Transco pipelines and have the ability to discharge into all of these pipelines.	1.00	1.40	Yes
Elizabeth River M&R Station	This station will take natural gas from the proposed AP-3 lateral and discharge into an existing Virginia Natural Gas pipeline.	Not applicable	0.35	No
Brunswick M&R Station	This station will take natural gas from the proposed AP-4 lateral and discharge to a Dominion Virginia Power electric generating facility which currently is under construction.	Not applicable	0.35	No
Greensville M&R Station	This station will take natural gas from the proposed AP-5 lateral and discharge to a proposed Dominion Virginia Power electric generating facility.	Not applicable	0.35	No

[a] bcf/d = billion cubic feet per day.

[b] The ACP has been designed to provide operational flexibility and sufficient capacity to receive fuel gas. This is why this value exceeds 1,500 mmscf/d.

3.4 PURPOSE AND NEED

The purpose and need of each single and complete crossing is to cross the particular water of the United States while avoiding impacts to waters of the United States to the maximum extent practicable and offsetting unavoidable impacts to the aquatic environment with compensatory mitigation.

3.5 FERC NEPA PROJECT PURPOSE STATEMENT

The following description of the purpose and need for the FERC NEPA process is provided as background information.

The ACP is a proposed interstate natural gas transmission pipeline that will serve the growing energy needs of multiple public utilities and local distribution companies in Virginia and North Carolina. The natural gas transported by the ACP will be used as a fuel to generate electricity for industrial, commercial, and residential uses. The natural gas will also be used directly for residential, commercial, and industrial uses. By providing access to additional low-cost natural gas supplies, the ACP will increase the reliability and security of natural gas supplies in Virginia and North Carolina.

In recent years, demand for natural gas in Virginia and North Carolina has grown significantly. Demand for natural gas for all uses grew by 37 and 50 percent, respectively, in Virginia and North Carolina between 2008 and 2012. Demand for gas-fired electric power generation grew by 123 percent in Virginia and 459 percent in North Carolina from 2008 to 2013 (U.S. Energy Information Administration [EIA], 2015a, 2015b, 2015c, 2015d, and 2015e).[3]

Demand for natural gas in Virginia and North Carolina is expected to increase in coming decades due to a combination of population growth and displacement of coal-fired electric power generation. The U.S. Census Bureau predicts 2.7 million new residents in Virginia and 4.2 million new residents in North Carolina between 2000 and 2030 (U.S. Census Bureau, 2014). At the same time, use of natural gas for power generation is expected to increase significantly. By 2035, natural gas is expected to surpass coal as the most common fuel for electric power generation due to coal-fired plant retirements and low natural gas prices. The EIA (2015a) expects renewable generation to grow 1.9 percent per year, meeting a part of the demand for power, but more than 70 percent of new generating capacity will be fueled by natural gas.

A study prepared by ICF International (2015) for Atlantic projects that electric power generation in Virginia and North Carolina will increasingly rely on natural gas over the next two decades. Between 2019 and 2038, the study predicts that approximately 9,900 megawatts of electric generating capacity from coal and nuclear fuels will be retired, while 20,200 megawatts of new generating capacity from natural gas will be built in Virginia and North Carolina. As a result, demand for natural gas for power generation in Virginia and North Carolina is expected to grow 6.3 percent annually between 2014 and 2035, increasing from 1 bcf/d to 3.7 bcf/d.

[3] U.S. Energy Information Administration. 2015a. Annual Energy Outlook 2015. Available online at http://www.eia.gov/forecasts/aeo/. Accessed June 2015.

U.S. Energy Information Administration. 2015b. Market Trends; Electricity Demand. Available online at http://www.eia.gov/forecasts/aeo/MT_electric.cfm. Accessed June 2015.

U.S. Energy Information Administration. 2015c. Market Trends; Natural Gas. Available online at http://www.eia.gov/forecasts/aeo/mt_naturalgas.cfm. Accessed June 2015.

U.S. Energy Information Administration. 2015d. Natural Gas Summary for Virginia. Available online at http://www.eia.gov/dnav/ng/ng_sum_lsum_dcu_SVA_a.htm. Accessed June 2015.

U.S. Energy Information Administration. 2015e. Natural Gas Summary for North Carolina. Available online at http://www.eia.gov/dnav/ng/ng_sum_lsum_dcu_SNC_a.htm. Accessed June 2015.

To meet the growing demand for natural gas, the EIA (2015a) projects total United States natural gas production to increase by 56 percent from 2012 to 2040. At the same time, natural gas transmission patterns across the United States are expected to change based on the growing production from shale basins in the mid-Atlantic region. Historically, gas produced from the Gulf of Mexico, Canada, and the Rocky Mountains was delivered to markets in the eastern United States. Large increases in production from United States supply basins have created abundant, competitively priced supplies to meet the demands of the region.

A study by the U.S. Department of Energy (DOE, 2015) [4], dated February 2015, examined the impact of increased demand for natural gas from the electric power sector on natural gas pipeline infrastructure in the United States over a 15 year period from 2015 to 2030.[5] The DOE (2015) study found that a projected 38 to 42 bcf/d of new and expanded pipeline capacity will be necessary to meet demand over the 15 year study period. The DOE study further found that flow reversal is projected to occur "to serve markets in the Southeast." Furthermore, existing pipelines that historically transported natural gas from the Gulf Coast region to points further north are expected to change the direction of flow in order to "serve the Virginia and Carolina markets" (DOE, 2015). However, there are no existing long haul interstate pipelines with available takeaway capacity from the Appalachian region directly serving Virginia and North Carolina (see Figure 1 in the DOE [2015] study).

Moreover, market participants in the region have determined that their needs cannot be adequately met by existing pipeline systems. In April 2014, Duke Energy and Piedmont issued requests for proposals for incremental pipeline transportation service due to their existing and future natural gas generation requirements, core load growth, and system reliability and supply diversity goals. In June 2014, Virginia Power Services Energy Corp., Inc. issued a request for proposals for firm transportation service to serve Virginia. Following the request for proposals processes, these companies contracted for transportation service on the ACP, as did other companies in the region.

To meet the natural gas demand of its customers, the ACP will connect the growing demand areas in Virginia and North Carolina with growing supplies. Interstate natural gas pipelines act as common carriers to transport natural gas; they are not part of natural gas exploration or production activities. The ACP will connect growing demand areas in Virginia and North Carolina with growing supply areas in the Appalachian region and provide access to the Dominion South Point supply hub, consisting of abundant supplies on the DTI system that are sourced from a wide variety of upstream pipeline interconnects and diverse production areas. More specifically, the ACP will provide up to 1.5 bcf/d of firm natural gas transportation service into West Virginia, Virginia, and North Carolina.

---

4 U.S. Department of Energy. 2015. Natural Gas Infrastructure Implications of Increased Demand from the Electric Power Section. Available on line at http://energy.gov/sites/prod/files/2015/02/f19/DOE%20Report%20Natural%20Gas%20Infrastructure%20V_02-02.pdf. Accessed February 2015.

5 In comments filed with the FERC, several individuals said that demand for natural gas in Virginia and North Carolina could be met by existing pipeline systems citing this study by the DOE. The study did not conclude, as some suggested, that no additional pipeline capacity is needed to meet the increased demand for natural gas. Instead, the study found that the expected increase in pipeline capacity over the study period will be modest relative to previous expansions in pipeline capacity.

The ACP will receive gas on behalf of its customers at two new interconnections: one between the ACP and the Supply Header Project (SHP)[6], a connected project proposed by DTI, (both existing facilities and new facilities proposed for the SHP) in Harrison County, West Virginia, to be known as the Marts Junction Interconnection; and one between the ACP and existing Transco facilities in Buckingham County, Virginia, to be known as the Buckingham Interconnect. The natural gas will be delivered to various new customer interconnects in West Virginia, Virginia, and North Carolina. Additionally, the ACP will lease capacity on a pipeline owned and operated by Piedmont to enable certain deliveries in North Carolina.

Of the new firm transportation capacity of up to 1.5 bcf/d proposed by the ACP, 1,360,000 dekatherms per day (Dth/d) (approximately 1.33 bcf/d) is currently subscribed pursuant to precedent agreements with six customers. These customers are major utilities and local distribution companies in the region. The precedent agreements demonstrate the need for the Projects, the demand for new gas supplies indicated in the studies noted above, and the desire for access to a new supply region. The remaining unsubscribed capacity will be awarded and contracted for in accordance with Commission policies applicable to open-access interstate pipelines and the provisions of applicable FERC gas tariffs. The natural gas supplied to each delivery point will be provided to local distribution companies (LDC), power generators, and other interstate pipeline companies.

3.6 PIPELINE RIGHTS-OF-WAY

The construction right of way for the pipeline has been minimized following FERC's "Wetland & Waterbody Construction & Mitigation Procedures," as prescribed for each land type. For the AP-1 mainline, the construction corridor in non-agricultural uplands will measure 125 feet in width, with 40-foot-wide temporary side-casted soil storage side and an 85-foot-wide working side. In areas where full width topsoil segregation is required (e.g., agricultural areas), an additional 25 feet of temporary construction workspace will be needed on the working side of the corridor to provide sufficient space to store topsoil. In wetlands, the width of the construction right-of-way will be reduced to 75 feet, with 25 feet on the soil storage side and 50 feet on the working side. Following construction, a 75-foot-wide permanent easement will be maintained for operation of the pipeline.

In West Virginia and northwestern Virginia, the proposed AP-1 mainline will be constructed in steep, mountainous terrain. Generally, the pipeline alignment will run along ridgelines and up and down slopes (as opposed to crossing laterally along side-slopes). Installation along the ridgelines may require the pipe to be buried deeper than normal (i.e., with greater than 3 feet of cover over the pipeline, which is typical in non-agricultural uplands). This is due in part to the techniques needed to construct along narrow ridgelines. The surface of ridgelines may be temporarily lowered to create a level construction right-of-way (125 feet wide). Excavation of the trench will begin from the leveled work area. When the temporary right-of-way is restored to pre-construction contours, the depth of cover over the pipeline could exceed the minimum of 3 feet by an additional 7 feet or more.

[6] The ACP and SHP are separate projects with separate applicants, but are being reviewed as connected actions by FERC through development of a single Environmental Impact Statement.

For pipeline construction, the top width of the excavated pipe trench will typically range from 8 to 15 feet. This assumes that construction personnel will not be required to work in the trench. In areas of steep terrain where construction personnel will likely be required to work in the trench, the top of the trench will typically be 30 feet wide. If it is necessary to expose the installed pipeline for maintenance activities during operations, a wider trench would need to be excavated. Unlike the initial installation of the pipeline, the lowering of the surface of the ridgeline to create a level construction right-of-way would not be an option during operations due to the lack of temporary workspace outside the permanent easement. Therefore, the trench would have to daylight to the natural grade of the ridgeline resulting in a wider trench at the top.

In determining the width of the permanent right-of-way needed along narrow ridgelines and steep terrain for operation of the AP-1 mainline, the following assumptions were made:

- 42-inch-diameter pipe;
- 10 feet depth of cover over the pipeline, and possibly greater depth of cover at over-bends and along ridgelines; and
- 1V:1H grade (45 degrees) on the trench walls.

Based on these assumptions, if it is necessary to expose the installed pipeline for maintenance activities, the width at the top of the trench could be approximately 40 feet along ridgelines in areas with steep terrain. A 60-foot-wide permanent right-of-way would not provide adequate space to safely maneuver people and equipment in the event that the trench needs to be excavated during operations. For this reason, a permanent right-of-way of 75 feet is required.

While a 60-foot-wide permanent right-of-way is typical for 42-inch-diameter pipelines, this does not take into account the nature of steep terrain nor the special construction and maintenance methods this requires. Atlantic has carefully considered the operations and maintenance requirements in steep terrain and determined that a 75-foot-wide right-of-way is necessary for the AP-1 mainline. This will provide for improved safety conditions and minimize requirements for off-right-of-way workspace during maintenance operations. FERC's "Wetland and Waterbody Construction & Mitigation Procedures Section D. Post-Construction Maintenance and Reporting," requires:

"Do not conduct routine vegetation mowing or clearing over the full width of the permanent right-of-way in wetlands. However, to facilitate periodic corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide may be cleared at a frequency necessary to maintain the 10-foot corridor in an herbaceous state. In addition, trees within 15 feet of the pipeline with roots that could compromise the integrity of pipeline coating may be selectively cut and removed from the permanent right-of-way. Do not conduct any routine vegetation mowing or clearing in wetlands that are between horizontal directional drill (HDD) entry and exit points."

For the AP-3, AP-4, and AP-5 pipeline laterals, the construction corridor in non-agricultural uplands and in wetlands will measure 75 feet in width, with a 25-foot-wide soil storage side and 50-foot-wide working side. In areas where full width topsoil segregation is required (e.g., agricultural areas), an additional 25 feet of temporary construction workspace will be needed on the working side of the corridor to provide sufficient space to store topsoil.

Following construction, a 50-foot-wide permanent easement will be maintained for operation of each pipeline.

Therefore, following construction within the 50-foot-wide permanent easement areas, the following maintenance will occur:

(a) Ten feet centered over pipeline – maintained in an herbaceous state to facilitate periodic aerial inspections.

(b) Thirty feet centered over pipeline – trees with roots that could compromise the integrity of the pipeline coating would be selectively removed.

(c) Outside 30' on either side of pipeline – Allowed to regrow with no restrictions - no vegetation maintained by Dominion.

Following construction of the ACP, land within the temporary construction right-of-way will be restored to preconstruction conditions and uses. Additionally, although 4,250.1 acres will be maintained as permanent easement for operation of the ACP, impacts in areas such as cultivated fields and pastures will be short term. These areas will be restored to preconstruction conditions and uses following installation of the pipeline.

In addition to the construction rights-of-way, additional temporary workspace (ATWS) will be required to stage construction activities and store equipment, materials, and excavated soil at wetland, waterbody, and road crossings. ATWS will also be required in areas with steep side slopes or where special construction techniques are implemented as well as at tie-ins with existing pipeline facilities, utility crossings, truck turnaround areas, and spread mobilization/de-mobilization areas.

For the AP-1 mainline, ATWS measuring 50 by 150 feet will typically be required on both sides of the construction corridor and both sides of the crossing at wetlands, waterbodies measuring greater than 10 feet in width, two lane roads, and railroads. ATWS measuring 25 by 100 feet will typically be required on both sides of the construction corridor and both sides of the crossing at waterbodies measuring less than 10 feet in width and single lane roads. For the AP-3, AP-4, and AP-5 laterals ATWS measuring 25 by 100 feet will typically be required on both sides of the construction corridor and both sides of the crossing at wetlands, waterbodies, roads, and railroads. Following construction of the pipelines, ATWS will be restored to pre-existing conditions and uses.

3.7 GENERAL CONSTRUCTION PROCEDURES

While some of the information pertaining to upland construction activities referenced in the sections below is not specifically related to the USACE's permitting requirements, the detailed information and Plans will be available through the FERC Project docket to all cooperating agencies, including the USACE.

The ACP will be designed, constructed, operated, and maintained in accordance with USDOT regulations codified at 49 CFR 192, *Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards*; with FERC regulations codified at 18 CFR

380.15, *Siting and Maintenance Requirements*; and with other applicable Federal and Commonwealth regulations, except as otherwise specified in the FERC Application or approved by the appropriate regulatory agency.

Atlantic will adopt and implement the 2013 versions of the FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan) and *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures).[7] Atlantic additionally will prepare and implement the following construction, restoration, and mitigation plans:

- *Spill Prevention, Control, and Countermeasures* (SPCC) *Plan*;
- *Horizontal Directional Drill Fluid Monitoring, Operations, and Contingency Plan* (HDD Plan);
- *Timber Removal Plan*;
- *Contaminated Media Plan*;
- *Traffic and Transportation Management Plan*;
- *Invasive Plant Species Management Plan*;
- *Blasting Plan*;
- *Winter Construction Plan*;
- *Plan for Unanticipated Discovery of Historic Properties or Human Remains during Construction;*
- *Karst Monitoring and Mitigation Plan*;
- *Restoration and Rehabilitation Plan;*
- *Migratory Bird Plan*;
- *Fire Prevention and Suppression Plan*; and
- *Fugitive Dust Control and Mitigation Plan.*

Proposed modifications to the Plan and Procedures will be reviewed and approved by FERC. A copy of the SPCC Plan, HDD Plan, Plan for Unanticipated Discovery of Historic Properties or Human Remains during Construction, and the Restoration and Rehabilitation Plan are provided in the Appendices F, G, H, and I. Construction typical drawings depicting construction sequence and methods are contained in Appendix J.

Atlantic will also prepare a set of construction alignment sheets or similar scale maps which depict the locations of erosion and sediment controls in construction work areas that will be used during construction of ACP. The alignment sheets will be based on the Plan and Procedures as well as Commonwealth and local regulations or guidelines applying the strictest applicable standards, such as the Virginia Department of Environmental Quality's *Virginia*

[7] Copies of the FERC's Plan and Procedures are available on the FERC's website at http://www.ferc.gov/industries/gas/enviro/guidelines.asp.

Erosion and Sediment Control Handbook[8]. Atlantic will develop construction alignment sheets that will be at a scale of one inch equals 200 feet. Alignment sheets for the portion of the project within Virginia will be provided to the USACE.

3.7.1 Survey and Staking

Affected landowners will be notified before the preconstruction survey and staking are conducted. After these notifications, Atlantic's survey contractor will stake the pipeline centerlines and limits of the construction right-of-way and ATWS areas. Wetland boundaries and other environmentally sensitive areas will also be marked at this time.

3.7.2 Clearing and Grading

Prior to beginning ground-disturbing activities, Atlantic's construction contractors will coordinate with the One-Call systems Virginia to have existing underground utilities (e.g., cables, conduits, and pipelines) identified and flagged. Once this process is complete, the clearing crew will mobilize to the construction areas. Fences along the rights-of-way will be cut and braced, and temporary gates and fences will be installed to contain livestock, if present. The clearing crew will then clear the work area of vegetation and other obstacles, including trees, stumps, logs, brush, and rocks.

To the extent feasible, Atlantic will minimize tree removal during construction. Cleared vegetation and stumps will be either burned, chipped (except in wetlands), or hauled offsite to a commercial disposal facility. Burning will be conducted in accordance with State and local burning requirements or permits in uplands; burning will not be conducted in wetlands.

Following clearing, the construction right-of-way and ATWS will be graded where necessary to provide a level work surface to allow safe passage of construction equipment and emergency vehicles. More extensive grading will be required in steep side slope or vertical areas and where necessary to prevent excessive bending of the pipelines. Graded topsoil will be segregated in accordance with the Plan and Procedures, where required. Typically, topsoil will be segregated from subsoil in cultivated and rotated croplands, managed pastures, residential areas, and hayfields, unless Atlantic is instructed by a landowner or land managing agency not to do so or Atlantic imports topsoil in accordance with the Plan.

The depth of topsoil removed will depend on soil conditions and landowner requests or land managing agency requirements. In accordance with the Plan, and in areas where topsoil segregation is required, Atlantic will segregate at least 12 inches of topsoil in deep soils (more than 12 inches of topsoil) and the entire topsoil layer in shallow soils (less than 12 inches of topsoil). Excavated topsoil will be placed on the edge or edges of the construction right-of-way as shown in the construction typicals provided in Appendix J.

If the ground is relatively flat and does not require topsoil segregation or grading, the existing vegetative mat will be peeled and removed similar to topsoil and stockpiled along the

[8] Hardcopy 1992 editions identify this as a Virginia Department of Conservation and Recreation document; the online version identifies this as a Virginia Department of Environmental Quality document. Available online at: http://www.deq.virginia.gov/Programs/Water/StormwaterManagement/Publications/ESCHandbook.aspx

right-of-way for use in restoration. In areas disturbed by grading, and as required by the Plan and Procedures, temporary erosion and sediment controls will be installed within the right-of-way to minimize erosion. The erosion and sediment controls will be inspected and maintained throughout the construction and restoration phases of the Projects, as appropriate, and as required by the Plan and Procedures.

3.7.3 Erosion Control Device Installation

Atlantic will install temporary best management practices (BMP) and/or erosion control devices (ECD), such as slope breakers, sediment barriers, stormwater diversions, etc., as necessary to prevent erosion within the construction right-of-way and ATWS immediately after the initial removal of vegetation (clearing and grubbing) and prior to grading and soil disturbance. ECDs will be installed in accordance with applicable permit conditions and in accordance with VDEQ approved Standards and Specifications. The temporary ECDs will be replaced by permanent ECDs as installation of the pipeline and restoration is completed. ECDs and BMPs will be properly maintained throughout construction and reinstalled as necessary (such as after backfilling of the trench) until replaced by permanent erosion controls, or restoration of adjacent upland areas is complete, and revegetation has stabilized the disturbed area.

3.7.4 Trenching

Pipe trench will be excavated by rotary trenching machines, track-mounted backhoes, or other similar equipment. Trench spoil will be deposited adjacent to the trench within the construction right-of-way. The trench for each pipeline will be excavated to a depth that provides sufficient cover over the pipeline after backfilling. The typical dimensions of each pipeline trench will vary depending on a number of factors, such as the diameter of the pipe being installed and the substrate in the vicinity of the trench. The bottom width of the trench will be sufficient to accommodate the diameter of the pipeline and sufficient pad material around it (typically approximately 1 foot on either side of the pipeline). The top width will vary to allow the sides of the trench to be adapted to local soil conditions at the time of construction. If trench dewatering is required within or off the construction right-of-way, it will be conducted in accordance with the Plan and Procedures and applicable permits in a manner that will not cause erosion or result in silt-laden water flowing into a wetland or waterbody.

In areas where topsoil segregation is required, subsoil from trench excavations will be placed adjacent to the topsoil in a separate pile to allow for proper restoration of the soil during backfilling and restoration. Gaps will be left between the topsoil and subsoil piles to prevent stormwater runoff from backing up or flooding. Mixing of topsoil and subsoil piles will be prevented by separating them physically or with a mulch or silt fence barrier, where necessary, to accommodate reduced workspace.

When rock or rocky formations are encountered, tractor-mounted mechanical rippers or rock trenchers will be used for breaking up the rock prior to excavation. In areas where mechanical equipment or other means cannot be used to break up or loosen boulders or shallow bedrock, blasting may be required.

3.7.5 Pipe Stringing, Bending, and Welding

Individual joints of pipe (up to 80 feet long) will be trucked to the construction right-of-way and strung along the trenchline in a single, continuous line. Individual sections of pipe will be bent, where necessary, to allow for a uniform fit with the contours at the bottom of the trench and horizontal points of inflection. Typically, a track-mounted, hydraulic pipe-bending machine will tailor the shape of the pipe to conform to the contours of the terrain. After the pipe sections are bent, they will be welded together into long sections and placed on temporary supports.

Welding is a crucial phase of pipeline construction because the integrity of the pipeline depends on this process. Each weld must exhibit the same structural integrity with respect to strength and ductility. Welding will be conducted in compliance with 49 CFR 192 and API Standard 1104, *Welding of Pipelines and Related Facilities*. Completed welds will be visually and radiographically inspected. Welds that do not meet established specifications will be repaired or removed. Following welding and after inspection, pipe weld joints will be coated with an epoxy coating in accordance with required specifications. The coating will be inspected for defects, and repaired, if necessary, prior to lowering the pipe into the trench.

3.7.6 Lowering-in and Backfilling

Prior to lowering-in, the trench will be inspected to confirm it is free of rocks and other debris that could damage the pipe or its protective coating. Dewatering may be necessary to inspect the bottom of the trench in areas where water has accumulated. If dewatering is required, it will be conducted in accordance with the Plan and Procedures and applicable permits in a manner that will not cause erosion or result in silt-laden water flowing into a wetland or waterbody.

The pipe will be lifted from the temporary supports and lowered into the trench using side-boom tractors. As necessary, trench breakers (stacked sand bags or foam) will be installed in the trench around the pipe in steeply sloped areas to prevent movement of subsurface water along the pipeline. After lowering-in, the trench will be backfilled with previously excavated materials using bladed equipment or backhoes. If the excavated material is rocky, the pipeline will be protected with a rock shield or covered with other suitable fill (e.g., crushed limestone rock). Excavated rock will then be used to backfill the trench to the top of the existing bedrock profile in the trench, except that large rock will be buried on the working side of the two-tone cut where the contractor levels the ground for construction. This will prevent large rocks from migrating into the pad material in the trench and making contact with the pipe. Additionally, excavated rock may be crushed with a rock pulverizer and incorporated into fill or used as gravel to upgrade access roads. Excavated material not required for backfill will be removed and disposed of at approved upland disposal sites. Coal ash and/or coal byproduct will not be utilized as fill material for backfilling the trench.

3.7.7 Hydrostatic Testing

After backfilling and all other construction activities that could affect the pipeline are complete, each pipeline will be hydrostatically tested in sections to verify that each system is free from leaks and will provide the required margin of safety at operating pressures. Individual

sections of pipeline to be tested will be determined by water availability and terrain conditions. Water for hydrostatic testing will be obtained from surface or groundwater sources in accordance with Commonwealth regulations and required permits. As practicable, water will be transferred from one test section to another to reduce the amount of water that is required for testing. Once hydrostatic testing is complete, the test water will be discharged in accordance with the Plan and Procedures and applicable permits through an approved discharge structure to remove turbidity or suspended sediments (i.e., dirt left in the pipe during construction). Alternatively, the water will be hauled offsite for disposal at an approved location.

During hydrostatic testing, internal pressures and durations will be in accordance with 49 CFR 192 and applicable permit conditions. If leaks are found during testing, the leaks will be repaired and the section of pipe retested until the required specifications are met.

3.7.8 Cleanup and Restoration

Final cleanup will begin after backfilling and as soon as weather and site conditions permit. A concerted effort will be made to complete final cleanup (including final grading and installation of permanent erosion control devices) within timeframes required by permits, in accordance with landowner requests, or as required by the Plan and Procedures. Construction debris will be collected and taken to an approved disposal facility. Preconstruction contours will be restored as closely as possible. Segregated topsoil will be spread over the surface of the right-of-way, and permanent erosion controls will be installed.

Revegetation measures will be implemented in accordance with the Plan and Procedures or as directed by the appropriate land managing agency. Disturbed, non-cultivated work areas will be stabilized and seeded as soon as possible after final grading, weather and soil conditions permitting, subject to the recommended seeding dates for the seed mixes used to revegetate different areas along the pipelines. Seeding will stabilize the soil, improve the appearance of the area disturbed by construction, and where native seed mixes are used, restore native flora. Atlantic and DTI are working with local NRCS offices to acquire native seed mixes appropriate to the region. These recommendations will be specified in the project-specific Restoration and Rehabilitation Plan (Appendix I). The Restoration and Rehabilitation Plan includes specific guidelines for seeding and restoration activities after construction in riparian areas and wetlands. For additional details please refer to the Restoration and Rehabilitation Plan.

Markers showing the location of the pipeline will be installed intermittently along the pipeline rights-of-way according to ACP specifications as well as at fence, road, and railroad crossings to identify DTI as the operator of the new pipelines. The markers will convey emergency information in accordance with applicable government regulations, including USDOT safety requirements. Special markers providing information and guidance to aerial patrol pilots also will be installed.

3.8 SPECIAL CONSTRUCTION TECHNIQUES

In addition to standard pipeline construction methods, Atlantic will use special construction techniques where warranted by site-specific conditions, (e.g., when constructing across waterbodies, wetlands, roads, highways, railroads, steep terrain, karst areas, agricultural

areas, and residential areas; when blasting through rock; or when working in winter conditions). Each of these specialized measures is described below. Illustrations of select crossing methods are provided in Appendix J.

3.8.1 Wetland Crossings

Construction across wetlands will be conducted in accordance with the Procedures, site-specific modifications to the Procedures requested by Atlantic and approved by the FERC, and any additional requirements identified in Federal or Commonwealth wetland crossing permits. Typical methods for construction across wetlands are described below. A list of wetland crossings along the proposed pipeline route is provided in Table B-1 of Appendix B.

In accordance with the Procedures, the width of the construction right-of-way will be limited to 75 feet through wetlands, with ATWS on both sides of wetland crossings to stage construction equipment and materials, fabricate the pipeline, and store materials and excavated spoil. ATWS will be located in upland areas a minimum of 50 feet from the wetland edge (with the exception of site-specific modifications as requested by Atlantic and approved by the FERC).

Wetland boundaries will be clearly marked in the field prior to the start of construction with signs and flagging. Construction equipment working in wetlands will be limited to what is essential for right-of-way clearing, excavating the trench, fabricating and installing the pipeline, backfilling the trench, and restoring the right-of-way. In areas where there is no reasonable access to the right-of-way except through wetlands, non-essential equipment will be allowed to travel through wetlands once, unless the ground is firm enough or has been stabilized to avoid rutting.

Clearing of vegetation in wetlands will be limited to trees and shrubs, which will be cut flush with the surface of the ground and removed from the wetland. To avoid excessive disruption of wetland soils and the native seed and rootstock within the topsoil, stump removal, grading, topsoil segregation, and excavation will be limited to the area immediately over the trenchline, except a limited amount of stump removal and grading may be conducted in other areas if required by safety-related issues. Topsoil segregation over the trenchline will only occur if the wetland soils are not saturated at the time of construction.

During clearing, sediment barriers, such as silt fences, straw bales, or other approved sediment barriers, will be installed and maintained adjacent to wetlands and within ATWS areas as necessary to minimize the potential for sediment runoff. Sediment barriers will be installed across the full width of the construction right-of-way at the base of slopes adjacent to wetland boundaries. ECDs installed across the working side of the right-of-way will be removed during the day when vehicle traffic is present, and will be replaced each night. Alternatively, drivable berms may be installed and maintained across the right-of-way in lieu of silt fences or straw bales. Sediment barriers will also be installed within wetlands along the edge of the right-of-way, where necessary, to minimize the potential for sediment to run off the construction right-of-way and into wetlands outside the work area. If trench dewatering is necessary, it will be conducted in accordance with the Procedures and applicable permits. Silt-laden trench water will be discharged into an energy dissipation/sediment filtration device, such as a geotextile filter bag and straw bale structure, to minimize the potential for erosion and sedimentation.

The method of pipeline construction used in wetlands will depend on site-specific weather conditions, soil saturation, and soil stability at the time of construction. If wetland soils are not excessively saturated at the time of construction and can support construction equipment on equipment mats, they will be crossed using conventional open-trench construction. This will occur in a manner similar to conventional upland cross-country construction techniques. In unsaturated wetlands, topsoil from the trenchline will be stripped and stored separately from subsoil.

Where wetland soils are saturated or in inundated lowlands areas where soils cannot support conventional pipe-laying equipment, the pipeline may be installed using the push-pull method. This method will involve stringing and welding the pipeline outside of the wetland and excavating and backfilling the trench using a backhoe supported by equipment mats. A prefabricated section of pipeline will be installed in the wetland by equipping it with buoys and pushing or pulling it across the water-filled trench. After the pipeline is floated into place, the floats will be removed and the pipeline will sink into place. In most cases, the pipeline will be coated with concrete or equipped with set-on weights to provide negative buoyancy. Once the pipeline is in place, the trench will be backfilled. The push-pull construction method minimizes the number of equipment passes, reducing wetland impacts and soil compaction in lowland areas.

Because little or no grading will occur in wetlands, restoration of contours will be accomplished during backfilling. Prior to backfilling, trench breakers will be installed, where necessary, to prevent subsurface drainage of water from wetlands. Where topsoil is segregated, the subsoil will be backfilled first followed by the topsoil. Topsoil will be replaced to the original ground level leaving no crown over the trenchline. In areas where wetlands overlie rocky soils, the pipe will be padded with rock-free soil or sand before backfilling with native bedrock and soil. Equipment mats, gravel fill, and/or geotextile fabric will be removed from wetlands following backfilling.

Where wetlands are located at the base of slopes, permanent slope breakers will be constructed across the right-of-way in upland areas adjacent to the wetland boundary. Temporary sediment barriers will be installed where necessary until revegetation of adjacent upland areas is successful. Once revegetation is successful, sediment barriers will be removed from the right-of-way and disposed of at an approved disposal facility.

3.8.2 Waterbody Crossings

Atlantic will use the open-cut, flume, dam-and-pump, conventional bore, cofferdam, or HDD methods to construct the pipelines across waterbodies. In each case and for each method, Atlantic will adhere to the measures specified in the Procedures; site-specific modifications to the Procedures as requested by Atlantic and approved by the FERC. As well as any additional requirements identified in Federal or Commonwealth waterbody crossing permits, including applicable permits and approvals from the USACE and various Commonwealth agencies (see Section 4.0). A complete list of the waterbodies along the proposed pipeline routes, and the construction method proposed for each crossing, is provided in Table B-2 of Appendix B. Construction methods for waterbodies that isolate the pipeline trench from flowing water (e.g.

flume, dam-and-pump, cofferdam) will be utilized where these methods are proposed and perceptible flow is present at the time of the crossing.

During the clearing and grading phase of construction, temporary bridges will be installed across waterbodies in accordance with the Procedures to allow construction equipment and personnel to cross. The bridges may include clean rock fill over culverts, timber mats supported by flumes, railcar flatbeds, flexi-float apparatuses, or other types of spans. Construction equipment will be required to use the bridges, except that the clearing and bridge installation crews will be allowed one pass through waterbodies before bridges are installed. The temporary bridges will be removed when construction and restoration activities are complete.

ATWS will be required on both sides of waterbody crossings to stage construction equipment, fabricate the pipeline, and store construction materials. Except as requested and approved by the Commission, the ATWS will be located at least 50 feet away from the water's edge at each waterbody (with the exception of site-specific modifications as requested by Atlantic and approved by the FERC).

Clearing adjacent to waterbodies will involve the removal of trees and brush from the construction right-of-way and ATWS areas. Woody vegetation within the construction right-of-way will be cleared to the edge of each waterbody. Sediment barriers may be installed at the top of the bank if no herbaceous strip exists. Initial grading of the herbaceous strip will be limited to the extent needed to create a safe approach to the waterbody and to install temporary bridges.

During clearing, sediment barriers will be installed and maintained across the right-of-way adjacent to waterbodies and within ATWS to minimize the potential for sediment runoff. ECDs located across the working side of the right-of-way will be removed during the day when vehicle traffic is present, and will be replaced each night. Alternatively, drivable berms may be installed and maintained across the right-of-way in lieu of silt fences and/or straw bales.

Typically, equipment refueling and lubricating at waterbodies will take place in upland areas that are 150 feet or more from the edge of the waterbody and any adjacent wetlands. However, there will be certain instances where equipment refueling and lubricating may be necessary in or near waterbodies. For example, stationary equipment, such as water pumps for withdrawing hydrostatic test water, may need to be operated continuously on the banks of waterbodies and may require refueling in place. Atlantic's SPCC Plan will address, among other items, the handling of fuel and other materials associated with the Projects. As required by the Procedures, the SPCC Plan will be available during construction on each construction spread. The SPCC Plan is provided in Appendix F.

After the pipeline is installed across a waterbody using one of the methods described below, the trench will be backfilled with native material excavated from the trench. If present and moved prior to construction, larger rocks or boulders will be replaced in the stream channel within the construction area following backfill of the trench. The streambed profile will be restored to preconstruction contours and grade conditions to prevent scouring. The stream banks will then be restored as near as practicable to preconstruction conditions and stabilized. Stabilization measures could include seeding, tree planting, installation of erosion control blankets, or installation of riprap materials, as appropriate. Jute thatching or bonded fiber

blankets will be installed on banks of waterbodies or road crossings to stabilize seeded areas. Temporary erosion controls will be installed immediately following bank restoration. The waterbody crossing area will be inspected and maintained until restoration of vegetation is complete.

Open-Cut Method

The open-cut or wet trench crossing method will involve trenching through the waterbody while water continues to flow through the trenching area. Prior to initiating construction across the waterbody, the crossing section of pipeline will be fabricated (i.e., bent, welded, and coated) in adjacent ATWS areas. Backhoe-type excavators will then be used to excavate a trench in the flowing waterbody from one or both banks of the waterbody. Where the waterbody is too wide to excavate the trench from the banks, equipment may operate from within the waterbody with approval from the appropriate regulatory agencies. Equipment operating within the waterbody will be limited to that needed to construct the crossing. During these operations, flow will be maintained at the crossing as specified in the Procedures.

Temporarily side casted material from the trench will be placed on the bank above the high water mark (at least 10 feet from the edge of the waterbody) for use as backfill. A prefabricated segment of pipeline will then be placed into the trench using side-boom tractors. Concrete coating or set-on weights will be utilized, as necessary, to provide negative buoyancy for the pipeline. Once the trench is backfilled, the banks will be restored as near as practicable to preconstruction contours and stabilized as described above. Excavated material not required for backfill will be removed and disposed of at approved upland disposal sites.

Throughout the construction process, Atlantic will follow the Procedures to avoid or minimize impacts on water quality. Construction activities will be scheduled so that the trench is not excavated across the waterbody until immediately prior to pipe laying activities. The duration of in-stream construction activities (excluding blasting, if required) will be limited to 24 hours across minor waterbodies (those 10 feet in width or less) and 48 hours across intermediate waterbodies (those between 10 and 100 feet in width).

Flume Method

The flume crossing method consists of isolating and temporarily diverting the flow of water across the trenching area through one or more large-diameter, smooth steel flume pipes placed in the waterbody. This method allows for trenching activities to occur within a relatively dry stream or riverbed (beneath the flume pipes containing the water flow), thereby minimizing sediment and turbidity within the waterbody. The flume method is typically used to cross small to intermediate flowing waterbodies that support coldwater or other significant fisheries.

For each waterbody where the flume method is implemented, a sufficient number of adequately sized flume pipes will be installed in the waterbody to accommodate the highest anticipated flows during construction. Atlantic will use stream gauge data from the USGS to determine the highest anticipated flows during the time the flume crossing is in effect. As noted above, the duration of in-stream construction activities (excluding blasting, if required) will be limited to 24 hours across minor waterbodies (up to 10 feet in width) and 48 hours across

intermediate waterbodies (greater than 10 feet and less than or equal to 100 feet in width). In the absence of stream gauge data, Atlantic's engineers and Environmental Inspectors will estimate the highest anticipated flows based on the width of the waterbody at the ordinary high water mark, the depth of the waterbody, existing flows at the time of the crossing, and the weather forecast at the time of the crossing. As a contingency, Atlantic will stage additional flume pipes at the crossing in the event that the volume of flow increases due to a precipitation event.

Prior to installation, Atlantic will inspect the flume pipes to confirm that they are free of dirt, grease, oil, or other pollutants. After placing the pipes in the waterbody, sand- or pea gravel-filled bags, water bladders, or metal wing deflectors will be placed in the waterbody around the flume pipes upstream and downstream of the proposed trench. These devices will serve to dam the stream and divert the water flow through the flume pipes, thereby isolating the water flow from the construction work area between the dams.

After installation of the flume pipes, any remaining standing water between the dams will be pumped out. Pump intakes will be appropriately screened to prevent entrainment of aquatic species. Additionally, any fish trapped in the dewatered area will be removed and returned to the flowing waterbody. Leakage from the dams or subsurface flow from below the waterbody bed may cause water to accumulate in the trench once trenching has begun. If water accumulates in this area, it may be periodically pumped out and discharged into energy dissipation/sediment filtration devices as required by the Procedures. Such devices include geotextile filter bags or straw bale structures. Alternatively, the water will be discharged into well-vegetated areas away from the edge of the waterbody, to prevent silt-laden water from entering the waterbody.

Backhoe-type excavators located on the banks of the waterbody will be used to excavate a trench under the flume pipe across the dewatered streambed. Spoil excavated from the waterbody trench will be placed and stored on the bank above the high water mark and a minimum of 10 feet from the edge of the waterbody. Once the trench is excavated, a prefabricated segment of pipe will be installed beneath the flume pipes. The trench will then be backfilled with the native material excavated from the trench across the waterbody bed. The banks will be stabilized before removing the dams and flume pipes and returning flow to the waterbody channel.

The flume method has proven to be an effective technique for constructing pipelines across sensitive waterbodies. The potential for the introduction of turbidity or suspended sediments is limited because sediment generated during trench excavation and backfilling operations is isolated to the dewatered area between dams. When flumes are installed properly, the operation of the flume is generally stable and can be installed and left in place for periods prior to and following the installation of the waterbody pipeline crossing. The flume method also provides for continued fish passage through the construction work area via the flume pipes during the crossing.

Dam-and-Pump Method

The dam-and-pump method may be used as an alternative to the flume method. It generally is preferred for waterbodies where hard bedrock occurs and in-stream blasting is required. The dam-and-pump method is similar to the flume method except that pumps and

hoses are used instead of flume pipes to isolate and transport the stream flow around the construction work area. Similar to the flume method, the objective of the dam-and-pump method is to create a relatively dry work area to avoid or minimize the transportation of sediment and turbidity downstream of the crossing during in-stream work.

As the first step in implementing the dam-and-pump method, one or more pumps and hoses of sufficient size to transport anticipated flows around the construction work area will be installed in the waterbody. Additional back-up pumps will be on site at all times in case of pump failure. Once the pumps are operational, the waterbody upstream and downstream of the construction area will be dammed with sandbags and/or steel plates. As the dams are installed, the pumps will be started to maintain continuous flow in the waterbody.

Following the installation of the dams, the pumps will be run continuously until the pipeline is installed across the waterbody and the streambed and banks are restored. Pump intakes above the upstream dam will be appropriately screened to prevent entrainment of aquatic species. Energy-dissipation devices will be used to prevent scouring of the streambed at the discharge location. Water flow will be maintained through all but a short reach of the waterbody at the actual crossing location.

Backhoe-type excavators located on the banks of the waterbody will be used to excavate a trench across the waterbody. Spoil removed from the trench will be placed and stored on the bank above the high water mark at a minimum of 10 feet from the edge of the waterbody. Trench plugs will be maintained between the upland trench and the waterbody crossing. After backfilling, the dams will be removed and the banks restored and stabilized as described above.

Conventional Bore

In some cases, waterbodies may be crossed by conventional subsurface boring beneath the waterbody. Boring involves installing a short segment of prefabricated pipeline through a hole bored through the substrate. Where this method is implemented, equipment operating from pits excavated on either side of the crossing will bore a hole through the substrate beneath the waterbody. If dewatering of the pits is necessary, it will be conducted in accordance with the Plan and Procedures and applicable permits in a manner that will not cause erosion or result in silt-laden water flowing into the waterbody or adjacent wetlands. The prefabricated section of the pipeline will be pulled through the hole under the waterbody. For long crossings, sections of pipe may be welded into a pipe string before being pulled through the borehole. Like the HDD method described below, use of this method will eliminate direct surface impacts on waterbodies, but there are limitations to its use. This method cannot typically be used to cross waterbodies with saturated soils in the substrate because it is not possible to maintain the integrity of the borehole in this condition.

Cofferdam

Some waterbodies will be crossed using the cofferdam method. In this method, a temporary diversion structure is installed from the bank around half the width of the crossing to isolate that section of the stream from the rest of the waterbody. Once the temporary diversion structure is installed, water is pumped from the isolated section to allow excavation of the pipe

trench from the bed of the waterbody in the dry. After the pipe is installed in the trench in the isolated section of stream, the temporary diversion structure is disassembled and reinstalled from the opposite bank of the crossing and the process is repeated. The cofferdam method allows waterbodies to be crossed in the dry in discrete sections while water flows unimpeded around the temporary diversion structure. The method is sometimes favored for wide, relatively shallow waterbodies or waterbodies containing sensitive fisheries because it allows water and fish to pass around the temporary diversion structure.

For waterbodies crossed using the cofferdam method, sections of steel frame for the temporary diversion structure will be assembled in an upland area adjacent to the crossing. Depending on size, the frame sections will be placed in the waterbody either manually or by crane. The frame sections will be positioned around a predetermined perimeter in the waterbody extending from one of the banks. The spacing of frame sections will be based on the depth of the water, but a typical spacing will be 15 to 30 inches. The frame sections may be reinforced, as necessary, with steel poles or other supports to increase stability of the structure, especially in waterbodies with soft substrate. Fabric sheets will then be attached to the top of the frame and unrolled down and out onto the bed of the waterbody on the exterior side of the frame. The fabric sheets will create a liner around the frame with a seal on the bed of the waterbody. The fabric may be covered in soft sediments or sandbags to help create the seal.

After the temporary diversion structure is installed, one or more pumps will be used to dewater the area within the temporary diversion structure. The pump intakes will be appropriately screened to prevent entrainment of aquatic species. Water will be discharged to the waterbody outside the structure through an energy-dissipating device to prevent scouring of the bed at locations of discharge. Once dewatering is complete, fish trapped in the temporary diversion structure will be removed and returned to the flowing waterbody. Construction equipment will then enter the isolated section of the waterbody from the adjacent bank, excavate the trench, install a pre-assembled section of pipe, backfill the trench, and restore the bed as near as practicable to preconstruction contours. The equipment will then exit the temporary diversion structure via the adjacent bank.

After the section of pipeline is installed, the enclosed area within the temporary diversion structure will be flooded, the fabric sheets and steel frame sections will be disassembled, and the structure will be reinstalled from the opposite bank with enough overlap of the initial excavation area so that the installed section of the pipeline will be accessible for tie-in to the next section of pipe. The dewatering and construction process will then be repeated from the opposite bank to complete the crossing of the waterbody.

Horizontal Directional Drill Method

The HDD method is a process that allows for trenchless construction by drilling a hole beneath a surface feature, such as a waterbody or other unique resource, and installing a prefabricated segment of pipeline through the hole. The method is employed to avoid disturbance to the surface of the right-of-way between the entry and exit points of the drill. The method is sometimes used to install pipelines underneath sensitive resources or areas that present difficulties associated with construction or access using typical installation methods. HDDs can

provide certain advantages over typical construction methods, such as avoidance of surface disturbance, riparian tree clearing, or in-stream construction.

For each HDD crossing, electric grid guide wires will be laid by hand on the ground along the pipeline centerline to create an electromagnetic sensor grid. The grid will be used by the HDD operator to steer the drill head during drilling. The sensor grid will be fabricated by installing several stakes along the drill path and wrapping them with an insulated coil wire. The wire will be energized with a portable generator, which will create a magnetic field that can be used to track the drill bit. No ground or surface disturbing activities will be required for installation of the guide wires. In thickly vegetated areas, however, a small pathway measuring approximately 2 to 3 feet in width may need to be cut with hand tools to create a path for the wires.

To complete each HDD, a drill rig will be placed on the entry side of the crossing and a small-diameter pilot hole will be drilled along a predetermined path beneath the waterbody using a powered drill bit. As drilling progresses, additional segments of drill pipe will be inserted into the pilot hole to extend the length of the drill. The drill bit will be steered and monitored throughout the process to maintain the designated path of the pilot hole. Once the pilot hole is complete, the electric sensor grid will be removed and the hole will be enlarged to accept the pipeline.

To enlarge the pilot hole, a larger reaming tool will be attached to the end of the drill on the exit side of the hole. The reamer will be drawn back through the pilot hole to the drill rig on the entry side of the hole. Drill pipe sections will be added to the rear of the reamer as it progresses toward the rig, allowing a string of drill pipe to remain in the hole at all times. Several passes with progressively larger reaming tools will be required to enlarge the hole to a sufficient diameter to accommodate the pipeline. The final hole will be approximately 12 inches larger than the pipeline to be installed.

Throughout the drilling process, a fluid mixture consisting of water and bentonite clay (a naturally occurring mineral) will be pumped into the drill hole to lubricate the bit, transport cuttings to the surface, and maintain the integrity of the hole. Water for the mixture will be pumped from the waterbody to the drill site through a hose or temporary network of irrigation-type piping or trucked in from another source. The pump intake will be appropriately screened to prevent entrainment of aquatic species. Small pits will be dug at or near the entry and exit points for the HDD to temporarily store the drilling fluid and cuttings. The fluid and cuttings will be pumped from the pits to an on-site recycling unit where the fluid will be processed for reuse.

The pipeline segment (also called a pull section) to be installed beneath the surface feature will be fabricated on the right-of-way or in the ATWS on the exit side of the crossing while the drill hole is reamed to size. Once assembled, the pull section will be coated with fusion-bonded epoxy (FBE). A sacrificial abrasion resistant overlay will be applied over the FBE coating for protection from abrasive materials that may be encountered as the pull section is installed. Additionally, the pull section will be inspected and hydrostatically tested prior to installation. A steel bullhead will be welded onto the front end of the pull section to aid in pulling the pipe through the drill hole. After the hole is completed, the pipeline segment will be

attached to the drill string on the exit side of the hole and pulled back through the hole toward the drill rig.

As the pipeline is being installed, excess drilling fluid will be collected and incorporated into the soil in an upland area or disposed of at an appropriate facility. If water is left over from the drilling process, it will be discharged in accordance with the Plan and Procedures and applicable permits into a well-vegetated upland area or an energy dissipation/sediment filtration device, such as a geotextile filter bag or straw bale dewatering structure, at the site.

If an HDD crossing is successful, there are little to no impacts on the surface feature being crossed. If a natural fracture or weak area in the ground is encountered during drilling, however, an inadvertent return of drilling fluid to the environment could occur. Substrate consisting of unconsolidated gravel, coarse sand, or fractured bedrock could present circumstances that increase the likelihood of an inadvertent return. Depending on the orientation of the natural fracture or substrate, the drilling fluid may move laterally or vertically from the drill hole. If the drilling fluid moves laterally, the release may not be evident on the ground. For an inadvertent return to be evident on the surface there must be a preferential pathway extending vertically from the drill hole to the surface of the ground. The volume of fluid released in an inadvertent return will be dependent on a number of factors, including the size of the pathway, the permeability of the geologic material, the viscosity of the fluid, and the pressure of the hydraulic drilling system.

Atlantic has prepared and will implement an HDD Plan (see Appendix G), which describes the procedures to be followed in the event of an inadvertent return. If a release occurs on land, including within a wetland, a small pit will be excavated at the release site to contain the spread of the fluid, and a pump will be used to transfer the fluid from the pit into a containment vessel. If an inadvertent return occurs in a waterbody it will be more difficult to contain because the fluid will be dispersed into the water and carried downstream. In this situation, an attempt will be made to plug the flow path by adding thickening agents to the drilling fluid, such as additional bentonite, cottonseed hulls, or other non-hazardous materials. Atlantic will consult with and obtain permission from the appropriate Commonwealth regulatory agencies regarding the use of additives during the HDD (or conventional bore) process, and confirm that additives will not violate water quality standards.

The HDD method will not be used in areas with the potential to contain karst features due to the potential for drilling fluid to enter aquifers through pre-existing voids or conduits in limestone or dolomite bedrock. This will avoid the potential for drilling fluid to reach groundwater and wells in karst areas. In other areas, Atlantic will monitor source waters along and near the drill path, such as seeps and springs, for inadvertent returns. Atlantic will implement the measures identified in the HDD Plan to control and clean-up the inadvertent return, test the water for water quality, and provide an alternate supply of water to affected landowners until the inadvertent return is remediated.

In most cases, horizontal directional drilling can continue during an inadvertent return. In some situations, however, the HDD may fail due to refusal of the drill bit or collapse of the hole in non-cohesive, unstable substrate. In cases where drilling fails, construction will be

completed using one of the alternative crossing methods described above, subject to review and approval of the Commission and any required permits or authorizations for the crossing.

For the ACP, the HDD method is currently being evaluated for the following four river crossings in Virginia pending the results of geotechnical investigations and final engineering:

- the James River crossing approximately at MP 184.9 of the AP-1 mainline at the Nelson/Buckingham County line in Virginia;
- the Nottoway River crossing approximately at MP 32.6 of the AP-3 lateral in Southampton County, Virginia;
- the Blackwater River crossing approximately at MP 38.6 of the AP-3 lateral at the Southampton County/City of Suffolk line in Virginia; and
- the Southern Branch Elizabeth River crossing (part of the Intracoastal Waterway) approximately at MP 78.4 of the AP-3 lateral in the City of Chesapeake, Virginia.

Site-specific crossing plans for the proposed HDDs are provided in Appendix C. Other HDD crossings for the ACP could be evaluated as a result of ongoing engineering design or consultation with permitting agencies.

Crossings of USACE civil works projects are currently understood to include the South Branch Elizabeth River. Site specific drawings provide in Appendix C provide the depth of the propose HDD below the navigation channel. The current design demonstrates the intended depth below the bottom elevation of the maintained river channel will be 40 feet.

3.9 ALTERNATIVES

For purposes of the USACE evaluation of single and complete crossings, the "alternatives analysis" is to ensure that the crossing of each water of the United States is made in a manner that avoids and minimizes impacts to the aquatic environment to the maximum extent practicable, after considering the approach to the crossing in the uplands immediately adjacent to the water of the United States. For example, to the extent practicable, crossings will be perpendicular to the aquatic feature to minimize the length of the pipeline in the particular aquatic system.

The FERC NEPA EIS process is evaluating alternative route alignments and the overall impacts on the human environment of the proposed pipeline. The USACE is a cooperating agency on the FERC NEPA EIS and is working with FERC to ensure that USACE comments regarding the overall pipeline alternatives analysis are fully considered in that process. The fact that the ACP will be subject to an EIS does not preclude the use of NWP 12 for the affected waterbody crossings. [9]

[9] As provided for in the USACE 2012 NWP Federal Register final NWPs:
"One commenter requested clarification that individual permits are not automatically required for NWP 12 activities when a Corps district participates as a cooperating agency for an environmental impact statement. [Response] "Even though an environmental impact statement may be prepared for a particular utility line, the National Environmental Policy Act process does not prohibit the Corps from using NWP 12

As background, information on the FERC alternatives analysis follows, including discussion of the various alternatives FERC is considering.

Atlantic has identified and evaluated a number of alternatives to the proposed Projects. These include a no-action alternative; alternative energy sources, including traditional and renewable sources; energy conservation measures; systems alternative; and conceptual collocation route alternatives.

3.10 NO ACTION ALTERNATIVE

Under the no-action alternative, the ACP would not be built and the environmental impacts associated with construction and operation of the proposed facilities would not occur. By not constructing this Project, however, Atlantic would be unable to meet their existing customers' demands for natural gas and the projected demand by other industrial, commercial, and domestic customers (including power-generating facilities) in Virginia and North Carolina. The projected demand is due to a combination of population growth and displacement of coal-fired electric power generation. In addition, other benefits from the Projects, such as future economic development opportunities, reduced energy costs in the region, and the repowering of coal-fired electric generation to gas-fired electric generation, would not be realized.

Under the no-action alternative, other natural gas transmission companies could propose to construct new facilities similar to the Projects to meet the demand for new natural gas transportation service in Virginia and North Carolina. Such actions would likely result in impacts similar to or greater than those associated with the ACP, and might not meet the Projects' objectives to satisfy demand from existing customers within the proposed time frames. For these reasons, the no-action alternative is not practical and provides no advantage over the Project.

3.11 ALTERNATIVE ENERGY SOURCES

The use of alternative energy sources is an option to meet some of the short-term and long-term demands for energy in the target market areas. Potential alternative energy sources to natural gas include traditional fuels, such as coal and oil, nuclear energy, and electricity (including electricity generated from oil, coal, and nuclear power); and renewable energy sources, such as wind, solar, hydroelectric, biomass, and tidal and wave. Like the ACP, all of these alternative energy sources, depending on the location of the source, would require new infrastructure, including transmission facilities, to connect supply and demand areas.

to authorize the construction, maintenance, repair, and removal of utility lines and associated facilities in waters of the United States, as long as the activity complies with all applicable terms and conditions and results in minimal individual and cumulative adverse effects on the aquatic environment. NEPA requires consideration of all environmental impacts, not only those to aquatic resources, so there may well be situations where aquatic impacts are minimal even though environmental impacts more generally are not. These other environmental impacts would be addressed by the lead agency preparing the environmental impact statement." [77 Federal Register, Vol 77, No. 34]

3.12 ENERGY CONSERVATION

Energy conservation could help alleviate some of the growing demand for energy in the United States and in the States/Commonwealths to be serviced by the ACP. State/Commonwealth and Federal energy conservation measures will likely play an important role in slowing the growth of energy demand in the coming decades. However, it is unlikely that these measures will offset the demand for new natural gas sources. The U.S. Energy Information Administration (EIA) predicts that United States energy use per capita will decrease by approximately 8 percent through 2040, as higher efficiency standards for vehicles and appliances take effect. Nevertheless, the EIA indicates that, even with the recently enacted energy efficiency policies, total primary energy consumption, including fuels used for electricity generation, will grow by 8.9 percent from 2013 to 2040.[10] To meet this demand, the EIA predicts that total domestic production of natural gas in the United States will grow from 24.4 trillion cubic feet in 2013 to 35.5 trillion cubic feet by 2040, and that shale gas production will make up 53 percent of total United States production in 2040, up from 40 percent in 2012.[11] The anticipated growth in natural gas demand will be driven primarily by its increased use for electric power generation and industrial applications.

Reduction in the need for additional energy is the preferred option wherever possible. Conservation of energy reduces the demand for limited existing reserves. Although energy conservation measures will be important elements in addressing future energy demands, it is unlikely that they will be able to offset more than a fraction of anticipated demand in the foreseeable future. As a result, energy conservation alone (or in conjunction with other alternatives) is not a viable alternative because it does not preclude the need for natural gas infrastructure projects like the ACP to meet the growing demand for energy.

3.13 SYSTEM ALTERNATIVES

System alternatives would make use of other existing, modified, or proposed pipeline systems to meet the same objectives as the ACP. Use of a system alternative would make it unnecessary to construct all or part of the ACP, though modifications or additions to existing or proposed systems could be required. The modifications or additions would result in environmental impacts that could be less than, similar to, or greater than those associated with the ACP.

Several existing, high-pressure, high-volume natural gas pipeline systems provide transportation services to delivery points in the Mid-Atlantic and southeast regions. These include Transco; Columbia Gas Transmission, LLC (Columbia); and East Tennessee Natural Gas, LLC (East Tennessee). Additionally, several new pipeline projects have been proposed to provide natural gas transportation service in the same regions, including the Spectra Energy Carolina Pipeline Project; Mountain Valley, LLC (Mountain Valley) Mountain Valley Pipeline (MVP) Project; and Transco Appalachian Connector Pipeline Project. Significant modifications

[10] U.S. Energy Information Administration. 2015. Annual Energy Outlook 2015 with Projections to 2040. U.S. Department of Energy, Washington, District of Columbia.

[11] U.S. Energy Information Administration. 2014. Virginia State Profile and Energy Estimates. U.S. Department of Energy, Washington, District of Columbia. Website at http://www.eia.gov/state/?sid=VA. Accessed June 2015.

to each of these systems would be necessary to access the same supply areas and/or provide transportation service to the same customers or at the same delivery points as the ACP. The environmental impacts associated with the upgrades and new pipeline construction modifying existing or proposed systems would likely be equal to or greater than those of the ACP. Therefore, the theoretical modifications to the existing systems or proposed systems would provide no environmental advantage over the ACP. For this reason, and the fact that the existing system does not meet the ACP's purpose and need, these system alternatives are not considered viable alternatives to ACP.

3.14 ROUTE ALTERNATIVES AND ROUTE ADJUSTMENTS

As noted in Section 3.8 above, alternative alignments are being evaluated under the FERC EIS process. Those alternative alignments will affect the location and configuration of each single and complete crossing so background information on the FERC NEPA process is provided below.

Atlantic identified an initial or "baseline" route for the proposed ACP pipeline based on locations of receipt and delivery points, engineering and constructability criteria, terrain, and existing land use. Atlantic subsequently evaluated and continues to evaluate environmental and other constraints along each of the routes in an effort to refine the baseline configurations. Route alternatives, variations, and minor adjustments were identified and continue to be identified based on a review of desktop constraint data, consultations and discussions with agency staff or other stakeholders, and field review in an effort to optimize the routes. The objective of the process was to identify the shortest possible route between the proposed receipt and delivery points taking into account the ACP purpose and need, engineering constraints, crossings of public lands, issues identified by stakeholders, minimization of impacts by collocating with existing rights-of-way or infrastructure, and the potential for impacts on sensitive environmental, tribal, and historical resources.

Atlantic's analysis of route alternatives and variations used a geographic information system (GIS) to characterize crossings of environmental features and other constraints along the routes. A digital centerline for each route alternative and the corresponding segment of the baseline was compared with a variety of datasets and map resources in the GIS. Features and constraints considered in the analysis included: length, public lands crossed, roads crossed, conservation easements crossed, forested lands crossed (based on the National Land Cover Database), wetlands crossed (based on the National Wetlands Inventory), waterbodies crossed (based on the National Hydrography Dataset), and known cultural resources sites crossed, such as Civil War battlefields.

Once a baseline route was determined using desktop data, a field oriented routing team consisting of a lead construction router, civil survey staff, and an ecological specialist teamed to adjust the route based on site-specific conditions while weighing competing constraints associated with environmental, tribal, and historical resource protection, constructability, available technology, and logistical constraints . Where practicable, adjustments to the route were made to avoid and/or minimize impacts to wetlands and waterbodies.

As a result of desktop analyses and field surveys, Atlantic identified a number of route alternatives and variations along the proposed pipeline routes to avoid or minimize crossings of sensitive environmental features or to address engineering or other issues. Additional route alternatives or variations may be considered to address issues identified as a result of ongoing environmental and civil field surveys, engineering design work, agency consultations, landowner communications, or other stakeholder input.

Atlantic has evaluated numerous route major route alternatives (greater than 5 miles in length), route variations (1 to 5 miles in length) and minor route adjustments to optimize the baseline route as a result of ongoing routing, biological, cultural resources, and civil field surveys. The primary criterion for comparing route variations to the baseline route was cumulative impact avoidance relative to the objective of the route variation. The route adjustments were adopted without a formal alternatives analysis, but the need for the adjustment was intuitive and practical (e.g., a slight shift in the centerline to avoid a wetland). Individually, the adjustment to the routes are small, but collectively they reduce impacts on environmental resources. Table 3-4 lists the route alternatives, route variations, and minor route adjustments to date that have been incorporated into the proposed ACP pipeline route within the Virginia and a brief rationale for each adjustment.

In addition to the route alternatives, variations, and adjustments, Atlantic continued to optimize the route at a localized scale to further minimize impacts on wetlands and waterbodies where feasible. Route optimization efforts that have occurred to minimize impacts on wetlands and waterbodies within Virginia are listed in Table 3-5.

Appendix D includes detailed route maps that illustrate how Atlantic has also minimized impacts to wetlands and waterbodies by reducing workspace at wetland crossings and in the vicinity of wetlands and waterbodies, where feasible. In addition, to avoid impacts to wetlands along the periphery of the construction workspace, modifications to workspace have been incorporated into the project design to minimize impacts to wetlands and waterbodies.

Despite Atlantics efforts to avoid and minimize impacts, there will be impacts that cannot be avoided. These impacts will be offset with compensatory mitigation, discussed in Section 9.4 of this of this Joint Permit Application document.

TABLE 3-4

Route Alternatives, Variations, and Adjustments Incorporated into the Proposed Atlantic Coast Pipeline Route

Route Adjustment	Approximate Mileposts	Rationale
AP-1 Mainline		
Laurel Fork	83.7 to 85.2	Adjustment to avoid a waterbody crossing
Jackson River	88.9 to 89.2	Adjustment to avoid a wetland
Dug Bank Road	90.7 to 91.4	Adjustment to avoid a waterbody crossing and reduce tree clearing
Little Doe Hill	99.1 to 99.9	Adjustment to meet a landowner request
Bullpasture River Road	102.3 to 104.0	Adjustment to reduce tree clearing
Wilson Hollow Lane	107.7 to 108.6	Adjustment to avoid a waterbody crossing
Braley Pond Road	116.3 to 117.0	Adjustment to optimize crossing of Calfpasture River
Hangars Mill Road	128.1 to 128.8	Adjustment to avoid a karst feature
Cochrans Mill Road	139.2 to 140.2	Adjustment to avoid a cultural resource site and a cave
White Hill Road	140.8 to 141.6	Adjustment to avoid a waterbody crossing
Christians Creek	141.6 to 142.6	Adjustment to avoid a wetland
Augusta Industrial	145.2 to 148.2	Variation to meet request of Augusta County Planning Commission to avoid proposed industrial development
Lyndhurst	147.4 to 159.6	Variation to reduce number of perennial waterbodies crossed, reduce tree clearing and avoid karst features.
Wintergreen Drive	158.7 to 159.2	Adjustment to avoid road crossing
Winery Lane	160.9 to 161.4	Adjustment to increase distance from residences
Glenthorne Loop Road	163.1 to 163.7	Adjustment to minimize crossing of Bold Rock Cidery
East of Lovingston	165.2 to 179.7	Route Alternative that minimizes forested clearing and significantly reduces The Nature Conservancy core forest areas and critical habitats
Wingina District	180.4 to 188.5	Variation to avoid Wingina Historic District
Warminister Church Road	188.0 to 189.9	Adjustment to reduce tree clearing as requested by a landowner and also to avoid a cultural resource site
Compressor Station 2	191.2 to 192.2	Adjustment to reduce tree clearing as requested by a landowner and also to avoid a cultural resource site
Perry Hill	192.3 to 195.0	Variation to avoid conservation easement and avoid three perennial waterbody crossings
Licky Branch	198.2 to 199.1	Adjustment to avoid a waterbody crossing
Horsepen WMA	199.0 to 200.0	Adjustment to avoid Horsepen Wildlife Management Area
Dixie Hill Road	200.5 to 201.7	Adjustment to avoid a cultural resource site
Rock Mill Road	203.5 to 204.6	Adjustment to meet a landowner request
Little Willis River 1	209.0 to 209.4	Adjustment to avoid two waterbody crossings
Little Willis River 2	209.8 to 210.0	Adjustment to avoid two waterbody crossings
Raines Tavern Road	212.9 to 213.8	Adjustment to avoid two waterbody crossings
Cumberland Church Battlefield	213.8 to 216.6	Variation to reduce the crossing length of the battlefield and avoids two waterbody crossings
River Road	219.9 to 220.4	Adjustment to avoid a wetland
South Genito Road	226.5 to 227.0	Adjustment to avoid a wetland
Little Creek	230.3 to 231.1	Adjustment to avoid a waterbody crossing
Deep Creek	235.9 to 237.0	Adjustment to minimize a wetland crossing
AP-3 Lateral		
Woody Creek	238.7 to 240.6	Adjustment to minimize a wetland crossing
Cellar Creek Road	241.5 to 243.1	Adjustment to avoid existing buried utilities
Gills Bridge Road	259.7 to 261.5	Adjustment to avoid a gem mine and house as requested by a landowner and to reduce crossings of cultural resource sites
Brunswick	264.7 to 284.2	Route Alternative to increase collocation with existing electrical transmission line
Taylors Mill Road	296.7 to 297.5	Adjustment to minimize a wetland crossing
Meherrin River	0.0 to 12.0	Route Alternative to minimize crossings of The Nature Conservancy Albemarle Sound Whole System project area, minimize forest fragmentation, reduce floodplain forests crossed
Hugo Road	13.3 to 13.5	Adjustment to optimize a railroad crossing
Cross Keys Road	20.5 to 21.5	Adjustment to increase collocation with existing utility corridor
Grays Shop Road	23.7 to 24.1	Adjustment to avoid a wetland
Bishop Poquoson Road	28.6 to 28.9	Adjustment to avoid a wetland
Sycamore Church Road	33.9 to 34.9	Adjustment to follow property boundary

TABLE 3-5

Route Optimization Locations to Avoid Wetlands

Route Segment/ Approximate Mileposts	Wetland ID	Wetland Avoided	Rationale
AP-1			
91.0		No	Nearby archeological site
153.0		No	Shift would move too close to structure
178.9	wnea050s	Yes	
208.2	wbuk013f	Yes	
208.4	wbuk016f	Yes	
210.7	wbua202f	Yes	
219.2	wcuk007e	Yes	
225.9	wnok001f	Yes	
250.8	wdim013f	Yes	
250.9	wdim014f	Yes	
AP-3			
13.3	wsop003f/wsop003e	Yes	
22.9	wsoa032f	Yes	
23.8	wsoa006s	Yes	
28.7	wsol015f/wsol015e	Yes	
28.8	wsoa033f/wsoa033e	Yes	
40.0		No	Centerline would fall too close to residences

3.15 CONSTRUCTION METHODS AND BEST MANAGEMENT PRACTICES

Atlantic will primarily utilize waterbody construction methods that isolate flowing water from excavation activities (i.e., dam and pump, flume, and cofferdam methods). The use of HDD was considered for wetland and waterbody crossings, but was determined to not be feasible in all crossing locations based on logistical, economic, temporal, and engineering constraints, additional environmental impacts, and potential environmental risks. The HDD method requires that a prefabricated segment of pipe at least the length of the bore hole be staged in line with the drill path at the exit hole, opposite the placement of the drilling rig. This "pullback" generally requires a false right-of-way that can deviate from the right-of-way approaching the crossing, unless the drill alignment is directly in-line with the construction right-of-way for the length of the prefabricated pipe segment. In many cases the drill path is not in-line with the construction right-of-way and additional workspace that extends well outside of the standard construction right-of-way must be cleared and graded to accommodate the prefabrication of the pipe segment described above. In addition, work space required at the entry and exit holes, although temporary, is approximately 300-ft by 300-ft.

The path of the drill is constrained by the flexibility of the pipe; the depth beneath the wetland and/or waterbody needed to achieve a successful installation; and the elevation of the entry and exit points. The entry and exit points should be similar in elevation to prevent a significant pressure differential that can contribute to failure of the HDD operation and by maintaining consistent pressure this helps maintain predictable flow of drilling mud and thus greater likelihood of a successful HDD.

As a rule of thumb used in evaluating the feasibility of the HDD method, the 42-inch pipe requires a minimum drill path of 2,200 feet and the 36-inch pipe requires a minimum drill path of 1,800 feet to achieve acceptable radius of curvature that will prevent a catastrophic "crinkling" of the pipe as it conforms to the path of the drill hole. All proposed HDD crossings will be designed based on specific site constraints at the crossing and geologic conditions, therefore site-specific designs may vary from the planning guidelines.

HDD poses a higher risk to construction scheduling as well. Typical installations of this pipe size take several months which increases the impact to the surrounding communities and environment. In the event the initial bore is unsuccessful the process would start again in the immediate vicinity further increasing the impact.

A large drill can be more expensive than traditional crossing methods and can take as long as ten to twelve months to install. Traditional crossing methods of major waterbodies can typically be completed in less than 30 days for major waterbody crossings, whereas typical minor or intermediate waterbody crossings can be completed within a day or a few days. Due to the extended time of exposure of additional workspace associated with HDD coupled with the potential for an inadvertent return, traditional crossing methods can often reduce the environmental impact over HDD. Based on these constraints and design considerations the HDD method is feasible and practicable where large, deep waterbodies are encountered and sufficient space to place the pullback and work area for drilling equipment is available.

The proposed HDD crossing locations on ACP constitute those where it is feasible and potential for a successful drill is acceptable.

Finally, Atlantic will construct the project according to the FERC Plan and Procedures and will implement numerous minimization measures during construction, as described in Section 3.6, Section 3.7, Section 3.14, Section 9.1, and Section 9.2 of this application.

4.0 PREVIOUS SITE VISITS AND/OR PERMITS RELATED TO THE PROPOSED WORK

Atlantic has received permits to survey on federal lands in the Monongahela and George Washington National Forests; other environmental permit applications have not been submitted. Atlantic is submitting federal agency permits coincident with filing the application with the FERC in September 2015. Table 4-1 includes a list of permits required for ACP and anticipated filing and approval dates based on the ACP project schedule.

TABLE 4-1

Permit Table for the Atlantic Coast Pipeline for Permits Required in Virginia

Agency	Permit/Approval/Consultation	Filing/Anticipated Filing Date	Anticipated Approval Date
FEDERAL			
Federal Energy Regulatory Commission	Certificate of Public Convenience and Necessity under Section 7(c) of the Natural Gas Act	September 2015	July 2016
Bureau of Land Management	Right-of-Way Grant to cross Federal lands in the George Washington National Forest, and Great Dismal Swamp National Wildlife Refuge	September 2015	September 2016
National Oceanic and Atmospheric Administration – National Marine Fisheries Service	Consultation under Section 7 of the Endangered Species Act and Section 305 of the Magnuson-Stevens Act	August 2014	June 2016
National Park Service – Blue Ridge Parkway	Right-of-Way Grant and Special Use Permit to cross the Blue Ridge Parkway	September 2015	June 2016
U.S. Army Corps of Engineers –Norfolk District	Department of the Army Permits under Section 404 of the Clean Water Act and Sections 10 and 14 (33 USC Section 408) of the Rivers and Harbors Act	September 2015	September 2016
U.S. Fish and Wildlife Service – Great Dismal Swamp National Wildlife Refuge	Special Use Permit and Concurrence in the Right-of-Way Grant issued by the Bureau of Land Management to cross the Great Dismal Swamp National Wildlife Refuge	September 2015	June 2016
U.S. Fish and Wildlife Service –Virginia Ecological Field Services Offices	Consultation under Section 7 of the Endangered Species Act	August 2014	June 2016
U.S. Forest Service – George Washington National Forest and the Appalachian Trail	Special Use Permit and Concurrence in the Right-of-Way Grant issued by the Bureau of Land Management to cross the George Washington National Forest and the Appalachian Trail as well as related amendments to Forest Management Plan	September 2015	September 2016
VIRGINIA			
Virginia Department of Agriculture and Consumer Services	Protected Species Consultation (plant species)	April 2016	March 2016
Virginia Department of Conservation and Recreation	Virginia Scenic Rivers Clearance	October 2015	March 2016
Virginia Department of Environmental Quality – Coastal Zone Management Program	Consistency Determination under the Virginia Coastal Zone Management Program	August 2015	May 2016
Virginia Department of Environmental Quality – Air Division	Air Permit – New Source Review Permit (or other applicable permit)	September 2015	October 2016
Virginia Department of Environmental Quality – Water Division	Water Quality Certificate under Section 401 of the Clean Water Act (Joint Permit Application for the Water Quality Certificate, Virginia Water Protection Permit, River and Stream Crossing Permit, Department of the Army Permit, and Tidal Wetland Permit)	September 2015	September 2016
Virginia Department of Environmental Quality – Water Division	Virginia Water Protection Permit (Joint Permit Application for the Water Quality Certificate, Virginia Water Protection Permit, River and Stream Crossing Permit, Department of the Army Permit, and Tidal Wetland Permit)	September 2015	September 2016
Virginia Department of Environmental Quality – Water Division	General Permit for Discharges from Petroleum Contaminated Sites, Groundwater Remediation, and Hydrostatic Tests (VAG83)	May 2016	September 2016
Virginia Department of Environmental Quality – Water Division	Soil and Erosion Plan and Variance for Open Trench Length	April 2016	July 2016

TABLE 4-1 (cont'd)

Permit Table for the Atlantic Coast Pipeline for Permits Required in Virginia

Agency	Permit/Approval/Consultation	Filing/Anticipated Filing Date	Anticipated Approval Date
Virginia Department of Game and Inland Fisheries	Natural Heritage/Protected Species Consultation	August 2014	March 2016
Virginia Department of Historical Resources	Consultation under Section 106 of the National Historic Preservation Act	June 2014	September 2016
Virginia Department of Transportation	Land Use Permit	November 2015	September 2016
Virginia Marine Resources Commission	River and Stream Crossing Permit (Joint Permit Application for the Water Quality Certificate, Virginia Water Protection Permit, River and Stream Crossing Permit, Department of the Army Permit, and Tidal Wetland Permit)	September 2015	September 2016
Virginia Marine Resources Commission	Submerged Lands Permit	September 2015	September 2016
Local Wetland Boards	Tidal Wetland Permit (Joint Permit Application for the Water Quality Certificate, Virginia Water Protection Permit, River and Stream Crossing Permit, Department of the Army Permit, and Tidal Wetland Permit)	September 2015	September 2016
County/City/Local	Floodplain Permits (as applicable)	November 2015	September 2016

Table 4-2 includes a list of previous site visits completed with USACE staff as part of the permit coordination process for ACP.

TABLE 4-2

Previous Site Visits and Permits related to Proposed Work

Agency	Activity	Date
USACE –Norfolk District	Wetland/Waterbody Boundary Verification	1/28/2015
USACE –Norfolk District	Wetland/Waterbody Boundary Verification	1/29/2015
USACE –Norfolk District	Wetland/Waterbody Boundary Verification	1/30/2015
USACE –Norfolk District	Wetland/Waterbody Boundary Verification	2/5/2015
USACE –Norfolk District	Wetland/Waterbody Boundary Verification	2/6/2015
USACE –Norfolk District	Wetland/Waterbody Boundary Verification	2/11/2015
USACE –Norfolk District	Wetland/Waterbody Boundary Verification	2/12/2015
USACE –Norfolk District	Wetland/Waterbody Boundary Verification	3/11/2015
USACE –Norfolk District	Wetland/Waterbody Boundary Verification	3/12/2015
USACE –Norfolk District	Wetland/Waterbody Boundary Verification	3/13/2015
USACE –Norfolk District	Wetland/Waterbody Boundary Verification	3/18/2015
USACE –Norfolk District	Wetland/Waterbody Boundary Verification	3/19/2015
USACE –Norfolk District	Wetland/Waterbody Boundary Verification	3/20/2015
USACE –Norfolk District	Wetland/Waterbody Boundary Verification	4/1/2015
USACE –Norfolk District	Wetland/Waterbody Boundary Verification	4/15/2015
USACE –Norfolk District	Wetland/Waterbody Boundary Verification	6/10/2015
USACE –Norfolk District	Wetland/Waterbody Boundary Verification	6/11/2015

5.0 PROJECT COSTS

Atlantic has estimated the approximate cost of the project in Virginia, including materials and labor, to be $236.5 million annually and $1.4 billion cumulatively for activities up through construction. Annual operations and maintenance costs are expected to be approximately

$37.8 million. Costs for construction activities that will have an effect, either temporary or permanent, on State water as defined in the JPA are expected to exceed the $500,000 threshold set by the VMRC.

6.0 PUBLIC NOTIFICATION

A detailed list of affected landowners is provided in Appendix E. Atlantic has contacted affected landowners in regards to site acquisition for the project and have been in contact with many of the adjacent landowners to the project area. Atlantic has made themselves available via communication lines listed on the project webpage (www.dom.com/acpipeline) for interested parties, including adjacent and affected land owners. The below table contains a list of newspapers having general circulation in the project area and information to contact those publications.

TABLE 6-1

Newspapers in the Vicinity of the Project Area

Newspaper	Mailing Address	City	State	Zip Code	Phone Number
The Recorder	P.O. Box 10	Monterey	VA	24465	540-468-2147
Staunton Daily News Leader	1300 W Main St	Staunton	VA	24401	540-885-7281
The News Virginian	P.O. Box 90	Waynesboro	VA	22980	540-949-8213
Nelson County Times	114 North St.	Lovingston	VA	24521	434-385-5555
The Farmville Herald	P.O. Box 412	Farmville	VA	23901	434-392-4151
Dinwiddie Monitor	P.O. Box 412	Sutherland	VA	23385	804-733-8636
Brunswick Times Gazette	P.O. Box 250	Lawrenceville	VA	23868	434-848-2114
Independent Messenger	111 Baker St	Emporia	VA	23847	434-634-4153
Courier Record	111 W. Maple St.	Blackstone	VA	23824	434-292-6397
Suffolk News Herald	130 S. Saratoga St.	Suffolk	VA	23434	757-538-3437
The Virginian Pilot	150 W Brambleton Ave	Norfolk	VA	23510	757-446-9000
New Journal and Guide	5127 E. Virginia Beach Blvd	Norfolk	VA	23502	757-543-6531
Tidewater News	P.O. Box 497	Franklin	VA	23851	757-562-3187
The Free Press	P.O. Box 777	Woodstock	VA	22664	540-459-4000
The Daily Press	703 Mariners Row	Newport News	VA	23606	757-247-4600
Richmond Times Dispatch	300 E. Franklin St	Richmond	VA	23219	804-649-6000
Richmond Free Press	422 e. Franklin St.	Richmond	VA	23219	804-644-0496

7.0 THREATENED AND ENDANGERED SPECIES INFORMATION

The below sections describe the results of survey and consultation with Federal, State, and Local agencies. Appendix K contains correspondence with agencies and survey result reports.

7.1 FEDERALLY LISTED SPECIES

The ACP is a FERC 7c regulated project and the USACE is participating in the pre-filing process as a cooperating agency. FERC will be coordinating with the U.S. Fish and Wildlife Service (FWS) regarding the review of Section 7 Endangered Species Act (ESA) compliance.

Section 7 of the ESA requires Federal agencies to verify that any actions authorized, funded, or carried out by the agencies do not jeopardize the continued existence of a federally

listed threatened or endangered species, or result in the destruction or adverse modification of designated critical habitat for a federally listed species. The law is jointly administered by the FWS, which is responsible for terrestrial and freshwater species, and National Oceanic and Atmospheric Administration (NOAA) Fisheries, which is responsible for marine and anadromous species. As the lead Federal agency for authorizing the Projects, FERC is required to coordinate with the FWS and NOAA Fisheries to determine whether federally listed endangered or threatened species or designated critical habitat are found in the vicinity of the Projects, and to evaluate the potential effects of the proposed actions on those species or critical habitat.

For actions involving major construction activities with the potential to affect listed species or designated critical habitat, the FERC must report its findings to the FWS and NOAA Fisheries in a biological assessment (BA) for those species that could be affected. If it is determined that the proposed action is likely to adversely affect listed species or designated critical habitat, the FERC is required to initiate formal consultation with the appropriate Federal agency.

Virginia has separate acts protecting threatened and endangered species. The Virginia Endangered Species Act (VA Code § 29.1-563 to 29.1-570) designates Virginia Department of Game and Inland Fisheries (VDGIF) as the Commonwealth agency with jurisdiction over federally or Commonwealth-listed endangered or threatened fish and wildlife. The act prohibits by regulation the taking, transportation, processing, sale, or offer for sale of those species.

Under the Virginia Endangered Plant and Insect Species Act (VA Code § 3.2-1000 et seq.), the taking or possession of endangered or threatened plant and insect species is prohibited except where authorized under a permit or from one's own land. The Virginia Department of Conservation and Recreation (VDCR) represents the Virginia Department of Agriculture and Consumer Services, which is responsible for Commonwealth-listed plants and insects, in providing comments regarding potential effects on Commonwealth-listed plant and insect species.

Atlantic requested and received National Heritage Inventory (NHI) data for a 2 mile-wide corridor centered on the proposed pipeline centerlines which include the locations of aboveground facilities. This data identifies occurrences of federally listed, Commonwealth/State-listed species as well as sensitive or significant habitats including parks, forests, or nature preserves located along or adjacent to the proposed pipeline routes.

Atlantic reviewed the IPaC System to determine which federally listed species could occur in the ACP Project area. Additionally Atlantic coordinated with the FWS Ecological Services Field Office (ESFO) in Virginia to introduce the Project and begin discussing potential impacts on federally listed species and designated critical habitat.

Atlantic requested and received data on known occurrences of Commonwealth-listed species in Virginia from the VDCR Natural Heritage Program (NHP). Additionally, Atlantic has consulted and continues to consult with the VDGIF and VDCR regarding impacts on Commonwealth-listed threatened and endangered species. A letter from the VDCR was received on November 18, 2014 identifying Natural Area Preserves and conservation sites in the ACP

Project area. A response from the VDGIF was received on February 19, 2015. Correspondence with agencies is located in Appendix K.

Atlantic sent letters to the FWS ESFO in Virginia, FWS EFSO and to the NOAA Fisheries' Office of Protected Resources in August 2014 requesting early coordination and technical assistance based on the species lists obtained through the IPaC System. These letters introduced the Project and begin discussing potential impacts on federally listed species and designated critical habitat, requested verification of the species that could be impacted by the ACP Project, and requested direction on field survey protocols for species-specific surveys.

Based on information obtained through IPaC System, NHI, and agency consultations to date, Atlantic has compiled a preliminary list of 17 federally listed threatened and endangered species that potentially occur within the ACP Project area within the USACE - Norfolk District (table 7-1) and a preliminary list of 18 Commonwealth -listed species with the potential to occur in the ACP Project area in Virginia (table 7-2).

TABLE 7-1

Federally Listed Species and Species Proposed for Federal Listing within the U.S. Army Corps of Engineers – Norfolk District

Species	Status [a]	Counties of Potential Occurrence
Mammals		
Indiana Bat (*Myotis sodalis*)	E	Highland, Augusta, and Cumberland
Northern Long-eared Bat (*Myotis septentrionalis*)	T	All Counties Crossed
Virginia Big-eared Bat (*Corynorhinus townsendii virginianus*)	E	Highland
Birds		
Red-cockaded Woodpecker (*Picoides borealis*)	E	Southampton, Suffolk
Mussels		
Dwarf Wedgemussel (*Alasmidonta heterodon*)	E	Brunswick, Dinwiddie, and Nottoway
James Spinymussel (*Pleurobema collina*)	E	Highland, Buckingham, Cumberland, and Nelson
Tar River Spinymussel (*Elliptio steinstansana*)	E	Dinwiddie
Plants		
American Chaffseed (*Schwalba americana*)	E	Greensville
Eastern Prairie Fringed Orchid (*Platanthera leucophaea*)	T	Augusta
Michaux's Sumac (*Rhus michauxii*)	E	Brunswick, Dinwiddie, and Nottoway
Northeastern Bulrush (*Scirpus ancistrochaetus*)	E	Augusta and Highland
Shale Barren Rock Cress (*Boechera serotina*)	E	Augusta and Highland
Small Whorled Pogonia (*Isotria medeoloides*)	T	Augusta and Highland
Swamp Pink (*Helonias bullata*)	T	Augusta and Nelson
Virginia Sneezeweed (*Helenium virginicum*)	T	Augusta

TABLE 7-1 (cont'd)

Federally Listed Species and Species Proposed for Federal Listing within the U.S. Army Corps of Engineers – Norfolk District

Species	Status [a]	Counties of Potential Occurrence
Invertebrate		
Madison Cave Isopod (*Antrolana lira*)	T	Augusta
Fish		
Roanoke Logperch (*Percina rex*)	E	Brunswick, Dinwiddie, Greensville, Nottoway, and Southampton

[a] Abbreviations for species federal status are as follows:
E = Endangered
T = Threatened

TABLE 7-2

Commonwealth-listed Endangered and Threatened Species Potentially Occurring in the Atlantic Coast Pipeline Area[a]

Species	Status [b]	Areas of Potential Occurrence
Amphibians		
Eastern Tiger Salamander	E	Augusta and Nelson Counties
Mabee's Salamander	T	Suffolk County
Birds		
Appalachian Bewick's Wren	E	Highland County
Bachman's sparrow	T	Greensville County
Loggerhead Shrike	T	Highland, Augusta, Nelson Counties
Peregrine Falcon	T	Chesapeake County
Freshwater Mussel		
Atlantic Pigtoe	T	Cumberland, Prince Edward, Dinwiddie, Brunswick, Greensville Counties
Green Floater	T	Nelson, Buckingham, Greensville, Southampton Counties
Mammals		
American Water Shrew	E	Highland, Augusta, and Cumberland Counties
Dismal Swamp Southeastern Shrew	T	Suffolk, Chesapeake Counties
Rafinesque's Eastern Big-eared Bat	E	Greensville, Southampton, Suffolk Counties
Plant		
Raven's Seedbox	R	Suffolk County
Reclining Bulrush	T	Southampton, Greenville Counties
Torrey's Mountain-mint	R	Nelson County
Valley Doll's Daisy	E	Augusta County
Variable Sedge	R	Augusta and Highland Counties
Virginia Least Trillium	R	Suffolk County
Reptiles		
Canebrake Rattlesnake	E	Suffolk, Chesapeake Counties

[a] Potential species in the ACP Project area are based on NHI occurrences within 300 feet of the proposed pipeline routes and response letters from the Virginia Department of Game and Inland Fisheries, dated February 19, 2015.
[b] E – Endangered, T – Threatened, R – Rare

Through coordination with the FWS EFSO, field survey protocols were developed for red-cockaded woodpecker, Roanoke logperch, all mussels, all bats, and all plants. The Madison cave isopod will be addressed through the development of a karst protection plan.

Correspondence logs documenting the coordination with the FWS EFSO are located in Appendix K.

Atlantic is developing an applicant prepared BA that will be submitted to FERC and the FWS, and anticipates that this will be completed in the Fall of 2015. A copy of the applicant prepared BA will be provided to the USACE.

7.2 ESSENTIAL FISH HABITAT

The only essential fish habitat along the ACP is located at the Southern Branch Elizabeth River crossing in Virginia. The Southern Branch of the Elizabeth River contains Essential Fish Habitat (EFH) for the egg, larvae, juvenile, and adult life stages of the following species: windowpane flounder (*Scophthalmusaquosus*), bluefish (*Pomatomussaltatrix*), Atlantic butterfish (*Peprilustriacanthus*), summer flounder (*Paralichthysdentatus*), black sea bass (*Centropristisstriata*), king mackerel (*Scomberomorus cavalla*), Spanish mackerel (*Scomberomorusmaculatus*), cobia (*Rachycentroncanadum*), red drum (*Sciaenopsoccelatus*), dusky shark (*Carcharhinusobscurus)*, sandbar shark (*Carcharhinusplumbeus*), and also includes Habitat Area of Particular Concern (HAPC) for sandbar shark. The Southern Branch Elizabeth River will be crossed via HDD resulting in no adverse effects to essential fish habitat.

As noted above, Atlantic is planning use of the HDD method for the crossing of the Southern Branch Elizabeth River, which would avoid direct impacts from in-stream excavation on the waterbody. However, impacts on EFH could result from an inadvertent return of drilling fluid, inadvertent hazardous material spills, run-off of sediment from construction areas into the waterbody, or water withdrawals for hydrostatic testing and drilling mud.

During construction, Atlantic will minimize potential impacts on aquatic resources, including EFH, through implementation of the measures described in the Procedures. Additionally Atlantic has prepared and will implement an SPCC Plan (for prevention and response measures in the event of a spill) and HDD Plan (for response measures in the event of an inadvertent return). If bentonite-drilling fluid is released into the river during an inadvertent release, the volume is expected to be relatively minimal. Additionally, due to the river current, high waterway traffic, high turbidity, and presence of existing pollutants, an inadvertent release will not likely be visible or result in significant impact on EFH.

Atlantic believes that the ACP will have no adverse effect on EFH or managed species in the Southern Branch Elizabeth River due to minimization and avoidance measures, including installing the pipeline by HDD. Atlantic will request concurrence from the NOAA Fisheries Northeast Regional Office with a no adverse effect finding for impacts on EFH in the Southern Branch Elizabeth River in Atlantic's draft Biological Assessment for the Project.

No preferred timeframes for crossing the Southern Branch Elizabeth River have been identified through consultation with NOAA Fisheries Northeast Region.

8.0 HISTORIC RESOURCES INFORMATION

The ACP is a FERC 7c regulated project and the USACE is participating in the pre-filing process as a cooperating agency. FERC will be coordinating with the Virginia State Historic Preservation Office (SHPO) for the review of Section 106 of the National Historic Preservation Act compliance, as well as coordinating its government-to-government consultation with federally recognized Indian Tribes. Project introduction letters were sent to 12 federally recognized Indian Tribes.

The area of potential effect (APE) for archaeological sites was defined horizontally as the proposed pipeline corridor and associated workspace, footprints of aboveground facility sites, and footprints of other work areas; and vertically as the maximum depth of trenching and other excavations or the depth to which evidence of human occupation could be found. The APE for aboveground historic resources was defined to include the proposed pipeline corridor and associated workspace, footprints of aboveground facility sites, and footprints of other work areas. The APE for aboveground historic resources also included viewsheds to and from historic sites along or near the proposed facilities. The linear extent of the viewsheds varied by site depending on changes in topography, vegetation cover, and the presence of structures or other obstructions in sight lines to and from aboveground historic resources.

The reports presenting the results of the cultural resources surveys for the Project can be provided to the USACE – Norfolk upon request, along with copies of documentation of SHPO review and comment when they become available.

9.0 WETLANDS, WATERS, AND DUNES/BEACHES IMPACT INFORMATION

Atlantic began conducting wetland field surveys during the 2014 field season, on properties where survey permission had been granted by the landowner, to identify and delineate wetlands within the ACP pipeline construction corridors, access roads and other work areas. The wetland delineation study area for the ACP consisted of a 300-foot-wide corridor centered on the proposed pipeline centerlines, a 50-foot-wide corridor centered over access roads, and the construction footprints at aboveground facility sites. Atlantic will continue to conduct waterbody surveys to document waterbody crossings along the remainder of the proposed pipeline routes, access roads and in other work areas. To date, wetland and waterbody surveys have been completed for approximately 62 percent of the proposed ACP Project in Virginia. Wetland and Waterbody surveys will continue until the entire route has been surveyed.

Appendix B provides a list of the waterbodies crossed by the proposed ACP within the Commonwealth of Virginia. For each waterbody crossing, the tables include the field survey designation (Feature ID), waterbody name, approximate crossing width, flow regime (perennial, intermittent, ephemeral, or canal/ditch), proposed crossing method, and state water classification, indicates if there is a time of year restriction at the crossing and describes the calculated impact to each resource. Subaqueous land crossings are also identified in table B-2 of Appendix B. Waterbodies that were not surveyed in the field due to a lack of survey permission or recent changes to the proposed pipeline routes were identified based on the NHD and/or recent aerial photography. These features are designated as "NHD" in the Feature ID column of each table. In addition, Appendix D, Figures 3 and 4 illustrate the location of wetlands and

waterbodies delineated on 7.5-Minute USGS topographic maps, and aerial photography maps, respectively.

Wetlands were delineated in accordance with the *1987 Corps of Engineers Wetlands Delineation Manual* and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region* (Version 2.0) or the *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Atlantic and Gulf Coastal Plain Region* (Version 2.0)), as appropriate. Observations of vegetation, hydrology, and soils were recorded, and photographs were taken at each wetland. Wetland and waterbody delineations for the ACP were conducted using a definition of "waters of the U.S." that is consistent with, and at least as stringent as, the final *Clean Water Rule: Definition of "Waters of the United States,"* 80 Federal Register 37054 (June 29, 2015). Atlantic will obtain preliminary jurisdictional determinations from the USACE for these delineations. The wetland and waterbody delineation report and supporting datasheets are included in Appendix L.

A summary description of the direct and indirect environmental effects to waterbodies and wetlands within the Commonwealth of Virginia that will result from the construction of the Project is provided in Section 9.2 and 9.3. In order to minimize environmental impacts during construction, Atlantic developed a SPCC Plan which is provided in Appendix F.

There will be no dune or beach impacts associated with the ACP.

9.1 CUMULATIVE IMPACTS

As part of the USACE evaluation of the single and complete crossings of waters of the United States for applicability of coverage under NWP 12, the USACE must determine if the individual and cumulative impacts on the aquatic environment are no more than minimal after considering compensatory mitigation for unavoidable impacts. The single and complete crossing impacts are presented by HUC 8 watershed in Appendix B. By avoiding impacts to higher ecological value waters of the United States, minimizing impacts to the maximum extent practicable, and providing compensatory mitigation for conversion of forested and scrub-shrub wetlands to herbaceous wetlands, Atlantic has ensured that impacts associated with single and complete crossings are minimal. As with all impact evaluations under the NWP program, the determination whether there will be more than minimal cumulative adverse impacts on the aquatic environment is made after considering proposed mitigation. Furthermore, based on the level of conversion impacts occurring within each HUC 8 watershed, and the fact that all conversion impacts have been offset by compensatory mitigation, the cumulative impacts to the aquatic environment have been reduced to minimal as described in Section 3.14 of this Joint Permit Application document.

The Preamble of the March 2012 NWP issuance package also indicates that cumulative effects will normally be evaluated on a watershed basis.

(77 FR 10196)"Each separate and distant crossing should be evaluated to determine if it meets the terms and conditions of the NWP, and cumulative effects of the overall utility line should be evaluated to determine if the adverse cumulative effects on the aquatic environment are more than minimal and therefore do not qualify for NWP authorization. Separate utility

line crossings are usually on different water bodies, and may also be in widely separated watersheds. Such factors should be considered when assessing cumulative impacts."

(77 FR 10264) "For single and complete linear projects, each separate and distant crossing of a waterbody, as well as each crossing of other waterbodies along the corridor for the linear project may be permitted by separate NWP authorizations. The acreage and other applicable limits for an NWP would be applied to each crossing, as long as those crossings are far enough apart to be considered separate and distant. District engineers will evaluate the cumulative effects of those linear projects when determining whether authorization by NWP is appropriate. The approach to cumulative effects analysis for linear projects is little different than the cumulative effects analysis for other types of NWP activities, including those circumstances in which more than one NWP is used to authorize a single and complete non-linear project, because cumulative effects are evaluated on a regional basis. Cumulative effects analysis may be done on a watershed basis, or by using a different type of geographic area, such as an ecoregion."

The USACE mitigation rule at 33 CFR 332.8(d)(6)(ii)(A), provides that normally mitigation service areas would be at the HUC 8 watershed level. HUC 8 has been used as the size of watershed in which to present the cumulative impacts of the proposed Project.

The vast majority of the Project impacts to waters of the U.S. would result from the temporary discharge of earthen fill material associated with trench excavation for pipeline installment within the rights-of-way. Furthermore, to facilitate construction equipment for pipeline installation, forested and scrub/shrub wetlands would be cleared and stumps removed where required for safe passage during pipeline installment. Where temporary discharges of fill or excavation is necessary, Atlantic will immediately restore the wetland to its pre-construction contours. The center 30-feet of the cleared rights-of-way that previously consisted of forested wetlands will be permanently maintained free of trees. The center 10-feet of the cleared rights-of-way that previously consisted of forested and scrub-shrub wetlands will be permanently maintained in an herbaceous state. This maintenance for the life of the project, while not resulting in a loss of waters of the U.S., will result in a permanent loss of function and value, which would otherwise exist had the vegetative cover of the wetland not been altered. This has been described as permanent conversion in associated tables.

Permanent impacts (i.e., permanent loss of waters of the U.S.), although minimized and avoided to the maximum extent practicable, may be necessary to accommodate the construction of permanent facilities and access roads. Atlantic has taken great steps to avoid all permanent impacts, however, 0.18 acre of PFO wetland are proposed to be permanently filled for the Elizabeth River M&R station. Impacts resulting in loss of the waters of the U.S. will not occur as a result of mainline pipeline construction. However, additional loss of waters of the U.S. may occur as a result of access roads improvements, where necessary. Existing access roads will be utilized where feasible. Where access road improvements are necessary for use, waters of the U.S. loss impacts will be minimized to the maximum extent practicable, and will be kept below 1/3 acre at single and complete crossings.

The temporary impacts and permanent conversion impacts of the proposed Project are provided in Appendix B, tables B-6 and B-7 by HUC 8 watershed. There will be no loss of

waters of the U.S. due mainline pipeline crossings of waters of the U.S. Despite potential minor loss of waters of the U.S. for access road improvements and the wetland conversion impacts, the compensatory mitigation plan will provide for impact offsets and Atlantic does not anticipate a net loss in aquatic functions and services of the waters of the U.S.

Assessment of cumulative effects also involves a general characterization of impacts to waters of the U.S. from similar types of projects in the past and reasonably foreseeable future. The area that the pipeline will traverse largely involves a mix of small community development, agricultural use and open undisturbed forested land. Past impacts would be those of typical rural development with road and various utility line crossings of streams and wetlands in support of agriculture and dispersed human development

As provided in the USACE 2012 NWP issuance document at 77 FR 10197, cumulative impacts to the human environment other than impacts to waters of the U.S. will be evaluated by FERC in its NEPA EIS process.

"Even though an environmental impact statement may be prepared for a particular utility line, the National Environmental Policy Act process does not prohibit the Corps from using NWP 12 to authorize the construction, maintenance, repair, and removal of utility lines and associated facilities in waters of the United States, as long as the activity complies with all applicable terms and conditions and results in minimal individual and cumulative adverse effects on the aquatic environment. NEPA requires consideration of all environmental impacts, not only those to aquatic resources, so there may well be situations where aquatic impacts are minimal even though environmental impacts more generally are not. These other environmental impacts would be addressed by the lead agency preparing the environmental impact statement."

The purpose of the proposed pipeline is to transport natural gas from West Virginia and Pennsylvania to use in areas of Virginia and North Carolina. Other pipelines, subject to future approvals with mitigation as appropriate and practicable, may be required to transport natural gas from source areas such as the Marcellus Shale and Utica Shale formations.

Based on the fact that the majority of the overall pipeline project impacts to waters of the U.S. are temporary with restoration immediately after construction and that permanent conversion of forested and scrub-shrub wetlands to other wetland types and small road fills will be mitigated to the minimal impact level the impacts at each single and complete crossing will be minimal. In addition, since these minimal impacts to waters of the U.S., at each single and complete crossing, are dispersed over different watersheds in Virginia, the aggregate impacts of the overall pipeline project to waters of the U.S. will be minimal as well. Therefore, the cumulative impacts of the overall pipeline project on each HUC 8 watershed are not of a nature or extent that would trigger the need for of an individual permit for the Project.

9.2 WATERBODY IMPACTS

After the avoidance and minimization efforts employed during routing and route refinement, as well as construction planning and design described in sections 3.9 through 3.14, within the Commonwealth of Virginia, a total of 563 waterbodies will be crossed by mainline

pipeline construction workspace, aboveground facilities, and construction staging areas for the ACP. Potential impacts associated with these crossings are listed in the impact tables in Appendix B.

Impacts on individual waterbodies crossed by the proposed ACP facilities could occur as a result of construction activities in stream channels and on adjacent banks. Potential impacts on waterbodies and minimization or mitigation measure that will be utilized are described below.

Clearing and grading of stream banks, blasting (if required), in-stream trenching, trench dewatering, and backfilling could each result in temporary, local modifications of aquatic habitat involving sedimentation, increased turbidity, and decreased dissolved oxygen concentrations. In almost all cases, these impacts will be limited to the period of in-stream construction, and conditions will return to normal shortly after stream restoration activities are completed. In addition, implementation of the best management procedure outlined in the FERC Plan and Procedures will help minimize impacts on waterbodies.

Vegetative clearing, grading for construction, and soil compaction by heavy equipment near stream banks could promote erosion of the banks and the transport of sediment into waterbodies by stormwater runoff. To minimize these potential impacts, Atlantic will install equipment bridges, mats, and pads, as necessary. Additionally, Atlantic will locate ATWS at least 50 feet from the top of stream banks (with the exception of site-specific modifications requested by Atlantic and approved by the FERC). Temporary sediment barriers will be installed around disturbed areas as outlined in the Plan and Procedures. Upon completion of construction, Atlantic will install approved permanent erosion control measures at stream crossing locations to provide long-term protection of water quality according to the Plan and Procedures and permit requirements.

Sedimentation and increased turbidity can occur as a result of in-stream construction activities, trench dewatering, or stormwater runoff from construction areas. In slow moving waters, increases in suspended sediments (turbidity) may increase the biochemical oxygen demand and reduce levels of dissolved oxygen in localized areas during construction. Suspended sediments also may alter the chemical and physical characteristics of the water column (e.g., color and clarity) on a temporary basis. Atlantic will use material excavated from the pipeline trench to backfill the trench once the pipe is installed to avoid introduction of foreign substances into waterbodies.

As noted above, Atlantic will install temporary equipment bridges to reduce the potential for turbidity and sedimentation resulting from construction equipment and vehicular traffic crossing waterbodies. Temporary bridges will be installed across waterbodies in accordance with the Procedures to allow construction equipment and personnel to cross. The bridges may include clean rock fill over culverts, timber mats supported by flumes, railcar flatbeds, flexi-float apparatuses, or other types of spans. Construction equipment will be required to use the bridges, except that the clearing and bridge installation crews will be allowed one pass through waterbodies before bridges are installed. The temporary bridges will be removed when construction and restoration activities are complete.

In-stream construction will typically be completed within 24 to 48 hours at each stream crossing where waterbodies are less than 100 feet in width. After the pipeline is installed across a waterbody using one of the methods described above, the trench will be backfilled with native material excavated from the trench. The streambed profile will be restored to pre-construction contours and grade conditions to prevent scouring. The stream banks will then be restored as near as practicable to preconstruction conditions and stabilized. Stabilization measures could include seeding, tree planting, installation of erosion control blankets, or installation of riprap materials, as appropriate. Temporary erosion controls will be installed immediately following bank restoration. The waterbody crossing area will be inspected and maintained until restoration of vegetation is complete.

During construction, the open trench may accumulate water, either from a high water table and seepage of groundwater into the trench or from precipitation. In accordance with the Plan and Procedures, and when necessary, trench water will be removed and discharged into an energy dissipation/sediment filtration device, such as a geotextile filter bag and/or straw bale structure, to minimize the potential for erosion and sedimentation.

In areas where concrete-coated pipe is required, and in accordance with the SPCC Plan, concrete coating activities conducted in the field will occur a minimum of 100 feet from wetlands, waterbodies, springs, and karst features. [12] Concrete-coated pipe will be installed after the concrete is dried and will not be dispersed when submerged in water.

As required in the Procedures and the SPCC Plan, hazardous materials, chemicals, lubricating oils, and fuels used during construction will be stored in upland areas at least 100 feet from wetlands and waterbodies. Refueling of construction equipment will be conducted at least 100 feet from wetlands and waterbodies, whenever possible. However, there will be certain instances where equipment refueling and lubricating may be necessary in or near waterbodies. For example, stationary equipment, such as water pumps for withdrawing hydrostatic test water, may need to be operated continuously on the banks of waterbodies and may require refueling in place. The SPCC Plan will address the handling of fuel and other materials associated with the Projects. As required by the Procedures, the SPCC Plan will be available during construction on each construction spread.

As noted above, it is possible that previously undocumented sites with contaminated soils or groundwater could be discovered during construction of the Projects. Atlantic will prepare and implement a *Contaminated Media Plan* to address these circumstances. The *Contaminated Media Plan* will describe measures to be implemented in the event that signs of contaminated soil and/or groundwater are encountered during construction. Signs of potential contamination could include discoloration of soil, chemical-like odors, or sheens on soils or water. Containment measures will be implemented to isolate and contain the suspected soil or groundwater contamination and collect and test samples of the soil or groundwater to identify the

[12] In comments filed with the Commission, the Virginia Department of Game and Inland Fisheries said that in-stream use of concrete should be done only in dry conditions, allowing all concrete to harden prior to returning stream flow

contaminants. Once the contaminants are identified, a response plan will be developed for crossing or avoiding the site.

Once construction is complete, the pipeline will be buried below the ground surface and preconstruction contours will be reestablished; therefore, the pipeline will not impact water retention or floodplain storage within riparian corridors. Atlantic is routing the proposed pipelines to avoid sharp angle crossings or crossing streams where high stream energy could result in bank erosion. Atlantic will implement measures outlined in the Procedures to minimize impacts on the waterbodies crossed, including the installation of trench plugs to prevent water from flowing along the trenchline during and after construction. These measures will minimize potential impacts on surface and below ground hydrology. Waterbody crossings will be in accordance with the requirements identified in the Federal or Commonwealth waterbody crossing permits obtained for the Projects.

During operations, the proposed pipelines will transport natural gas, which primarily is methane. Methane is buoyant at atmospheric temperatures and pressure, and disperses rapidly in air. The proposed pipelines will not carry liquids. Therefore, in the unlikely event of a leak, impacts on surface waters or groundwater from methane are not anticipated.

The impacts associate with construction are planned to occur in an expedient and efficient manner such that impacts on the waterbody and associate banks are temporary in nature. In addition, while the number of waterbody crossings across the project in Virginia are numerous, the crossings are distributed across many watersheds. Table B-5 summarizes the impacts on waterbodies by basin and sub-basin (HUC 6 and HUC 8, respectively). Based on the short duration and distant nature of the waterbody crossings, Atlantic anticipates that cumulative impacts will result in less than significant adverse impacts to the basin and sub-basins crossed.

9.3 DITCHES

Several human-altered ditches were identified during field surveys as potentially jurisdictional features. These ditches and the locations along the ACP project route within the Norfolk District are summarized in table 9-1, and illustrated on maps included in Appendix D.

9.4 WETLAND IMPACTS

After the avoidance and minimization efforts employed during routing and route refinement, as well as construction planning and design described in sections 3.9 through 3.14, there will be a total of 520 wetland crossings for the ACP mainline construction, aboveground facilities, and construction staging areas within Virginia. Where the route crosses a single wetland more than once, each crossing was counted separately.

TABLE 9-1

Atlantic Coast Pipeline Project – Commonwealth of Virginia
Non-tidal Ditches in Virginia

Facility/County	Unique ID	Latitude	Longitude
AP-1			
Highland			
	dhic001	38.307789	-79.425301
Augusta			
	daub100	38.026749	-78.995041
Greensville			
	dgra001	36.742691	-77.652855
	dgra002	36.742195	-77.652534
	dgrc001	36.659103	-77.587379
Southampton			
	dsoa006	36.626648	-77.148071
	dsoc001	36.642735	-76.970566
	dsoc002	36.643799	-76.964432
	dsoa001	36.638935	-76.936554
	dsoa002	36.638893	-76.936462
	dsoa003	36.639378	-76.935387
	dsoa004	36.638138	-76.929176
	dsoa005	36.636387	-76.927727
Suffolk			
	dsua001	36.634529	-76.876122

The combined linear crossing distance of all wetlands within the Commonwealth of Virginia is 162,050 feet, accounting for less than 11 percent of the combined length of the pipeline routes within that district. In total, approximately 306.8 acres of wetlands will be temporarily impacted by construction of the ACP mainline pipeline and an additional 2.6 acres of temporary impact will occur at aboveground facilities within Virginia. The proposed Project will result in the conversion of approximately 87.52 acres of PFO wetlands and 2.87 acre of PSS wetlands, and loss of 0.18 acre of PFO wetland at one aboveground facility site (South Elizabeth River M&R Site). Impacts resulting in loss of the waters of the U.S. will not occur as a result of mainline pipeline construction. However, loss of waters of the U.S. may also occur as a result of access road improvements, where necessary. Existing access roads will be utilized where feasible. Where access road improvements are necessary for use, waters of the U.S. loss impacts will be minimized to the maximum extent practicable, and will be kept below 1/3 acre at single and complete crossings.

The crossing method for each wetland during construction will depend on site-specific weather and soil conditions, including soil saturation and stability. Appendix B identifies the proposed crossing method for each wetland along the ACP.

Construction activities can affect wetlands in several ways. Clearing and grading of wetlands, trenching, backfilling, and trench dewatering can affect wetlands through the temporary alteration of wetland vegetation and hydrology; loss or change to wildlife habitat; erosion and sedimentation; and accidental spills of fuels and lubricants. Potential impacts on wetland and minimization or mitigation measure that will be utilized are described below.

In general, Atlantic will minimize impacts on wetlands by following the Plan and Procedures, site-specific modifications to the Procedures requested by Atlantic and approved by the FERC, and any additional requirements identified in Federal or Commonwealth wetland crossing permits. Atlantic will prepare a Plan of Development or *Construction, Operation, and Maintenance Plan*, which will identify construction procedures and mitigation measures to be implemented on federally managed lands.

The proposed wetland mitigation measures are intended to avoid wetland impacts to the greatest extent practicable, minimize the area and duration of disturbance, reduce soil disturbance, and enhance wetland revegetation after construction. Some of the measures proposed include:

- limiting the construction right-of-way width to 75-feet through wetlands (unless alternative, site-specific measures are requested by Atlantic and approved by the FERC and other applicable agencies);
- locating ATWS within uplands, at least 50 feet away from wetland boundaries (unless alternative, site-specific measures are requested by Atlantic and approved by the FERC and other applicable agencies);
- limiting the operation of construction equipment within wetlands to only equipment essential for clearing, excavation, pipe installation, backfilling, and restoration;
- limiting the operation of equipment from equipment mats or timber riprap in wetlands only if the wetland is not excessively saturated in order to prevent the compaction and rutting of wetland soils;
- restricting grading in wetlands to the area directly over the trenchline, except where necessary to provide safety;
- installing trench breakers or trench plugs at the boundaries of wetlands to prevent draining of wetlands;
- segregating topsoil from the trench in non-saturated wetlands and returning topsoil to its original location during backfilling to avoid changes in the subsurface hydrology and to promote re-establishment of the original plant community by replacing the seed bank found in the topsoil;
- installing temporary and permanent erosion and sediment control devices and re-establishing vegetation on adjacent upland areas to avoid erosion and sedimentation into wetlands;

- removing woody stumps only from areas directly above the trenchline or where they will create a safety hazard to facilitate the re-establishment of woody species by existing root structures;
- ~~returning graded areas to their preconstruction contours to the greatest extent~~ practicable, and returning excavated soil from the trench within the wetlands back to their original soil horizon to maintain hydrologic characteristics;
- prohibiting the storage of chemicals, fuels, hazardous materials, and lubricating oils within 100 feet of a wetland;
- prohibiting parking and/or fueling of equipment within 100 feet of a wetland, unless the Environmental Inspector determines there is no reasonable alternative, and appropriate steps (such as use of a secondary containment structure) are taken;
- dewatering the trench at a controlled rate into an energy dissipation/sediment filtration device, such as a geotextile filter bag and properly installed straw bale structure, to minimize the potential for erosion and sedimentation;
- preventing the invasion or spread of undesirable exotic vegetation as according to a project-specific invasive plant species management plan.
- limiting post-construction maintenance of vegetation to removal of trees with roots that could compromise the integrity of the pipeline within 15 feet of the pipeline centerline, and the maintenance of a 10-foot wide corridor centered over the pipeline as herbaceous vegetation;
- annual monitoring of the success of wetland revegetation following construction until wetland revegetation is successful; and
- at the end of 3 years after construction, active management for any wetland where revegetation is not successful by developing and implementing a remedial revegetation plan, in consultation with a professional wetland ecologist, to actively revegetate wetlands.

Based on FERC Procedures, restoration/revegetation of wetlands will be considered successful when the affected wetland satisfies the Federal definition of a wetland (i.e., soils, hydrology, and vegetation); the vegetation is at least 80 percent of the cover documented for the wetland prior to construction, or at least 80 percent of the cover in adjacent, undisturbed areas of the wetland; or the plant species composition is consistent with early successional wetland plant communities in the affected ecoregion (if natural rather than active revegetation is used); and invasive plant species are absent, unless they are abundant in adjacent areas that were not disturbed by construction.

The impacts associated with construction are planned to occur in an expedient and efficient manner such that impacts on the wetlands are minimized to the extent practicable, and long-term impacts are associated with minimal conversion of type but not loss of wetlands. In addition, while the number of wetland crossings across the project in Virginia are numerous, the crossings are distributed across many watersheds. Table B-6 summarizes the impacts on

wetlands by basin and sub-basin (HUC 6 and HUC 8, respectively). Based on the short duration of construction thru wetlands, minimization of long-term conversion by implementing FERC procedures (i.e., clearing of 10 feet to maintain herbaceous condition, and 15 feet either side of centerline for trees), Atlantic anticipates that cumulative impacts will result in less than significant adverse impacts to the basin and sub-basins crossed.

COMPENSATORY MITIGATION

In order to authorize any activity under the NWP Program the USACE must determine that the authorized activity in waters of the U.S. meets the terms and conditions of the relevant NWP, in this case NWP 12, which allows no more than 1/3 acre loss of waters of the U.S. due to access road impacts, and 0.5 acre loss for other project facilities. Furthermore, provided the activity meets the terms and conditions of NWP 12 USACE must determine that the activity will not result in more than minimal individual or cumulative impacts on the aquatic environment ***AFTER*** considering proposed compensatory mitigation. Such impacts would include the conversion impacts from one type of water of the U.S. to another type of water of the U.S. As stated in the Preamble to the 1991 NWP rule (56 FR 59118-59119) mitigation can be used to reduce impacts to the aquatic environment to the minimal level:

"In response to the comments concerning whether the DE should allow an activity to proceed under a relevant NWP when the mitigation reduces the adverse environmental effects to the minimal level (the "buy down" or "write down" concept), we believe it is indeed appropriate for the DE to consider mitigation in determining whether the proposed activity will result in no more than a minimal level of adverse environmental effects." and "In summary, the net impact concept regarding the determination of minimal is consistent with NEPA, the Army/EPA Mitigation MOA and the Section 404(b)(1) Guidelines as they pertain to general permits."

Permanent loss of wetlands are not anticipated to occur as a result of the ACP mainline pipeline construction in Virginia. However, loss of waters of the U.S. will occur as a result of aboveground facilities and may occur as a result of access road improvements. Existing access roads will be utilized where feasible. Where access road improvements are necessary for use, waters of the U.S. loss impacts will be minimized to the maximum extent practicable, and will be kept below 1/3 acre at individual and complete crossings. Atlantic will compensate for the conversion of forested and scrub-shrub wetlands, both for the permanent conversion and temporal lag in replanting temporarily impacted wetlands, along the ACP right-of-way and permanent losses of wetlands and/or waterbodies at facility sites and access roads through the purchase of commercially available mitigation credits from an agency-approved mitigation bank as a first option. In-kind mitigation bank credits will be purchased from mitigation banks servicing the areas (HUC 8 watershed, or approved service area) where the conversion or loss occurs. In the event that a conversion or loss occurs in a service area where mitigation bank credits are not available, Atlantic will seek authorization to purchase credits from outside the service area of the next nearest mitigation bank and/or participate in an agency-approved In-Lieu-Fee program, where credits or opportunities are available.

Atlantic will coordinate with landowners to identify wetlands where on-site restoration activities would be agreeable and consistent with the landowner's intended land use practices to

facilitate the success of restoration (i.e., where landowner activities are not contrary to onsite restoration of wetlands within the right-of-way). Onsite restoration activities, such as planting of native tree species, would be implemented in those areas outside of the maintenance corridor of 15 feet each side of the pipeline.

10.0 APPLICANT, AGENT, OWNER AND CONTRACTOR CERTIFICATIONS

See the JPA for the Applicant, Agent, Owner and Contractor Certifications section.

21.0 UTILITY CROSSINGS

The ACP will be constructed as described in Section 3.6. Construction of the project will consist of both trenched crossings and horizontal directional drill crossings of wetlands and waterbodies. Areas of construction that use one of the trench construction methods, described in section 3.6, will require mechanized clearing of vegetation and where needed the top soil will be stripped to prevent the mixing of top and sub-soils. Clearing activities in wetlands will strip vegetation flush with the surface except over the trench line where top soil will be segregated from sub-soil before excavation. Material excavated from a wetland will be stored in the wetland along the construction trench in accordance with NWP 12. However, no excess material will be left behind after construction. Excess material will be disposed of at off-site locations or in upland areas where permissible with permit and landowner requirements.

Upland topsoil and sub-soil stock piles will be windrowed along the trench with a spacing between the piles to prevent mixing. The project right-of-way will be as described in section 3.5. Wetlands and waterbodies will be allowed to return to preconstruction conditions with the exception that post-construction maintenance of vegetation will occur to remove trees with roots that could compromise the integrity of the pipeline within 15 feet of the pipeline centerline, and the maintenance of a 10-foot wide corridor centered over the pipeline as herbaceous vegetation. Wetland impacts will be temporary except PSS wetlands will be converted to PEM wetlands within the 10-foot-wide corridor (permanent conversion impacts) and PFO wetlands will be converted to PSS or PEM wetlands within the above described 30 foot wide corridor (permanent conversion impacts).

Construction will use native soil excavated from the trench to backfill the trench. Trench breakers (stacked sandbags or foam) may be used as necessary. If the excavated material is rocky or presents a risk of damage to the pipe or its coating, a rock shield or other suitable fill will be used to protect the pipe. Atlantic will dispose of any extra material (i.e. Rock, timber, etc.) at appropriate off site facilities or onsite with landowner permission. In addition to fill materials, the project will also use a bentonite clay slurry during horizontal directional drilling activities.

Atlantic will not construct any overhead crossings of navigable waters, and is not a power line project. Atlantic will utilized existing roads to the maximum extent practicable. Where access to the construction right-of-way is limited, Atlantic may improve unmaintained private roads, or in limited cases construct new access roads to gain access during construction and for operation of the pipeline. Construction of permanent access roads will typically involve minor

improvements to existing roads. Some new construction of access roads will be required. Where new construction and improvements are necessary and permanent impacts may occur, Atlantic would minimize impacts at each individual and complete crossing to keep impacts under 1/3 acre in accordance with NWP 12 regional conditions.

Impacts resulting in loss of the waters of the U.S. are not anticipated as a result of mainline pipeline construction. However, loss of waters of the U.S. are proposed at the Elizabeth River M&R station and may occur as a result of access road improvements, where necessary. Existing access roads will be utilized where feasible. Where access road improvements are necessary for use, waters of the U.S. loss impacts will be minimized to the maximum extent practicable, and will be kept below 1/3 acre at individual and complete crossings.

22.0 ROAD CROSSINGS

Where new culvert placement is required or replacement of existing culverts will occur, Atlantic will design culverts and embed culverts according to the appropriate design parameters per USACE general and regional conditions, or state requirements. Details pertaining to the required improvement of access roads will be provided as engineering designs are completed.

TABLE B-1

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
SURVEY DELINEATED FEATURES													
AP-1													
whib001e	84.7	Highland County	02070001	PEM	23	0.07	0.00	0.00	0.00	Open Cut	38.479179	-79.673493	97
whia001e	85.3	Highland County	02070001	PEM	0	0.01	0.00	0.00	0.00	N/A	38.474307	-79.665965	0
whia002e	87.2	Highland County	02080201	PEM	78	0.09	0.00	0.00	0.00	Open Cut	38.453813	-79.650288	326
whib002e	87.2	Highland County	02080201	PEM	0	0.00	0.00	0.00	0.00	N/A	38.453963	-79.64975	0
whib003e	87.7	Highland County	02080201	PEM	58	0.12	0.00	0.00	0.00	Open Cut	38.450685	-79.643729	244
whia053e	89.2	Highland County	02080201	PEM	61	0.13	0.00	0.00	0.00	Open Cut	38.432382	-79.638985	254
whia050e	91.3	Highland County	02080201	PEM	37	0.10	0.00	0.00	0.00	Open Cut	38.405292	-79.622782	157
whib108s	96.5	Highland County	02080201	PSS	60	0.15	0.00	0.01	0.00	Open Cut	38.371084	-79.552115	253
whib105e	96.6	Highland County	02080201	PEM	43	0.09	0.00	0.00	0.00	Open Cut	38.370806	-79.549964	179
whib102e	100.5	Highland County	02080201	PEM	5	0.01	0.00	0.00	0.00	Open Cut	38.339006	-79.506232	20
whib100e	100.7	Highland County	02080201	PEM	0	0.00	0.00	0.00	0.00	N/A	38.335595	-79.50683	0
whib103e	101.0	Highland County	02080201	PEM	20	0.03	0.00	0.00	0.00	Open Cut	38.332634	-79.509272	82
whia054e	102.4	Highland County	02080201	PEM	47	0.08	0.00	0.00	0.00	Open Cut	38.315593	-79.504402	197
whib104e	102.4	Highland County	02080201	PEM	7	0.01	0.00	0.00	0.00	Open Cut	38.315865	-79.50393	31
whia055e	102.5	Highland County	02080201	PEM	375	0.53	0.00	0.00	0.00	Open Cut	38.313556	-79.503077	1573

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
whib113e	102.6	Highland County	02080201	PEM	53	0.10	0.00	0.00	0.00	Open Cut	38.312579	-79.503159	224
whia056e	102.7	Highland County	02080201	PEM	107	0.15	0.00	0.00	0.00	Open Cut	38.312138	-79.503265	449
whib110e	105.6	Highland County	02080201	PEM	11	0.03	0.00	0.00	0.00	Open Cut	38.290838	-79.464081	44
whib106e	106.8	Highland County	02080201	PEM	4	0.04	0.00	0.00	0.00	Open Cut	38.299875	-79.448501	17
waub100e	115.4	Augusta County	02080202	PEM	9	0.01	0.00	0.00	0.00	Open Cut	38.27851	-79.31668	40
waub101e	115.7	Augusta County	02080202	PEM	15	0.03	0.00	0.00	0.00	Open Cut	38.280945	-79.31099	62
waub102e	115.8	Augusta County	02080202	PEM	21	0.06	0.00	0.00	0.00	Open Cut	38.280874	-79.310302	89
waub102e	115.8	Augusta County	02080202	PEM	0	0.00	0.00	0.00	0.00	N/A	38.280695	-79.310186	0
wauc001f	117.1	Augusta County	02080202	PFO	12	0.01	0.00	0.00	0.00	Open Cut	38.283788	-79.288569	52
wauc002s	120.4	Augusta County	02070005	PSS	0	0.02	0.00	0.00	0.00	N/A	38.291725	-79.234308	0
waub001e	143.2	Augusta County	02070005	PEM	10	0.05	0.00	0.00	0.00	Open Cut	38.061445	-79.048151	42
waub104e	148.4	Augusta County	02070005	PEM	66	0.11	0.00	0.00	0.00	Open Cut	38.028843	-78.976717	278
waub105f	148.5	Augusta County	02070005	PFO	227	0.37	0.16	0.00	0.00	Open Cut	38.028102	-78.975983	952
waua056e	150.6	Augusta County	02070005	PEM	330	0.56	0.00	0.00	0.00	Open Cut	38.000293	-78.96349	1385
waua058f	150.9	Augusta County	02070005	PFO	82	0.13	0.07	0.00	0.00	Open Cut	37.996325	-78.964437	344
waub103f	152.4	Augusta County	02070005	PFO	294	0.55	0.20	0.00	0.00	Open Cut	37.977652	-78.966776	1233

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
waua059f	153.4	Augusta County	02070005	PFO	23	0.04	0.00	0.00	0.00	Open Cut	37.966525	-78.959653	95
waua060f	153.4	Augusta County	02070005	PFO	0	0.04	0.00	0.00	0.00	N/A	37.966041	-78.958957	0
waua061f	153.6	Augusta County	02070005	PFO	119	0.21	0.08	0.00	0.00	Open Cut	37.964383	-78.956467	498
waua053s	156.0	Augusta County	02070005	PSS	40	0.06	0.00	0.01	0.00	Open Cut	37.935173	-78.971151	168
waua052e	156.2	Augusta County	02070005	PEM	20	0.12	0.00	0.00	0.00	Open Cut	37.933774	-78.973267	84
waua051e	156.4	Augusta County	02070005	PEM	43	0.09	0.00	0.00	0.00	Open Cut	37.931208	-78.976205	179
wnea051f	166.2	Nelson County	02080203	PFO	57	0.09	0.04	0.00	0.00	Open Cut	37.857527	-78.865944	239
wnep001f	182.9	Nelson County	02080203	PFO	0	0.00	0.00	0.00	0.00	N/A	37.671596	-78.74776	0
wbup006e	184.9	Buckingham County	02080203	PEM	296	0.91	0.00	0.00	0.00	HDD	37.661005	-78.715528	1243
wbup005f	187.6	Buckingham County	02080203	PFO	104	0.18	0.07	0.00	0.00	Open Cut	37.629288	-78.693477	438
wbup004f	188.2	Buckingham County	02080203	PFO	26	0.04	0.02	0.00	0.00	Open Cut	37.62055	-78.693481	108
wbup003f	188.2	Buckingham County	02080203	PFO	0	0.02	0.00	0.00	0.00	N/A	37.62019	-78.693648	0
wbua001f	190.6	Buckingham County	02080203	PFO	54	0.08	0.04	0.00	0.00	Open Cut	37.59906	-78.662234	228
wbua002f	191.0	Buckingham County	02080203	PFO	51	0.11	0.04	0.00	0.00	Open Cut	37.595617	-78.656381	214
wbuc003f	193.5	Buckingham County	02080203	PFO	115	0.19	0.08	0.00	0.00	Open Cut	37.56562	-78.641948	485
wbuc004e	194.1	Buckingham County	02080203	PEM	11	0.03	0.00	0.00	0.00	Open Cut	37.558486	-78.639914	45
wbuc005f	194.1	Buckingham County	02080203	PFO	0	0.03	0.00	0.00	0.00	N/A	37.557889	-78.640337	0

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
wbuk001e	195.0	Buckingham County	02080203	PEM	25	0.05	0.00	0.00	0.00	Open Cut	37.549292	-78.629783	106
wbuk006e	195.7	Buckingham County	02080203	PEM	0	0.00	0.00	0.00	0.00	N/A	37.542191	-78.62013	0
wbuk005e	196.1	Buckingham County	02080203	PEM	177	0.29	0.00	0.00	0.00	Open Cut	37.541807	-78.613838	745
wbuk007e	197.5	Buckingham County	02080203	PEM	0	0.00	0.00	0.00	0.00	N/A	37.527099	-78.596984	0
wbua200e	198.5	Buckingham County	02080203	PEM	29	0.04	0.00	0.00	0.00	Open Cut	37.516494	-78.587445	120
wbua201e	198.5	Buckingham County	02080203	PEM	47	0.08	0.00	0.00	0.00	Open Cut	37.515812	-78.587485	199
wbua201f	198.5	Buckingham County	02080203	PFO	68	0.10	0.05	0.00	0.00	Open Cut	37.515549	-78.58722	285
wbul004s	200.1	Buckingham County	02080203	PSS	29	0.08	0.00	0.01	0.00	Open Cut	37.495158	-78.577455	121
wbup002e	200.5	Buckingham County	02080203	PEM	132	0.21	0.00	0.00	0.00	Open Cut	37.489553	-78.57614	556
wbup001f	201.2	Buckingham County	02080203	PFO	151	0.23	0.10	0.00	0.00	Open Cut	37.486734	-78.565585	632
wbup001s	201.2	Buckingham County	02080203	PSS	0	0.01	0.00	0.00	0.00	N/A	37.486976	-78.565488	0
wbul005f	201.8	Buckingham County	02080203	PFO	129	0.20	0.09	0.00	0.00	Open Cut	37.482933	-78.554948	541
wbul002f	203.6	Buckingham County	02080205	PFO	173	0.48	0.12	0.00	0.00	Open Cut	37.470979	-78.527812	727
wbul003f	205.2	Buckingham County	02080205	PFO	0	0.01	0.00	0.00	0.00	N/A	37.455642	-78.5064	0
wbul007f	206.5	Buckingham County	02080205	PFO	0	0.02	0.00	0.00	0.00	N/A	37.440317	-78.49413	0
wbul006f	206.9	Buckingham County	02080205	PFO	80	0.19	0.06	0.00	0.00	Open Cut	37.437009	-78.489663	337

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
wbua004f	207.8	Buckingham County	02080205	PFO	37	0.08	0.02	0.00	0.00	Open Cut	37.428627	-78.476336	154
wbuk013f	209.1	Buckingham County	02080205	PFO	0	0.02	0.00	0.00	0.00	N/A	37.414432	-78.462467	0
wbuk016f	209.4	Buckingham County	02080205	PFO	0	0.03	0.00	0.00	0.00	N/A	37.411745	-78.460015	0
wbuk017e	209.5	Buckingham County	02080205	PEM	32	0.10	0.00	0.00	0.00	Open Cut	37.410703	-78.458589	133
wbuk018e	209.5	Buckingham County	02080205	PEM	129	0.29	0.00	0.00	0.00	Open Cut	37.410131	-78.458004	540
wbuk019e	209.6	Buckingham County	02080205	PEM	43	0.05	0.00	0.00	0.00	Open Cut	37.409635	-78.457169	179
wbuk021f	210.0	Buckingham County	02080205	PFO	206	0.22	0.13	0.00	0.00	Open Cut	37.405315	-78.453042	865
wbuk012e	210.1	Buckingham County	02080205	PEM	361	0.68	0.00	0.00	0.00	Open Cut	37.403842	-78.452008	1517
wbuk010f	210.9	Buckingham County	02080205	PFO	69	0.13	0.05	0.00	0.00	Open Cut	37.394249	-78.444012	288
wbua203e	211.7	Buckingham County	02080205	PEM	0	0.01	0.00	0.00	0.00	N/A	37.38979	-78.431949	0
wcuk001f	213.8	Cumberland County	02080207	PFO	19	0.03	0.01	0.00	0.00	Open Cut	37.369041	-78.410432	80
wcuk002f	213.9	Cumberland County	02080207	PFO	0	0.03	0.00	0.00	0.00	N/A	37.368309	-78.410181	0
wcuc001f	214.5	Cumberland County	02080207	PFO	32	0.10	0.02	0.00	0.00	Open Cut	37.3635	-78.401414	135
wcuk014f	215.0	Cumberland County	02080207	PFO	0	0.01	0.00	0.00	0.00	N/A	37.363753	-78.392288	0
wcuk017e	216.0	Cumberland County	02080207	PEM	0	0.01	0.00	0.00	0.00	N/A	37.360421	-78.37465	0
wcuk012s	218.2	Cumberland County	02080207	PSS	41	0.02	0.00	0.01	0.00	Open Cut	37.343985	-78.342404	173

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
wcuk011f	218.7	Cumberland County	02080207	PFO	12	0.11	0.01	0.00	0.00	Open Cut	37.338252	-78.33641	52
wcuk008f	219.5	Cumberland County	02080207	PFO	55	0.20	0.04	0.00	0.00	Open Cut	37.33125	-78.325641	230
wcuk006e	220.4	Cumberland County	02080207	PEM	213	0.50	0.00	0.00	0.00	Open Cut	37.324097	-78.310003	893
wcuk005e	220.7	Cumberland County	02080207	PEM	10	0.08	0.00	0.00	0.00	Open Cut	37.322097	-78.306409	42
wpek001e	221.7	Prince Edward County	02080207	PEM	91	0.12	0.00	0.00	0.00	Open Cut	37.314649	-78.291529	383
wpek002e	222.6	Prince Edward County	02080207	PEM	71	0.10	0.00	0.00	0.00	Open Cut	37.305552	-78.28231	297
wpea005f	223.2	Prince Edward County	02080207	PFO	443	0.85	0.30	0.00	0.00	Open Cut	37.302693	-78.271588	1860
wpea003e	224.1	Prince Edward County	02080207	PEM	64	0.14	0.00	0.00	0.00	Open Cut	37.2972	-78.257797	268
wpea004f	224.3	Prince Edward County	02080207	PFO	42	0.11	0.03	0.00	0.00	Open Cut	37.295435	-78.255268	176
wpec001f	225.2	Prince Edward County	02080207	PFO	53	0.08	0.04	0.00	0.00	Open Cut	37.287733	-78.242352	224
wpea006f	225.5	Prince Edward County	02080207	PFO	57	0.14	0.04	0.00	0.00	Open Cut	37.285304	-78.237399	239
wnok021s	226.0	Nottoway County	02080207	PSS	25	0.06	0.00	0.01	0.00	Open Cut	37.281875	-78.231091	106
wnok022f	226.1	Nottoway County	02080207	PFO	62	0.12	0.04	0.00	0.00	Open Cut	37.280471	-78.229626	260
wnok002f	227.2	Nottoway County	02080207	PFO	30	0.07	0.02	0.00	0.00	Open Cut	37.27143	-78.213993	126
wnok003f	228.3	Nottoway County	02080207	PFO	0	0.03	0.01	0.00	0.00	N/A	37.265956	-78.196581	0
wnok003e	228.3	Nottoway County	02080207	PEM	155	0.26	0.00	0.00	0.00	Open Cut	37.265433	-78.19636	653

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
wnok005f	228.8	Nottoway County	02080207	PFO	44	0.09	0.03	0.00	0.00	Open Cut	37.261829	-78.189072	186
wnok006e	229.2	Nottoway County	02080207	PEM	153	0.33	0.00	0.00	0.00	Open Cut	37.258998	-78.182821	644
wnok007f	229.3	Nottoway County	02080207	PFO	3	0.07	0.01	0.00	0.00	Open Cut	37.258712	-78.181412	15
wnok008f	229.9	Nottoway County	02080207	PFO	7	0.01	0.00	0.00	0.00	Open Cut	37.254836	-78.171047	29
wnok009f	230.0	Nottoway County	02080207	PFO	47	0.09	0.03	0.00	0.00	Open Cut	37.253925	-78.168778	198
wnol001f	231.8	Nottoway County	02080207	PFO	61	0.08	0.04	0.00	0.00	Open Cut	37.244937	-78.138919	256
wnol003f	232.4	Nottoway County	02080207	PFO	0	0.01	0.00	0.00	0.00	N/A	37.242738	-78.129439	0
wnok017f	232.7	Nottoway County	02080207	PFO	30	0.07	0.02	0.00	0.00	Open Cut	37.239963	-78.12437	127
wnok017e	232.7	Nottoway County	02080207	PEM	56	0.10	0.00	0.00	0.00	Open Cut	37.239977	-78.124164	236
wnok017f	232.7	Nottoway County	02080207	PFO	83	0.17	0.06	0.00	0.00	Open Cut	37.240076	-78.123857	347
wnok018s	232.8	Nottoway County	02080207	PSS	0	0.01	0.00	0.00	0.00	N/A	37.239303	-78.123533	0
wnok019f	233.4	Nottoway County	02080207	PFO	29	0.05	0.02	0.00	0.00	Open Cut	37.23399	-78.114484	123
wnok019f	233.4	Nottoway County	02080207	PFO	63	0.11	0.04	0.00	0.00	Open Cut	37.233865	-78.114631	264
wnok020s	233.5	Nottoway County	02080207	PSS	0	0.03	0.00	0.00	0.00	N/A	37.232917	-78.113009	0
wnok020f	233.5	Nottoway County	02080207	PFO	33	0.05	0.02	0.00	0.00	Open Cut	37.232214	-78.112894	139
wnom005e	235.2	Nottoway County	02080207	PEM	0	0.01	0.00	0.00	0.00	N/A	37.212339	-78.097663	0

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
wnom006f	235.5	Nottoway County	02080207	PFO	275	0.49	0.19	0.00	0.00	Open Cut	37.207996	-78.096236	1154
wnok101f	235.9	Nottoway County	02080207	PFO	215	0.44	0.15	0.00	0.00	Open Cut	37.203396	-78.090352	905
wnok100f	236.1	Nottoway County	02080207	PFO	99	0.19	0.07	0.00	0.00	Open Cut	37.202559	-78.08995	414
wnok010f	238.6	Nottoway County	02080207	PFO	137	0.20	0.09	0.00	0.00	Open Cut	37.181132	-78.057006	576
wnok010e	238.6	Nottoway County	02080207	PEM	125	0.33	0.00	0.00	0.00	Open Cut	37.180837	-78.056756	524
wnok011e	238.8	Nottoway County	02080207	PEM	27	0.05	0.00	0.00	0.00	Open Cut	37.179417	-78.053689	114
wnok012f	239.1	Nottoway County	02080207	PFO	0	0.00	0.00	0.00	0.00	N/A	37.176172	-78.050572	0
wnok013e	240.0	Nottoway County	02080207	PEM	11	0.02	0.00	0.00	0.00	Open Cut	37.166159	-78.041038	47
wnok014s	240.6	Nottoway County	02080207	PSS	134	0.25	0.00	0.03	0.00	Open Cut	37.16018	-78.033098	563
wnok016f	240.6	Nottoway County	02080207	PFO	219	0.44	0.15	0.00	0.00	Open Cut	37.1592	-78.032484	921
wnoc001f	242.8	Nottoway County	02080207	PFO	361	0.70	0.24	0.00	0.00	Push-Pull	37.139924	-78.001426	1517
wnoc001e	242.8	Nottoway County	02080207	PEM	0	0.04	0.00	0.00	0.00	N/A	37.140257	-78.001774	0
wnoc001e	242.9	Nottoway County	02080207	PEM	492	1.02	0.00	0.00	0.00	Push-Pull	37.139509	-77.99999	2066
wnoc001f	243.0	Nottoway County	02080207	PFO	105	0.19	0.06	0.00	0.00	Push-Pull	37.139278	-77.999059	442
wnoa001e	243.4	Nottoway County	02080207	PEM	14	0.04	0.00	0.00	0.00	Open Cut	37.136415	-77.992354	61
wnol004e	243.7	Nottoway County	02080207	PEM	0	0.01	0.00	0.00	0.00	N/A	37.135187	-77.987057	0

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
wnol005s	244.2	Nottoway County	02080207	PSS	144	0.32	0.00	0.03	0.00	Open Cut	37.132914	-77.979362	604
wnol005f	244.2	Nottoway County	02080207	PFO	233	0.47	0.16	0.00	0.00	Open Cut	37.132823	-77.978817	977
wnol006f	245.1	Nottoway County	02080207	PFO	166	0.39	0.11	0.00	0.00	Open Cut	37.128649	-77.964817	699
wnoa010f	245.4	Nottoway County	02080207	PFO	17	0.02	0.01	0.00	0.00	Open Cut	37.127758	-77.959393	71
wnol007f	245.6	Nottoway County	02080207	PFO	113	0.21	0.07	0.00	0.00	Open Cut	37.127727	-77.955973	473
wnol008f	246.0	Nottoway County	02080207	PFO	151	0.29	0.10	0.00	0.00	Open Cut	37.128435	-77.948223	634
wnok023f	247.1	Nottoway County	02080207	PFO	0	0.04	0.00	0.00	0.00	N/A	37.125352	-77.930461	0
wnok024f	247.2	Nottoway County	02080207	PFO	0	0.00	0.00	0.00	0.00	N/A	37.124306	-77.930381	0
wnok025f	247.2	Nottoway County	02080207	PFO	113	0.24	0.08	0.00	0.00	Open Cut	37.124356	-77.929883	474
wnok026f	247.2	Nottoway County	02080207	PFO	0	0.11	0.00	0.00	0.00	N/A	37.12387	-77.929237	0
wnom001e	247.7	Nottoway County	03010201	PEM	111	0.15	0.00	0.00	0.00	Open Cut	37.120175	-77.921836	468
wnom002e	248.1	Nottoway County	03010201	PEM	51	0.10	0.00	0.00	0.00	Open Cut	37.118756	-77.916035	216
wnom003f	248.1	Nottoway County	03010201	PFO	57	0.22	0.04	0.00	0.00	Open Cut	37.118571	-77.912649	241
wnom004f	248.6	Nottoway County	03010201	PFO	119	0.24	0.08	0.00	0.00	Open Cut	37.118976	-77.907265	501
wdim001f	249.1	Dinwiddie County	03010201	PFO	51	0.11	0.03	0.00	0.00	Open Cut	37.119068	-77.898262	216
wdim001e	249.1	Dinwiddie County	03010201	PEM	53	0.14	0.00	0.00	0.00	Open Cut	37.119176	-77.897961	223

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
wdim002s	249.2	Dinwiddie County	03010201	PSS	62	0.15	0.00	0.01	0.00	Open Cut	37.119181	-77.896053	260
wdim003e	249.5	Dinwiddie County	03010201	PEM	141	0.32	0.00	0.00	0.00	Open Cut	37.119348	-77.889075	592
wdim004e	249.8	Dinwiddie County	03010201	PEM	37	0.08	0.00	0.00	0.00	Open Cut	37.118386	-77.886123	154
wdim005s	249.9	Dinwiddie County	03010201	PSS	0	0.00	0.00	0.00	0.00	N/A	37.117531	-77.884413	0
wdim006f	250.2	Dinwiddie County	03010201	PFO	54	0.12	0.04	0.00	0.00	Open Cut	37.115578	-77.878336	228
wdim007f	250.5	Dinwiddie County	03010201	PFO	17	0.03	0.01	0.00	0.00	Open Cut	37.114001	-77.874342	70
wdim011f	250.6	Dinwiddie County	03010201	PFO	163	0.42	0.12	0.00	0.00	Open Cut	37.112779	-77.871877	685
wdim010f	251.2	Dinwiddie County	03010201	PFO	40	0.09	0.03	0.00	0.00	Open Cut	37.108956	-77.86221	168
wdim008e	251.4	Dinwiddie County	03010201	PEM	7	0.02	0.00	0.00	0.00	Open Cut	37.107656	-77.859353	31
wdim009e	251.5	Dinwiddie County	03010201	PEM	58	0.09	0.00	0.00	0.00	Open Cut	37.107135	-77.858172	245
wdim009f	251.5	Dinwiddie County	03010201	PFO	7	0.02	0.01	0.00	0.00	Open Cut	37.107106	-77.857899	29
wdim012f	251.5	Dinwiddie County	03010201	PFO	82	0.13	0.05	0.00	0.00	Open Cut	37.106393	-77.85761	346
wdim015f	252.0	Dinwiddie County	03010201	PFO	48	0.14	0.03	0.00	0.00	Open Cut	37.100248	-77.853897	201
wdim016f	252.1	Dinwiddie County	03010201	PFO	13	0.03	0.01	0.00	0.00	Open Cut	37.099107	-77.853396	53
wdim018f	252.6	Dinwiddie County	03010201	PFO	61	0.12	0.04	0.00	0.00	Open Cut	37.093381	-77.849014	256
wdim019f	252.7	Dinwiddie County	03010201	PFO	32	0.08	0.02	0.00	0.00	Open Cut	37.09098	-77.848276	134

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
wdim020f	252.9	Dinwiddie County	03010201	PFO	30	0.07	0.02	0.00	0.00	Open Cut	37.088637	-77.846496	127
wdim021f	253.1	Dinwiddie County	03010201	PFO	24	0.05	0.02	0.00	0.00	Open Cut	37.087197	-77.844386	99
wdib006f	254.6	Dinwiddie County	03010201	PFO	70	0.21	0.05	0.00	0.00	Open Cut	37.068845	-77.829893	294
wdia006f	254.8	Dinwiddie County	03010201	PFO	159	0.40	0.12	0.00	0.00	Open Cut	37.067337	-77.827757	668
wdib004f	255.4	Dinwiddie County	03010201	PFO	30	0.07	0.02	0.00	0.00	Open Cut	37.061502	-77.819057	125
wdib005e	255.4	Dinwiddie County	03010201	PEM	54	0.18	0.00	0.00	0.00	Open Cut	37.060981	-77.818878	229
wdib003s	255.5	Dinwiddie County	03010201	PSS	47	0.13	0.00	0.01	0.00	Open Cut	37.059782	-77.817866	199
wdib002s	255.7	Dinwiddie County	03010201	PSS	164	0.29	0.00	0.04	0.00	Open Cut	37.057846	-77.816525	687
wdib001f	255.9	Dinwiddie County	03010201	PFO	73	0.18	0.05	0.00	0.00	Open Cut	37.054743	-77.818006	307
wdil001f	256.7	Dinwiddie County	03010201	PFO	179	0.36	0.13	0.00	0.00	Open Cut	37.046411	-77.828382	751
wdil002f	257.2	Dinwiddie County	03010201	PFO	200	0.46	0.14	0.00	0.00	Open Cut	37.042099	-77.834338	840
wdia005f	257.3	Dinwiddie County	03010201	PFO	23	0.10	0.02	0.00	0.00	Open Cut	37.041069	-77.834906	96
wdil003f	257.5	Dinwiddie County	03010201	PFO	31	0.10	0.02	0.00	0.00	Open Cut	37.038163	-77.836051	130
wdil004e	257.8	Dinwiddie County	03010201	PEM	54	0.27	0.00	0.00	0.00	Open Cut	37.035323	-77.837437	226
wdil004f	257.8	Dinwiddie County	03010201	PFO	150	0.35	0.10	0.00	0.00	Open Cut	37.034451	-77.838122	632
wdic002f	258.3	Dinwiddie County	03010201	PFO	683	1.37	0.46	0.00	0.00	Open Cut	37.025806	-77.838974	2869

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
wdic001f	259.3	Dinwiddie County	03010201	PFO	231	0.48	0.15	0.00	0.00	Open Cut	37.014608	-77.835906	970
wdic003f	260.6	Dinwiddie County/ Brunswick County	03010201	PFO	524	1.07	0.36	0.00	0.00	Open Cut	36.997004	-77.840031	2202
wbra201f	260.8	Brunswick County	03010201	PFO	100	0.20	0.07	0.00	0.00	Open Cut	36.994641	-77.839346	419
wbrc001e	261.3	Brunswick County	03010201	PEM	46	0.13	0.00	0.00	0.00	Open Cut	36.988128	-77.837326	194
wbra202f	261.5	Brunswick County	03010201	PFO	31	0.05	0.02	0.00	0.00	Open Cut	36.984932	-77.834587	130
wbra203f	262.5	Brunswick County	03010201	PFO	176	0.35	0.12	0.00	0.00	Open Cut	36.972012	-77.827032	737
wbra204f	262.8	Brunswick County	03010201	PFO	391	0.80	0.27	0.00	0.00	Open Cut	36.967747	-77.82339	1641
wbra205f	264.7	Brunswick County	03010201	PFO	0	0.00	0.00	0.00	0.00	N/A	36.947261	-77.803814	0
wbrc006f	274.0	Brunswick County	03010201	PFO	47	0.16	0.03	0.00	0.00	Open Cut	36.83845	-77.740705	197
wbra217s	280.0	Brunswick County	03010204	PSS	0	0.05	0.00	0.00	0.00	N/A	36.762814	-77.700296	0
wbra216f	280.4	Brunswick County	03010204	PFO	607	1.14	0.40	0.00	0.00	Open Cut	36.762533	-77.693876	2549
wbra215e	280.6	Brunswick County	03010204	PEM	230	0.40	0.00	0.00	0.00	Open Cut	36.762349	-77.69026	968
wbra214f	281.0	Brunswick County	03010201	PFO	0	0.13	0.00	0.00	0.00	N/A	36.7609	-77.684216	0
wbra213s	281.3	Brunswick County	03010201	PSS	43	0.12	0.00	0.01	0.00	Open Cut	36.760194	-77.678946	182
wbrb003f	281.9	Brunswick County	03010204	PFO	10	0.07	0.00	0.00	0.00	Open Cut	36.757332	-77.669191	43

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
wbrb002f	282.0	Brunswick County	03010204	PFO	61	0.27	0.04	0.00	0.00	Open Cut	36.756418	-77.668559	255
wbrb001f	282.1	Brunswick County	03010204	PFO	242	0.58	0.16	0.00	0.00	Open Cut	36.754109	-77.666665	1015
wbrb004f	282.3	Brunswick County	03010204	PFO	123	0.22	0.08	0.00	0.00	Open Cut	36.752701	-77.665335	518
wbra002f	282.8	Brunswick County	03010204	PFO	0	0.16	0.00	0.00	0.00	N/A	36.74766	-77.65953	0
wbra001f	282.9	Brunswick County	03010204	PFO	45	0.12	0.03	0.00	0.00	Open Cut	36.746595	-77.657281	189
wgra018f	283.0	Brunswick County	03010204	PFO	0	0.00	0.00	0.00	0.00	Open Cut	36.745953	-77.656491	0
wgra018f	283.0	Greensville County	03010204	PFO	393	0.81	0.28	0.00	0.00	N/A	36.744701	-77.655041	1652
wgra035f	283.3	Greensville County	03010204	PFO	167	0.25	0.10	0.00	0.00	Open Cut	36.742285	-77.652083	703
wgra036e	283.5	Greensville County	03010204	PEM	72	0.13	0.00	0.00	0.00	Open Cut	36.740237	-77.650158	304
wgra036f	283.5	Greensville County	03010204	PFO	39	0.12	0.03	0.00	0.00	Open Cut	36.740157	-77.649485	163
wgra037f	283.7	Greensville County	03010204	PFO	0	0.06	0.00	0.00	0.00	N/A	36.738678	-77.64841	0
wgra016f	283.9	Greensville County	03010204	PFO	234	0.62	0.15	0.00	0.00	Open Cut	36.734248	-77.643225	982
wgra016e	284.1	Greensville County	03010204	PEM	0	0.03	0.00	0.00	0.00	N/A	36.7338	-77.642562	0
wgra038s	284.4	Greensville County	03010204	PSS	0	0.01	0.00	0.00	0.00	N/A	36.731052	-77.64023	0
wgra017f	284.5	Greensville County	03010204	PFO	812	1.66	0.55	0.00	0.00	Open Cut	36.728824	-77.637798	3410
wgra040e	285.3	Greensville County	03010204	PEM	0	0.07	0.00	0.00	0.00	N/A	36.719771	-77.629632	0

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
wgra013f	285.9	Greensville County	03010204	PFO	60	0.26	0.04	0.00	0.00	Open Cut	36.713956	-77.62365	254
wgra014f	286.2	Greensville County	03010204	PFO	3	0.03	0.00	0.00	0.00	Open Cut	36.709609	-77.620169	12
wgra015f	286.3	Greensville County	03010204	PFO	45	0.11	0.03	0.00	0.00	Open Cut	36.70871	-77.619752	188
wgra008f	286.4	Greensville County	03010204	PFO	349	0.66	0.23	0.00	0.00	Open Cut	36.707019	-77.619158	1466
wgra008e	286.5	Greensville County	03010204	PEM	105	0.22	0.00	0.00	0.00	Open Cut	36.706494	-77.618941	441
wgra009f	286.8	Greensville County	03010204	PFO	338	0.81	0.23	0.00	0.00	Open Cut	36.702101	-77.616955	1420
wgra010f	287.1	Greensville County	03010204	PFO	59	0.34	0.05	0.00	0.00	Open Cut	36.69767	-77.615218	247
wgra039f	287.4	Greensville County	03010204	PFO	1108	2.24	0.75	0.00	0.00	Open Cut	36.693628	-77.609689	4654
wgra011f	287.8	Greensville County	03010204	PFO	264	0.52	0.18	0.00	0.00	Open Cut	36.691415	-77.606165	1109
wgra011f2	287.8	Greensville County	03010204	PFO	398	0.79	0.27	0.00	0.00	Open Cut	36.690549	-77.60487	1671
wgra001f	288.2	Greensville County	03010204	PFO	121	0.42	0.08	0.00	0.00	Open Cut	36.687134	-77.60224	507
wgra002f	288.5	Greensville County	03010204	PFO	347	0.70	0.23	0.00	0.00	Open Cut	36.681815	-77.60012	1459
wgrc010e	290.1	Greensville County	03010204	PEM	472	0.79	0.00	0.00	0.00	Open Cut	36.661614	-77.591	1982
wgrc011f	290.2	Greensville County	03010204	PFO	49	0.14	0.04	0.00	0.00	Open Cut	36.660434	-77.589445	207
wgrc009f	290.4	Greensville County	03010204	PFO	512	1.02	0.35	0.00	0.00	Open Cut	36.658487	-77.58666	2151
wgra003f	291.4	Greensville County	03010204	PFO	27	0.09	0.02	0.00	0.00	Open Cut	36.647433	-77.576714	114

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
wgra012s	292.4	Greensville County	03010204	PSS	3498	7.14	0.00	0.79	0.00	Open Cut	36.630072	-77.566303	14690
wgra004f	294.0	Greensville County	03010204	PFO	291	0.50	0.17	0.00	0.00	Open Cut	36.623128	-77.548033	1223
wgra005f	294.2	Greensville County	03010204	PFO	283	0.49	0.20	0.00	0.00	Open Cut	36.621075	-77.545393	1187
wgra007f	294.7	Greensville County	03010204	PFO	276	0.54	0.20	0.00	0.00	Open Cut	36.615734	-77.537624	1158
wgrb003f	295.6	Greensville County	03010204	PFO	339	0.69	0.23	0.00	0.00	Open Cut	36.604089	-77.534298	1423
wgrb003f	295.7	Greensville County	03010204	PFO	4	0.01	0.00	0.00	0.00	Open Cut	36.60375	-77.534159	15
wgrb003f	295.7	Greensville County	03010204	PFO	267	0.55	0.18	0.00	0.00	Open Cut	36.603387	-77.533749	1123
wgrp004f	295.9	Greensville County	03010204	PFO	135	0.32	0.09	0.00	0.00	Open Cut	36.600435	-77.532065	566
wgrp003f	296.1	Greensville County	03010204	PFO	77	0.17	0.05	0.00	0.00	Open Cut	36.597919	-77.530555	324
wgrb001f	296.8	Greensville County	03010204	PFO	242	0.51	0.16	0.00	0.00	Open Cut	36.587468	-77.530148	1017
wgrb002f	296.9	Greensville County	03010204	PFO	947	1.89	0.63	0.00	0.00	Open Cut	36.582812	-77.529346	3977
wgrc012e	297.5	Greensville County	03010204	PEM	144	0.29	0.00	0.00	0.00	Open Cut	36.577943	-77.527331	605
wgra034e	297.7	Greensville County	03010204	PSS	799	1.46	0.00	0.18	0.00	Open Cut	36.575344	-77.525555	3357
wgra034e	297.7	Greensville County	03010204	PSS	0	0.00	0.00	0.00	0.00	N/A	36.57582	-77.526271	0
wgra033f	298.2	Greensville County	03010204	PFO	79	0.25	0.06	0.00	0.00	Open Cut	36.570242	-77.522044	331
wgra032f	298.3	Greensville County	03010204	PFO	0	0.05	0.00	0.00	0.00	N/A	36.568377	-77.520437	0

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
wgra031f	298.4	Greensville County	03010204	PFO	168	0.30	0.11	0.00	0.00	Open Cut	36.566996	-77.519339	706
wgra030f	298.4	Greensville County	03010204	PFO	147	0.30	0.10	0.00	0.00	Open Cut	36.566289	-77.518954	618
wgra029f	298.6	Greensville County	03010204	PFO	117	0.22	0.08	0.00	0.00	Open Cut	36.565301	-77.517781	492
wgrp005s	298.7	Greensville County	03010204	PSS	803	1.65	0.00	0.18	0.00	Open Cut	36.562042	-77.515474	3373
wgrp006s	299.3	Greensville County	03010204	PSS	1230	2.49	0.00	0.28	0.00	Open Cut	36.553619	-77.510854	5166
wgrp006f	299.6	Greensville County	03010204	PFO	1305	2.71	0.89	0.00	0.00	Open Cut	36.550133	-77.509554	5481
AP-3													
wgrp001f	12.1	Greensville County	03010204	PFO	1673	2.83	1.15	0.00	0.00	Open Cut	36.546057	-77.30164	4015
wsop004f	12.4	Southampton County	03010204	PFO	2951	5.07	2.03	0.00	0.00	Open Cut	36.549122	-77.294363	7083
wsop003f	13.3	Southampton County	03010204	PFO	0	0.00	0.01	0.00	0.00	N/A	36.553743	-77.285269	0
wsop001f	13.4	Southampton County	03010204	PFO	3551	6.27	2.44	0.00	0.00	Open Cut	36.559396	-77.282263	8522
wsop006s	14.2	Southampton County	03010204	PSS	211	0.91	0.00	0.05	0.00	Open Cut	36.565083	-77.278058	507
wsop006e_w2	14.3	Southampton County	03010204	PEM	868	1.43	0.00	0.00	0.00	Open Cut	36.565676	-77.277524	2083
wsop006f	14.4	Southampton County	03010204	PFO	0	0.01	0.00	0.00	0.00	N/A	36.565829	-77.276422	0
wsop006f	14.4	Southampton County	03010204	PFO	260	0.22	0.13	0.00	0.00	Open Cut	36.567922	-77.27559	623
wsoa031e	23.0	Southampton County	03010201	PEM	74	0.13	0.00	0.00	0.00	Open Cut	36.627975	-77.145243	178
wsoa005f	23.5	Southampton County	03010201	PFO	31	0.06	0.02	0.00	0.00	Open Cut	36.632365	-77.139669	75

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
wsol009f	27.3	Southampton County	03010201	PFO	453	0.66	0.31	0.00	0.00	Open Cut	36.641378	-77.073998	1087
wsol010f	27.7	Southampton County	03010201	PFO	302	0.40	0.21	0.00	0.00	Open Cut	36.642598	-77.067771	725
wsol010e	27.7	Southampton County	03010201	PEM	204	0.49	0.00	0.00	0.00	Open Cut	36.642449	-77.067454	491
wsol011e	27.9	Southampton County	03010201	PEM	35	0.05	0.00	0.00	0.00	Open Cut	36.643359	-77.064601	84
wsol012f	28.1	Southampton County	03010201	PFO	522	0.65	0.36	0.00	0.00	Open Cut	36.643953	-77.06135	1252
wsol012e	28.1	Southampton County	03010201	PEM	0	0.28	0.00	0.00	0.00	N/A	36.643681	-77.061451	0
wsol014f	28.3	Southampton County	03010201	PFO	132	0.17	0.09	0.00	0.00	Open Cut	36.644923	-77.057439	316
wsol014e	28.3	Southampton County	03010201	PEM	0	0.06	0.00	0.00	0.00	N/A	36.6446	-77.057122	0
wsol016f	29.2	Southampton County	03010201	PFO	76	0.12	0.05	0.00	0.00	Open Cut	36.642551	-77.043817	184
wsol017s	29.4	Southampton County	03010201	PSS	209	0.45	0.00	0.05	0.00	Open Cut	36.63935	-77.041381	502
wsol018f	29.5	Southampton County	03010201	PFO	212	0.31	0.14	0.00	0.00	Open Cut	36.637923	-77.039356	509
wsoc009f	29.7	Southampton County	03010201	PFO	48	0.10	0.03	0.00	0.00	Open Cut	36.636768	-77.038503	115
wsol019e	29.9	Southampton County	03010201	PEM	213	0.30	0.00	0.00	0.00	Open Cut	36.63556	-77.034136	511
wsol019f	30.0	Southampton County	03010201	PFO	234	0.50	0.16	0.00	0.00	Open Cut	36.635546	-77.032685	561
wsol020f	30.1	Southampton County	03010201	PFO	475	0.74	0.32	0.00	0.00	Open Cut	36.635606	-77.030651	1141
wsoa017f	30.7	Southampton County	03010201	PFO	227	0.40	0.16	0.00	0.00	Open Cut	36.633969	-77.020575	544

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
wsoa020f	31.8	Southampton County	03010201	PFO	499	0.82	0.34	0.00	0.00	Open Cut	36.628257	-77.002825	1197
wsol031f	32.1	Southampton County	03010201	PFO	448	0.75	0.31	0.00	0.00	Open Cut	36.630493	-76.998215	1076
wsol030f	32.2	Southampton County	03010201	PFO	301	0.51	0.21	0.00	0.00	Open Cut	36.631601	-76.995724	723
wsol029f	32.3	Southampton County	03010201	PFO	153	0.27	0.11	0.00	0.00	Open Cut	36.632065	-76.99448	367
wsol029s	32.4	Southampton County	03010201	PSS	196	0.31	0.00	0.04	0.00	Open Cut	36.6322	-76.993928	469
wsol028s	32.5	Southampton County	03010201	PSS	47	0.08	0.00	0.01	0.00	HDD	36.633035	-76.992687	112
wsol027f	32.5	Southampton County	03010201	PFO	151	0.30	0.10	0.00	0.00	HDD	36.633201	-76.99202	361
wsol026f	32.6	Southampton County	03010201	PFO	113	0.18	0.08	0.00	0.00	HDD	36.633958	-76.991204	270
wsol021f	32.6	Southampton County	03010201	PFO	728	1.25	0.50	0.00	0.00	HDD	36.635105	-76.989503	1746
wsol022f	32.9	Southampton County	03010201	PFO	52	0.09	0.04	0.00	0.00	Open Cut	36.637608	-76.98647	125
wsoa026e	33.5	Southampton County	03010201	PEM	31	0.05	0.00	0.00	0.00	Open Cut	36.640594	-76.977623	75
wsoa027s	33.6	Southampton County	03010201	PSS	137	0.18	0.00	0.03	0.00	Open Cut	36.641104	-76.975853	328
wsoa028f	33.7	Southampton County	03010201	PFO	254	0.43	0.17	0.00	0.00	Open Cut	36.641629	-76.974103	609
wsol025e	34.9	Southampton County	03010201	PEM	1043	1.80	0.00	0.00	0.00	Open Cut	36.640905	-76.952488	2503
wsol025f	35.1	Southampton County	03010201	PFO	88	0.10	0.06	0.00	0.00	Open Cut	36.640801	-76.950503	210
wsol025s	35.1	Southampton County	03010201	PSS	474	0.79	0.00	0.11	0.00	Open Cut	36.640366	-76.949724	1138

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
wsol024s	35.2	Southampton County	03010201	PSS	512	0.87	0.00	0.12	0.00	Open Cut	36.640027	-76.947355	1229
wsol023s	35.4	Southampton County	03010201	PSS	1234	2.12	0.00	0.28	0.00	Open Cut	36.639296	-76.943207	2961
wsol023e	35.6	Southampton County	03010201	PEM	1047	1.80	0.00	0.00	0.00	Open Cut	36.638741	-76.939334	2514
wsoa025e	35.8	Southampton County	03010202	PEM	28	0.05	0.00	0.00	0.00	Open Cut	36.638854	-76.937324	67
wsol033e	37.0	Southampton County	03010202	PEM	434	0.73	0.00	0.00	0.00	Open Cut	36.635787	-76.916952	1043
wsol034f	37.3	Southampton County	03010202	PFO	172	0.25	0.12	0.00	0.00	Open Cut	36.63391	-76.912788	413
wsoa023f	37.4	Southampton County	03010202	PFO	809	1.36	0.56	0.00	0.00	Open Cut	36.632677	-76.909651	1941
wsoc008f	37.6	Southampton County	03010202	PFO	109	0.15	0.07	0.00	0.00	Open Cut	36.631621	-76.907283	261
wsoc007f	37.7	Southampton County	03010202	PFO	117	0.18	0.08	0.00	0.00	Open Cut	36.631074	-76.905827	281
wsoa022f	37.8	Southampton County	03010202	PFO	121	0.15	0.08	0.00	0.00	Open Cut	36.630394	-76.904049	291
wsoa021f	38.1	Southampton County	03010202	PFO	637	1.10	0.44	0.00	0.00	Open Cut	36.628926	-76.89867	1530
wsoa024f	38.4	Southampton County/ City of Suffolk	03010202	PFO	1112	1.92	0.77	0.00	0.00	HDD	36.629917	-76.893415	2670
wsua006f	38.6	City of Suffolk	03010202	PFO	208	0.37	0.14	0.00	0.00	HDD	36.630736	-76.89057	500
wsua007s	39.1	City of Suffolk	03010202	PSS	50	0.09	0.00	0.01	0.00	HDD	36.63163	-76.882166	120
wsua008f	39.3	City of Suffolk	03010202	PFO	140	0.32	0.10	0.00	0.00	Open Cut	36.633633	-76.878311	336
wsua021f	39.5	City of Suffolk	03010202	PFO	485	0.79	0.33	0.00	0.00	Open Cut	36.634503	-76.875812	1165
wsua020f	39.7	City of Suffolk	03010202	PFO	38	0.06	0.03	0.00	0.00	Open Cut	36.634379	-76.872669	91
wsua019s	39.7	City of Suffolk	03010202	PSS	111	0.21	0.00	0.03	0.00	Open Cut	36.63405	-76.871931	267
wsua018s	39.9	City of Suffolk	03010202	PSS	33	0.03	0.00	0.01	0.00	Open Cut	36.633864	-76.869467	78

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
wsua009f	40.0	City of Suffolk	03010202	PFO	32	0.06	0.02	0.00	0.00	Open Cut	36.633505	-76.867636	78
wsua010f	40.1	City of Suffolk	03010202	PFO	193	0.34	0.13	0.00	0.00	Open Cut	36.633547	-76.864769	463
wsuo003e	53.9	City of Suffolk	02080208	PEM	500	0.52	0.00	0.00	0.00	Open Cut	36.687132	-76.661127	1201
wsuo003f	54.0	City of Suffolk	02080208	PFO	0	0.33	0.00	0.00	0.00	N/A	36.686731	-76.660858	0
wsuo004f	54.5	City of Suffolk	02080208	PFO	157	0.22	0.11	0.00	0.00	Open Cut	36.68796	-76.6522	378
wsuo004e	54.5	City of Suffolk	02080208	PEM	0	0.03	0.00	0.00	0.00	N/A	36.688239	-76.652484	0
wsuo005e	54.7	City of Suffolk	02080208	PEM	356	0.42	0.00	0.00	0.00	Open Cut	36.689498	-76.649393	854
wsuo005f	54.7	City of Suffolk	02080208	PFO	0	0.19	0.00	0.00	0.00	N/A	36.689328	-76.648897	0
wsup008f	55.5	City of Suffolk	02080208	PFO	29	0.05	0.02	0.00	0.00	Open Cut	36.695576	-76.636408	69
wsup007f	55.6	City of Suffolk	02080208	PFO	89	0.12	0.06	0.00	0.00	Open Cut	36.696632	-76.635038	213
wsup005e	56.5	City of Suffolk	02080208	PEM	10	0.02	0.00	0.00	0.00	Open Cut	36.704666	-76.624151	23
wsup004e	56.5	City of Suffolk	02080208	PEM	132	0.16	0.00	0.00	0.00	Open Cut	36.704939	-76.623783	316
wsup003e	56.6	City of Suffolk	02080208	PEM	164	0.20	0.00	0.00	0.00	Open Cut	36.705322	-76.6226	393
wsup003f	56.6	City of Suffolk	02080208	PFO	0	0.01	0.00	0.00	0.00	N/A	36.705661	-76.622402	0
wsup006e	56.9	City of Suffolk	02080208	PEM	312	0.43	0.00	0.00	0.00	Open Cut	36.706761	-76.617325	749
wsup006f	56.9	City of Suffolk	02080208	PFO	0	0.09	0.04	0.00	0.00	N/A	36.70695	-76.618133	0
wsuo001e	57.8	City of Suffolk	02080208	PEM	58	0.08	0.00	0.00	0.00	Open Cut	36.708399	-76.602749	140
wsuo001f	57.8	City of Suffolk	02080208	PFO	0	0.03	0.01	0.00	0.00	N/A	36.708527	-76.602055	0
wsuo002s	59.0	City of Suffolk	02080208	PSS	78	0.13	0.00	0.02	0.00	Open Cut	36.702743	-76.582482	188
wsup001s	60.1	City of Suffolk	02080208	PSS	152	0.24	0.00	0.03	0.00	Open Cut	36.709739	-76.568163	365
wsur006f	64.3	City of Suffolk	02080208	PFO	1045	1.80	0.72	0.00	0.00	Open Cut	36.749851	-76.517343	2509
wsur003e	64.7	City of Suffolk	02080208	PEM	611	1.09	0.00	0.00	0.00	Open Cut	36.753004	-76.513237	1466
wsuo008s	64.9	City of Suffolk	02080208	PSS	880	1.15	0.00	0.20	0.00	Open Cut	36.756122	-76.512902	2113
wsuo007e	65.1	City of Suffolk	02080208	PEM	0	0.00	0.00	0.00	0.00	N/A	36.756239	-76.511355	0
wsuo008f	65.1	City of Suffolk	02080208	PFO	268	0.40	0.19	0.00	0.00	Open Cut	36.757014	-76.51081	643
wsuo007f	65.1	City of Suffolk	02080208	PFO	0	0.18	0.01	0.00	0.00	N/A	36.756648	-76.510781	0
wsuo009f	65.2	City of Suffolk	02080208	PFO	6814	11.63	4.69	0.00	0.00	Open Cut	36.763983	-76.491956	16353

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
wsuo009e	65.2	City of Suffolk	02080208	PEM	39	0.07	0.00	0.00	0.00	Open Cut	36.757927	-76.510116	94
wsuo009e	65.5	City of Suffolk	02080208	PEM	149	0.26	0.00	0.00	0.00	Open Cut	36.759569	-76.504852	357
wsuo009f	66.0	City of Suffolk	02080208	PFO	2	0.00	4.69	0.00	0.00	Open Cut	36.762274	-76.496587	4
wsuo010s	67.6	City of Suffolk	02080208	PSS	524	0.89	0.00	0.12	0.00	Open Cut	36.771145	-76.470504	1256
wsur001f	67.7	City of Suffolk	02080208	PFO	64	0.10	0.03	0.00	0.00	Open Cut	36.770739	-76.468288	153
wsuo011f	67.8	City of Suffolk	02080208	PFO	768	1.30	0.53	0.00	0.00	Open Cut	36.770786	-76.466602	1844
wsuo011e	67.9	City of Suffolk	02080208	PEM	23	0.04	0.00	0.00	0.00	Open Cut	36.77047	-76.465547	56
wchr002f	70.1	City of Chesapeake	02080208	PFO	7911	13.61	5.44	0.00	0.00	Open Cut	36.759108	-76.417979	18986
wchr001f	71.6	City of Chesapeake	02080208	PFO	3712	5.66	2.55	0.00	0.00	Open Cut	36.758167	-76.399191	8908
AP-5													
wgrc014f	0.2	Greensville County	03010204	PFO	19	0.02	0.01	0.00	0.00	Open Cut	36.728494	-77.641533	46
wgrc013f	0.8	Greensville County	03010204	PFO	152	0.29	0.10	0.00	0.00	Open Cut	36.723201	-77.650787	365
DESKTOP DELINEATED FEATURES													
AP-1													
DKWA_VA_013E	89.6	Highland County	2080201	PEM	128	0.42	0.00	0.00	0	N/A	38.42809	-79.63525	538
DKWA_VA_014E	90.3	Highland County	2080201	PEM	198	0.72	0.00	0.00	0	N/A	38.41906	-79.62938	831
DKWA_VA_015E	90.8	Highland County	2080201	PEM	41	0.12	0.00	0.00	0	N/A	38.41172	-79.62662	172
DKWA_VA_016E	93.3	Highland County	2080201	PEM	206	0.79	0.00	0.00	0	N/A	38.38905	-79.59801	865
DKWA_VA_017F	114.0	Augusta County	2080202	PFO	169	0.47	0.12	0.00	0	N/A	38.28044	-79.34025	712
DKWA_VA_018F	114.1	Augusta County	2080202	PFO	153	0.43	0.10	0.00	0	N/A	38.28043	-79.3386	642

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
DKWA_VA_020F	116.5	Augusta County	2080202	PFO	121	0.32	0.08	0.00	0	N/A	38.28061	-79.29787	509
DKWA_VA_019E	116.7	Augusta County	2080202	PEM	104	0.42	0.00	0.00	0	N/A	38.28138	-79.29430	439
DKWA_VA_027E	134.4	Augusta County	2070005	PEM	62	0.29	0.00	0.00	0	N/A	38.15036	-79.14988	262
DKWA_VA_021E	126.8	Augusta County	2070005	PEM	0	0.05	0.00	0.00	0	N/A	38.25147	-79.14771	0
DKWA_VA_028F	134.6	Augusta County	2070005	PFO	257	0.41	0.18	0.00	0	N/A	38.14913	-79.14753	1079
DKWA_VA_025E	130.1	Augusta County	2070005	PEM	94	0.29	0.00	0.00	0	N/A	38.20778	-79.14749	394
DKWA_VA_023E	128.8	Augusta County	2070005	PEM	46	0.18	0.00	0.00	0	N/A	38.22617	-79.14592	194
DKWA_VA_024F	129.2	Augusta County	2070005	PFO	68	0.25	0.05	0.00	0	N/A	38.22129	-79.14437	287
DKWA_VA_029E	135.8	Augusta County	2070005	PEM	31	0.09	0.00	0.00	0	N/A	38.13549	-79.13474	131
DKWA_VA_030E	136.9	Augusta County	2070005	PEM	0	0.02	0.00	0.00	0	N/A	38.12115	-79.12791	0
DKWA_VA_030F	137.0	Augusta County	2070005	PFO	35	0.15	0.02	0.00	0	N/A	38.12116	-79.12736	147
DKWA_VA_031F	139.1	Augusta County	2070005	PFO	129	0.6	0.09	0.00	0	N/A	38.09746	-79.10206	542
DKWA_VA_032E	145.6	Augusta County	2070005	PEM	235	0.91	0.00	0.00	0	N/A	38.03609	-79.01933	986
DKWA_VA_037E	151.1	Augusta County	2070005	PEM	63	0.21	0.00	0.00	0	N/A	37.99324	-78.96351	264
DKWA_VA_038F	153.2	Augusta County	2070005	PFO	134	0.41	0.09	0.00	0	N/A	37.96746	-78.96274	563
DKWA_VA_039E	162.5	Nelson County	2080203	PEM	0	0.06	0.00	0.00	0	N/A	37.88671	-78.91198	0
DKWA_VA_040E	163.2	Nelson County	2080203	PEM	0	0.11	0.00	0.00	0	N/A	37.88284	-78.90131	0

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
DKWA_VA_041F	163.7	Nelson County	2080203	PFO	0	0.01	0.00	0.00	0	N/A	37.88206	-78.89255	0
DKWA_VA_042F	163.9	Nelson County	2080203	PFO	30	0.09	0.02	0.00	0	N/A	37.87997	-78.89039	127
DKWA_VA_043F	164.2	Nelson County	2080203	PFO	74	0.14	0.05	0.00	0	N/A	37.87605	-78.88817	312
DKWA_VA_044F	164.4	Nelson County	2080203	PFO	54	0.16	0.04	0.00	0	N/A	37.87251	-78.88665	228
DKWA_VA_045F	165.4	Nelson County	2080203	PFO	141	0.46	0.10	0.00	0	N/A	37.86171	-78.8804	593
DKWA_VA_046F	165.5	Nelson County	2080203	PFO	88	0.27	0.06	0.00	0	N/A	37.86047	-78.87877	371
DKWA_VA_047F	165.9	Nelson County	2080203	PFO	313	1.48	0.22	0.00	0	N/A	37.85900	-78.87210	1314
DKWA_VA_049F	168.4	Nelson County	2080203	PFO	46	0.14	0.03	0.00	0	N/A	37.84013	-78.83597	193
DKWA_VA_050S	169.7	Nelson County	2080203	PSS	69	0.16	0.00	0.02	0	N/A	37.82965	-78.8171	289
DKWA_VA_052F	171.7	Nelson County	2080203	PFO	162	0.54	0.11	0.00	0	N/A	37.80991	-78.79997	679
DKWA_VA_051F	171.3	Nelson County	2080203	PFO	65	0.28	0.05	0.00	0	N/A	37.81589	-78.79938	271
DKWA_VA_053F	175.6	Nelson County	2080203	PFO	166	0.56	0.12	0.00	0	N/A	37.76104	-78.78693	699
DKWC_VA_001F	186.7	Buckingham County	2080203	PFO	198	0.77	0.14	0.00	0	N/A	37.64091	-78.69577	833
DKWC_VA_002F	186.8	Buckingham County	2080203	PFO	162	0.66	0.11	0.00	0	N/A	37.63981	-78.69573	680
DKWA_VA_060S	190.1	Buckingham County	2080203	PSS	128	0.58	0.00	0.03	0	N/A	37.60252	-78.66918	539
DKWA_VA_060F	190.1	Buckingham County	2080203	PFO	68	0.2	0.04	0.00	0	N/A	37.60278	-78.66879	287
DKWB_VA_004f	206.1	Buckingham County	2080205	PFO	93	0.2	0.06	0.00	0	N/A	37.44520	-78.49882	392
DKWA_VA_062F	206.1	Buckingham County	2080205	PFO	75	0.15	0.05	0.00	0	N/A	37.44533	-78.49879	315
DKWA_VA_063F	223.1	Prince Edward County	2080207	PFO	324	0.71	0.23	0.00	0	N/A	37.30289	-78.27276	1360
DKWA_VA_064F	237.4	Nottoway County	2080207	PFO	152	0.39	0.10	0.00	0	N/A	37.19536	-78.06809	636
DKWA_VA_066F	241.5	Nottoway County	2080207	PFO	460	1.06	0.32	0.00	0	N/A	37.15006	-78.02102	1930

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
DKWA_VA_067F	246.7	Nottoway County	2080207	PFO	32	0.05	0.02	0.00	0	N/A	37.12921	-77.93569	134
DKWA_VA_068F	253.6	Dinwiddie County	3010201	PFO	901	2.53	0.62	0.00	0	N/A	37.08088	-77.83837	3784
DKWA_VA_069F	253.8	Dinwiddie County	3010201	PFO	211	0.41	0.14	0.00	0	N/A	37.07864	-77.8366	887
DKWA_VA_070E	254.3	Dinwiddie County	3010201	PEM	199	0.32	0.00	0.00	0	N/A	37.07269	-77.83247	837
DKWA_VA_071E	254.4	Dinwiddie County	3010201	PEM	0	0.03	0.00	0.00	0	N/A	37.07082	-77.83173	0
DKWA_VA_072F	254.4	Dinwiddie County	3010201	PFO	102	0.31	0.07	0.00	0	N/A	37.07125	-77.83138	427
DKWA_VA_073F	256.5	Dinwiddie County	3010201	PFO	494	1.29	0.33	0.00	0	N/A	37.04819	-77.82510	2075
DKWC_VA_004F	265.1	Brunswick County	3010201	PFO	307	0.89	0.21	0.00	0	N/A	36.94429	-77.79648	1290
DKWC_VA_003F	265.6	Brunswick County	3010201	PFO	146	0.44	0.10	0.00	0	N/A	36.94180	-77.78844	615
DKWC_VA_005F	267.4	Brunswick County	3010201	PFO	267	0.79	0.18	0.00	0	N/A	36.93040	-77.76591	1122
DKWC_VA_006F	267.9	Brunswick County	3010201	PFO	222	0.82	0.15	0.00	0	N/A	36.92314	-77.76554	933
DKWC_VA_007E	269.6	Brunswick County	3010201	PUB (POND)	98	0.26	0.00	0.00	0	N/A	36.89950	-77.75685	414
DKWC_VA_008F	270.5	Brunswick County	3010201	PFO	129	0.45	0.09	0.00	0	N/A	36.88732	-77.75241	540
DKWC_VA_009F	270.8	Brunswick County	3010201	PFO	120	0.37	0.08	0.00	0	N/A	36.88333	-77.75074	505
DKWC_VA_010F	271.9	Brunswick County	3010201	PFO	326	0.99	0.24	0.00	0	N/A	36.86746	-77.74476	1368
DKWC_VA_013F	274.8	Brunswick County	3010204	PFO	521	1.46	0.36	0.00	0	N/A	36.82668	-77.74194	2187

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
DKWC_VA_014E	274.9	Brunswick County	3010204	PEM	323	0.78	0.00	0.00	0	N/A	36.82503	-77.74154	1355
DKWC_VA_014F	274.9	Brunswick County	3010204	PSS	127	0.46	0.00	0.03	0	N/A	36.82503	-77.74117	532
DKWC_VA_014E	275	Brunswick County	3010204	PEM	168	0.54	0.00	0.00	0	N/A	36.82442	-77.74091	707
DKWC_VA_012F	274.2	Brunswick County	3010201	PFO	293	0.93	0.20	0.00	0	N/A	36.83473	-77.74066	1229
DKWC_VA_011F	273.0	Brunswick County	3010201	PFO	146	0.49	0.10	0.00	0	N/A	36.85209	-77.74059	614
DKWC_VA_015F	275.2	Brunswick County	3010204	PFO	148	0.42	0.10	0.00	0	N/A	36.82099	-77.73863	623
DKWC_VA_016S	275.3	Brunswick County	3010204	PSS	103	0.29	0.00	0.02	0	N/A	36.82017	-77.73745	431
DKWC_VA_017F	275.5	Brunswick County	3010204	PFO	81	0.25	0.06	0.00	0	N/A	36.81882	-77.73558	339
DKWC_VA_018F	275.8	Brunswick County	3010204	PFO	137	0.39	0.09	0.00	0	N/A	36.81532	-77.73253	574
DKWC_VA_019U	276.1	Brunswick County	3010204	PUB	0	0.08	0.00	0.00	0	N/A	36.81187	-77.73142	0
DKWC_VA_020F	276.2	Brunswick County	3010204	PFO	237	0.69	0.16	0.00	0	N/A	36.81011	-77.73006	997
DKWC_VA_021S	276.3	Brunswick County	3010204	PSS	58	0.16	0.00	0.01	0	N/A	36.80798	-77.72936	245
DKWC_VA_022F	276.7	Brunswick County	3010204	PFO	115	0.34	0.08	0.00	0	N/A	36.80354	-77.72717	483
DKWC_VA_023S	277.0	Brunswick County	3010204	PSS	110	0.31	0.00	0.03	0	N/A	36.79902	-77.72519	462
DKWC_VA_024S	277.1	Brunswick County	3010204	PSS	0	0.06	0.00	0.00	0	N/A	36.79703	-77.72484	0
DKWC_VA_025F	277.6	Brunswick County	3010204	PFO	225	0.64	0.15	0.00	0	N/A	36.79046	-77.72111	945

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
DKWC_VA_026F	277.9	Brunswick County	3010204	PFO	114	0.32	0.08	0.00	0	N/A	36.78698	-77.71907	478
DKWC_VA_028F	278.3	Brunswick County	3010204	PFO	167	0.44	0.11	0.00	0	N/A	36.78118	-77.71715	700
DKWC_VA_027F	278.6	Brunswick County	3010204	PFO	148	0.43	0.10	0.00	0	N/A	36.77732	-77.71493	620
DKWC_VA_029F	278.8	Brunswick County	3010204	PFO	155	0.46	0.11	0.00	0	N/A	36.77479	-77.71187	652
DKWC_VA_030F	279.3	Brunswick County	3010204	PFO	69	0.2	0.05	0.00	0	N/A	36.76931	-77.70708	291
DKWB_VA_054f	279.7	Brunswick County	3010204	PFO	141	0.39	0.10	0.00	0	N/A	36.76418	-77.70554	594
DKWB_VA_052f	285.0	Greensville County	3010204	PFO	354	1.05	0.24	0.00	0	N/A	36.72383	-77.63305	1486
AP-3													
DKWB_VA_058f	15.2	Southampton County	3010204	PFO	709	0.9	0.49	0.00	0	N/A	36.57207	-77.26209	1702
DKWB_VA_058e	15.3	Southampton County	3010204	PEM	0	0.31	0.00	0.00	0	N/A	36.57211	-77.26142	0
DKWB_VA_130f	15.9	Southampton County	3010204	PFO	116	0.2	0.08	0.00	0	N/A	36.57579	-77.25287	278
DKWB_VA_130e	15.9	Southampton County	3010204	PEM	0	0	0.00	0.00	0	N/A	36.57555	-77.25248	0
DKWB_VA_129f	16.1	Southampton County	3010204	PFO	1352	1.79	0.90	0.00	0	N/A	36.57785	-77.24829	3245
DKWB_VA_129e	16.0	Southampton County	3010204	PEM	298	0.99	0.00	0.00	0	N/A	36.57733	-77.24811	715
DKWB_VA_128e	16.5	Southampton County	3010204	PEM	0	0.07	0.00	0.00	0	N/A	36.57942	-77.24275	0
DKWB_VA_128f	16.5	Southampton County	3010204	PFO	300	0.64	0.21	0.00	0	N/A	36.58003	-77.24254	719
DKWB_VA_127f	16.8	Southampton County	3010204	PFO	636	0.96	0.44	0.00	0	N/A	36.58212	-77.23718	1527

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
DKWB_VA_127e	16.8	Southampton County	3010204	PEM	0	0.26	0.00	0.00	0	N/A	36.58176	-77.23679	0
DKWB_VA_126f	17.0	Southampton County	3010204	PFO	366	0.55	0.25	0.00	0	N/A	36.58309	-77.23469	879
DKWB_VA_126e	17.0	Southampton County	3010204	PEM	0	0.07	0.00	0.00	0	N/A	36.58272	-77.23436	0
DKWB_VA_125f	17.1	Southampton County	3010204	PFO	1171	1.65	0.70	0.00	0	N/A	36.58423	-77.23202	2811
DKWB_VA_125e	17.1	Southampton County	3010204	PEM	0	0.18	0.00	0.00	0	N/A	36.58387	-77.23140	0
DKWB_VA_124f	17.7	Southampton County	3010204	PFO	2310	3.95	1.58	0.00	0	N/A	36.58829	-77.22101	5545
DKWB_VA_124e	17.6	Southampton County	3010204	PEM	0	0.01	0.00	0.00	0	N/A	36.58775	-77.22094	0
DKWB_VA_123f	19.0	Southampton County	3010204	PFO	90	0.18	0.06	0.00	0	N/A	36.59469	-77.20279	215
DKWB_VA_122f	19.1	Southampton County	3010204	PFO	755	1.58	0.52	0.00	0	N/A	36.59671	-77.19921	1812
DKWB_VA_121f	19.9	Southampton County	3010204	PFO	583	1.24	0.40	0.00	0	N/A	36.60388	-77.18847	1398
DKWB_VA_120f	20.6	Southampton County	3010204	PFO	321	0.61	0.22	0.00	0	N/A	36.60846	-77.17872	771
DKWB_VA_120e	20.7	Southampton County	3010204	PEM	0	0.05	0.00	0.00	0	N/A	36.60828	-77.17846	0
DKWB_VA_119f	20.8	Southampton County	3010204	PFO	1398	1.81	0.53	0.00	0	N/A	36.61092	-77.17296	3355
DKWB_VA_119e	21.0	Southampton County	3010204	PEM	1300	0.8	0.00	0.00	0	N/A	36.61149	-77.17220	3120
DKWB_VA_118f	21.3	Southampton County	3010204	PFO	430	0.72	0.30	0.00	0	N/A	36.61318	-77.16888	1033
DKWB_VA_117f	21.5	Southampton County	3010204	PFO	1513	1.68	0.60	0.00	0	N/A	36.61581	-77.16371	3632

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
DKWB_VA_117e	21.5	Southampton County	3010204	PEM	1625	0.94	0.00	0.00	0	N/A	36.61598	-77.16351	3901
DKWB_VA_002f	24.3	Southampton County	3010201	PFO	160	0.36	0.11	0.00	0	N/A	36.63742	-77.12743	384
DKWB_VA_003f	24.5	Southampton County	3010201	PFO	217	0.46	0.15	0.00	0	N/A	36.63730	-77.12471	522
DKWB_VA_116f	24.9	Southampton County	3010201	PFO	0	0.01	0.00	0.00	0	N/A	36.63662	-77.11637	0
DKWB_VA_114f	25.4	Southampton County	3010201	PFO	0	0.1	0.00	0.00	0	N/A	36.63458	-77.10748	0
DKWB_VA_112f	25.8	Southampton County	3010201	PFO	169	0.28	0.12	0.00	0	N/A	36.63497	-77.10060	404
DKWB_VA_113f	26.0	Southampton County	3010201	PFO	196	0.33	0.14	0.00	0	N/A	36.63575	-77.09730	470
DKWB_VA_110f	41.1	City of Suffolk	3010202	PFO	581	1.01	0.36	0.00	0	N/A	36.64595	-76.85890	1394
DKWB_VA_108f	42.1	City of Suffolk	3010202	PFO	1290	2.46	0.89	0.00	0	N/A	36.65887	-76.85245	3096
DKWB_VA_107f	42.6	City of Suffolk	3010202	PFO	307	0.66	0.21	0.00	0	N/A	36.66475	-76.85176	737
DKWB_VA_106e	43.1	City of Suffolk	3010202	PEM	80	0.24	0.00	0.00	0	N/A	36.66753	-76.84489	192
DKWB_VA_105f	43.4	City of Suffolk	3010202	PFO	703	1.13	0.48	0.00	0	N/A	36.66791	-76.83801	1687
DKWB_VA_005f	44.1	City of Suffolk	3010202	PFO	668	1.42	0.47	0.00	0	N/A	36.66893	-76.82586	1604
DKWB_VA_102e	44.7	City of Suffolk	3010202	PEM	0	0.11	0.00	0.00	0	N/A	36.66955	-76.81367	0
DKWB_VA_102f	44.7	City of Suffolk	3010202	PFO	2266	4.13	1.59	0.00	0	N/A	36.66912	-76.81361	5439
DKWB_VA_101e	45.4	City of Suffolk	3010202	PEM	34	0.08	0.00	0.00	0	N/A	36.66987	-76.80287	81
DKWB_VA_101f	45.4	City of Suffolk	3010202	PFO	0	0.05	0.00	0.00	0	N/A	36.66990	-76.80269	0
DKWB_VA_099f	46.8	City of Suffolk	3010203	PFO	1759	3.04	1.21	0.00	0	N/A	36.67091	-76.77776	4220
DKWB_VA_096e	48.4	City of Suffolk	3010203	PEM	0	0.08	0.00	0.00	0	N/A	36.67489	-76.75996	0
DKWB_VA_096f	48.1	City of Suffolk	3010203	PFO	279	0.4	0.17	0.00	0	N/A	36.67445	-76.75994	670
DKWB_VA_095e	49.2	City of Suffolk	3010203	PEM	0	0.01	0.00	0.00	0	N/A	36.67914	-76.74137	0
DKWB_VA_095f	49.2	City of Suffolk	3010203	PFO	280	0.47	0.19	0.00	0	N/A	36.67881	-76.74075	672
DKWB_VA_094f	49.4	City of Suffolk	3010203	PFO	886	1.61	0.61	0.00	0	N/A	36.67947	-76.73772	2128

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
DKWB_VA_094e	49.5	City of Suffolk	3010203	PEM	0	0.03	0.00	0.00	0	N/A	36.67991	-76.73772	0
DKWB_VA_093f	49.5	City of Suffolk	3010203	PFO	369	0.7	0.25	0.00	0	N/A	36.68007	-76.73545	887
DKWB_VA_097f	47.6	City of Suffolk	3010203	PFO	3352	5.77	2.31	0.00	0	N/A	36.68169	-76.73215	8046
DKWB_VA_092f	50.4	City of Suffolk	3010203	PFO	87	0.12	0.05	0.00	0	N/A	36.68353	-76.72094	209
DKWB_VA_092e	50.4	City of Suffolk	3010203	PEM	153	0.22	0.00	0.00	0	N/A	36.68373	-76.72091	367
DKWB_VA_091e	50.6	City of Suffolk	3010203	PEM	0	0.01	0.00	0.00	0	N/A	36.68424	-76.71826	0
DKWB_VA_091f	50.6	City of Suffolk	3010203	PFO	232	0.41	0.16	0.00	0	N/A	36.68476	-76.71817	557
DKWB_VA_090f	50.8	City of Suffolk	3010203	PFO	717	0.96	0.49	0.00	0	N/A	36.68579	-76.71317	1722
DKWB_VA_090e	50.9	City of Suffolk	3010203	PEM	0	0.49	0.00	0.00	0	N/A	36.68549	-76.71256	0
DKWB_VA_089f	51.6	City of Suffolk	3010203	PFO	2803	4.8	1.93	0.00	0	N/A	36.68844	-76.69646	6728
DKWB_VA_087e	52.2	City of Suffolk	2080208	PEM	0	0.03	0.00	0.00	0	N/A	36.69044	-76.68844	0
DKWB_VA_088f	52.6	City of Suffolk	2080208	PFO	182	0.48	0.14	0.00	0	N/A	36.69135	-76.68124	437
DKWB_VA_086f	53.2	City of Suffolk	2080208	PFO	431	0.93	0.30	0.00	0	N/A	36.69024	-76.67354	1035
DKWB_VA_038f	60.8	City of Suffolk	2080208	PFO	806	3.54	0.70	0.00	0	N/A	36.71916	-76.55702	1935
DKWB_VA_038e	61.0	City of Suffolk	2080208	PEM	3327	3.92	0.00	0.00	0	N/A	36.71975	-76.55660	7984
DKWB_VA_039f	61.7	City of Suffolk	2080208	PFO	0	0.01	0.00	0.00	0	N/A	36.72431	-76.55080	0
DKWB_VA_039e	61.7	City of Suffolk	2080208	PEM	67	0.13	0.00	0.00	0	N/A	36.72400	-76.55031	162
DKWB_VA_040f	61.8	City of Suffolk	2080208	PFO	0	0.05	0.00	0.00	0	N/A	36.72515	-76.54943	0
DKWB_VA_040e	61.7	City of Suffolk	2080208	PEM	217	0.36	0.00	0.00	0	N/A	36.72495	-76.54928	522
DKWB_VA_042f	62.0	City of Suffolk	2080208	PFO	1481	2.57	1.02	0.00	0	N/A	36.72925	-76.54562	3555
DKWB_VA_042e	61.9	City of Suffolk	2080208	PEM	539	1.18	0.00	0.00	0	N/A	36.72764	-76.54559	1294
DKWB_VA_041e	62.3	City of Suffolk	2080208	PEM	757	0.6	0.00	0.00	0	N/A	36.73228	-76.54504	1818
DKWB_VA_041f	62.3	City of Suffolk	2080208	PFO	10	0.76	0.10	0.00	0	N/A	36.73218	-76.54439	25
DKWB_VA_044f	62.6	City of Suffolk	2080208	PFO	844	1.02	0.34	0.00	0	N/A	36.73450	-76.54191	2024
DKWB_VA_044e	62.7	City of Suffolk	2080208	PEM	124	0.62	0.00	0.00	0	N/A	36.73523	-76.54176	297
DKWB_VA_043e	62.8	City of Suffolk	2080208	PEM	0	0.79	0.00	0.00	0	N/A	36.73910	-76.53726	0
DKWB_VA_043f	62.8	City of Suffolk	2080208	PFO	1871	2.63	1.07	0.00	0	N/A	36.73869	-76.53702	4491

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)
DKWB_VA_045f	63.6	City of Suffolk	2080208	PFO	218	0.36	0.15	0.00	0	N/A	36.74330	-76.52790	524
DKWB_VA_035e	68.7	City of Chesapeake	2080208	PEM	524	5.42	0.00	0.00	0	N/A	36.76644	-76.44294	1258
DKWB_VA_035f	68.1	City of Chesapeake	2080208	PFO	9261	11.71	6.22	0.00	0	N/A	36.76380	-76.43097	22227
DKWB_VA_033f	72.4	City of Chesapeake	2080208	PFO	4602	8.08	3.17	0.00	0	N/A	36.75930	-76.38611	11045
DKWB_VA_032f	73.9	City of Chesapeake	2080208	PFO	711	1.33	0.49	0.00	0	N/A	36.76225	-76.3660	1707
DKWB_VA_032e	74	City of Chesapeake	2080208	PEM	451	0.87	0.00	0.00	0	N/A	36.76187	-76.364	1083
DKWB_VA_048f	74.6	City of Chesapeake	2080208	PFO	2661	4.56	1.79	0.00	0	N/A	36.76259	-76.35089	6386
DKWB_VA_048e	74.9	City of Chesapeake	2080208	PEM	868	2.12	0.00	0.00	0	N/A	36.76352	-76.34847	2083
DKWB_VA_031e	76.2	City of Chesapeake	2080208	PEM	0	0.05	0.00	0.00	0	N/A	36.76543	-76.32783	0
DKWB_VA_030e	76.4	City of Chesapeake	2080208	PEM	103	0.23	0.00	0.00	0	N/A	36.76483	-76.32529	246
DKWB_VA_029e	76.5	City of Chesapeake	2080208	PEM	119	0.21	0.00	0.00	0	N/A	36.76454	-76.32333	286
DKWB_VA_028e	76.9	City of Chesapeake	2080208	PEM	2201	4.42	0.00	0.00	0	N/A	36.76545	-76.31309	5282
DKWB_VA_027e	77.4	City of Chesapeake	2080208	PEM	141	0.23	0.00	0.00	0	N/A	36.76754	-76.30825	339
DKWB_VA_026e	77.7	City of Chesapeake	2080208	PEM	0	0.01	0.00	0.00	0	N/A	36.77067	-76.30805	0
AP-4													
DKWB_VA_053f	0.1	Brunswick County	03010204	PFO	130	0.22	0.09	0.00	0.00	N/A	36.76525	-77.70874	312
Norfolk District Totals					**161,869**	**306.77**	**87.13**	**2.86**	**0.00**				

TABLE B-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b,c]	PFO Conversion (acres) [d]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method[e]	Latitude	Longitude	Volume of Fill Below OHWM[f] (cubic yards)

[a] Wetland types according to Cowardin et al. (1979):
PEM = palustrine emergent
PFO = palustrine forested
PSS = palustrine scrub-shrub

[b] Temporary wetland impacts are associated with a 75-foot-wide construction right-of-way through wetlands.

[c] Impact types, as listed in the JPA, for all crossings are F, EX, NT, V, and MC with the exception of those constructed with the horizontal directional drill method which will have no impact. Additionally there are no dune/beach impact associated with the ACP.

[d] Wetland vegetation type conversion impacts are associated with scrub-shrub and forested wetlands. Operational requirements (corrosion/leak surveys) allow a 10-foot-wide corridor centered over the pipeline to be maintained in an herbaceous state, and allow trees within 15 feet on either side of the pipeline with roots that could compromise the integrity of the pipeline to be selectively cut from the right-of-way. To determine conversion impacts on scrub-shrub wetlands, a 10-foot-wide corridor centered over the pipeline was assessed. A 30-foot-wide corridor centered over the pipeline was assessed for forested wetlands.

[e] N/A: wetlands that occur within the workspace but are not crossed by the centerline of the pipeline are given a value of N/A in the Construction Method column. While direct impacts due to trenching activities are not anticipated, these wetlands will likely be temporarily impacted due to construction through placement of temporary sidecast material or construction mats. Additionally, wetlands delineated using desktop data have been given a value of N/A for the construction method until construction methods are determined once field surveys have been completed.

[f] Ordinary High Water Mark

Note: The totals shown in this table may not equal the sum of addends due to rounding

TABLE B-2

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
SURVEY DELINEATED FEATURES														
AP-1														
shia001	84.7	Highland County	02070001	Laurel Fork	Perennial	27	150	1) Dam and Pump 2) Flume	38.47896	-79.67318	October 1 through March 31	Aquatic Life, II	114	4.19
shib001	85.3	Highland County	02070001	UNT to Laurel Fork	Intermittent	6	99	1) Dam and Pump	38.47457	-79.66602		UNT to Aquatic Life, II	27	
shib003	87.2	Highland County	02080201	Back Creek	Perennial	15	118	1) Dam and Pump 2) Flume	38.45377	-79.65004		Aquatic Life, VI	64	2.93
shia002	87.6	Highland County	02080201	UNT to Back Creek	Intermittent	2	185	1) Dam and Pump	38.45137	-79.64452		UNT to Aquatic Life	9	
shia052	89.2	Highland County	02080201	UNT to Jackson River	Intermittent	8	185	1) Dam and Pump	38.43239	-79.63913		UNT to Aquatic Life, VI	32	
shia050	91.1	Highland County	02080201	UNT to Jackson River	Perennial	7	155	1) Dam and Pump	38.40804	-79.62648		UNT to Aquatic Life, VI	31	0.28
shib115	96.5	Highland County	02080201	UNT to Crab Run	Perennial		40	Not Crossed by Centerline	38.37134	-79.55252		UNT to Aquatic Life	0	
shib110	96.7	Highland County	02080201	Crab Run	Perennial	28	125	1) Dam and Pump 2) Flume	38.37073	-79.54957	October 1 through May 15	Aquatic Life, II	119	6.70
shib100	100.8	Highland County	02080201	Crab Run	Perennial	26	128	1) Dam and Pump 2) Flume	38.33512	-79.50751	October 1 through May 15	Aquatic Life, II	109	12.68
shib102	101.0	Highland County	02080201	UNT to Crab Run	Intermittent	11	136	1) Dam and Pump	38.33277	-79.50928		UNT to Aquatic Life, II	46	
shib104	101.8	Highland County	02080201	UNT to Bullpasture River	Intermittent	4	162	1) Dam and Pump	38.32263	-79.50845		UNT to Aquatic Life	17	
shib103	101.9	Highland County	02080201	UNT to Bullpasture River	Intermittent	4	130	1) Dam and Pump	38.32087	-79.50866		UNT to Aquatic Life	18	
shib122	102.4	Highland County	02080201	UNT to Bullpasture River	Perennial	7	87	1) Dam and Pump	38.31563	-79.50410		UNT to Aquatic Life	29	54.26

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
shib123	102.6	Highland County	02080201	UNT to Bullpasture River	Perennial	6	80	1) Dam and Pump	38.31323	-79.50333		UNT to Aquatic Life	26	54.33
shib124	102.9	Highland County	02080201	Bullpasture River	Perennial	55	128	1) Cofferdam 2) Dam & Pump	38.30861	-79.50414	May 15 through July 31	Aquatic Life	230	54.95
shib111	106.4	Highland County	02080201	UNT to Cowpasture River	Ephemeral	1	129	1) Dam and Pump	38.29429	-79.45285		UNT to Aquatic Life, VI	4	
shib116	106.4	Highland County	02080201	UNT to Cowpasture River	Ephemeral	2	130	1) Dam and Pump	38.29507	-79.45254		UNT to Aquatic Life, VI	8	
shib112	106.7	Highland County	02080201	Cowpasture River	Perennial	20	146	1) Dam and Pump	38.29809	-79.45014	March 15 through June 30	Aquatic Life, VI	86	14.17
shib114	107.4	Highland County	02080201	Shaw's Fork	Perennial	34	127	1) Dam and Pump	38.30077	-79.43960		Aquatic Life, V-VI	144	20.04
shic002	108.6	Highland County	02080201	UNT to Shrews Fork	Perennial	11	127	Not Crossed by Centerline	38.29214	-79.42113		UNT to Aquatic Life, V-VI	44	1.05
shic001	108.7	Highland County	02080201	UNT to Shrews Fork	Perennial			1) Flume 2) Dam and Pump	38.29249	-79.42034		UNT to Aquatic Life, V-VI	0	
sauc001	111.2	Augusta County	02080202	Hodges Draft	Perennial	10	133	1) Flume 2) Dam and Pump	38.27374	-79.38533	October 1 through March 31	Aquatic Life, I-IV	42	2.16
saub100	114.5	Augusta County	02080202	UNT to Ramsey's Draft	Intermittent	4	148	1) Dam and Pump	38.27889	-79.33209		UNT to Aquatic Life, IV	19	
saub101	114.8	Augusta County	02080202	UNT to Ramsey's Draft	Perennial	6	219	1) Dam and Pump	38.27788	-79.32774		UNT to Aquatic Life, IV	24	0.19
saub102	114.8	Augusta County	02080202	UNT to Ramsey's Draft	Ephemeral		101	Not Crossed by Centerline	38.27768	-79.32730		UNT to Aquatic Life, IV	0	
saub104	115.2	Augusta County	02080202	Ramsey's Draft	Perennial	11	169	1) Flume 2) Dam and Pump	38.27838	-79.32064		Aquatic Life, IV	45	1.37
saub105	115.4	Augusta County	02080202	UNT to Calfpasture River	Intermittent	3	167	1) Dam and Pump	38.27837	-79.31654		UNT to Aquatic Life	13	
saub106	115.7	Augusta County	02080202	UNT to Barn Lick Branch	Ephemeral		13	Not Crossed by Centerline	38.27998	-79.31222		Unclassified	0	

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
saub107	115.7	Augusta County	02080202	UNT to Barn Lick Branch	Intermittent		33	Not Crossed by Centerline	38.28053	-79.31089		Unclassified	0	
saub108	115.8	Augusta County	02080202	Barn Lick Branch	Perennial	9	169	Not Crossed by Centerline	38.28105	-79.31018		Unclassified	37	0.33
saub109	116.3	Augusta County	02080202	UNT to Calfpasture River	Perennial	12	259	1) Dam and Pump	38.27989	-79.30145		UNT to Aquatic Life	50	12.86
sauc002	117.1	Augusta County	02080202	Dowell's Draft	Perennial	10	159	1) Flume 2) Dam and Pump	38.28379	-79.28880		Unclassified	41	1.42
sauc004	117.2	Augusta County	02080202	UNT to Dowell's Draft	Perennial	9	138	1) Dam and Pump	38.28401	-79.28681		Unclassified	38	1.37
sauc005	117.7	Augusta County	02080202	UNT to Dowell's Draft	Intermittent	7	168	1) Dam and Pump	38.28736	-79.27857		Unclassified	30	
sauc007	120.2	Augusta County	02070005	UNT to White Oak Draft	Ephemeral	2	125	1) Dam and Pump 2) Flume	38.29135	-79.23876		UNT to Aquatic Life, I-IV	9	
sauc006	120.2	Augusta County	02070005	White Oak Draft	Perennial	25	173	1) Dam and Pump	38.29150	-79.23873	October 1 through March 31	Aquatic Life, I-IV	103	3.36
sauc008	120.4	Augusta County	02070005	UNT to White Oak Draft	Perennial	29	127	1) Flume 2) Dam and Pump	38.29196	-79.23494		UNT to Aquatic Life, I-IV	123	3.36
sauc009	120.6	Augusta County	02070005	UNT to White Oak Draft	Intermittent		64	Not Crossed by Centerline	38.29128	-79.23178		UNT to Aquatic Life, I-IV	0	
saub013	120.7	Augusta County	02070005	UNT to Stoutameyer Branch	Intermittent	3	165	Dam and Pump	38.29100	-79.22904		UNT to Aquatic Life	14	
saub012	120.9	Augusta County	02070005	UNT to Stoutameyer Branch	Intermittent	5	177	1) Dam and Pump	38.29044	-79.22640		UNT to Aquatic Life	19	
sauc010	122.5	Augusta County	02070005	UNT to Jennings Branch	Intermittent	3	126	1) Dam and Pump	38.29181	-79.19956		UNT to Aquatic Life	13	
sauc011	122.8	Augusta County	02070005	UNT to Jennings Branch	Perennial	6	146	Not Crossed by Centerline	38.29062	-79.19318		UNT to Aquatic Life	24	0.13
sauc012	123.0	Augusta County	02070005	UNT to Jennings Branch	Intermittent	3	137	Not Crossed by Centerline	38.28960	-79.19060		UNT to Aquatic Life	15	
saub004	124.1	Augusta County	02070005	UNT to Elk Run	Intermittent	5	216	1) Dam and Pump	38.27991	-79.17685		Unclassified	21	

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
saub003	124.4	Augusta County	02070005	UNT to Elk Run	Intermittent	2	151	1) Dam and Pump	38.27601	-79.17469		Unclassified	9	
saub002	125.1	Augusta County	02070005	UNT to Elk Run	Intermittent	5	168	1) Dam and Pump	38.27029	-79.16529		Unclassified	23	
saub001	125.8	Augusta County	02070005	UNT to Elk Run	Intermittent	2	126	1) Dam and Pump	38.26391	-79.15461		Unclassified	9	
saua070	130.4	Augusta County	02070005	Middle River	Perennial	80	128	1) Cofferdam 2) Dam and Pump	38.20409	-79.14849		Aquatic Life	338	89.52
saub007	142.5	Augusta County	02070005	Christian`s Creek	Perennial		26	1) Dam and Pump 2) Flume	38.06847	-79.05745		Unclassified	0	
saub011	143.9	Augusta County	02070005	UNT to Barterbrook Branch	Intermittent	4	139	1) Dam and Pump	38.05554	-79.03705		UNT to Aquatic Life	17	
saub010	144.0	Augusta County	02070005	Barterbrook Branch	Intermittent	2	152	1) Dam and Pump	38.05534	-79.03666		Aquatic Life, V	9	
daub100	147.3	Augusta County	02070005	UNT to South River	Stream Centerline	5	144		38.02669	-78.99506		UNT to Aquatic Life	21	
saub114	148.2	Augusta County	02070005	UNT to South River	Perennial	3	162	Not Crossed by Centerline	38.03108	-78.98023		UNT to Aquatic Life	12	0.85
saub116	148.4	Augusta County	02070005	South River	Perennial	43	76	1) Dam and Pump	38.02865	-78.97652	April 15 through June 15 & August 15 through September 30	Aquatic Life	180	80.01
oaub100	152.3	Augusta County	02070005	Unnamed Pond	Pond	46		Not Crossed by Centerline	37.97927	-78.96714		UNP to Aquatic Life	193	
saub115	152.4	Augusta County	02070005	UNT to Back Creek	Intermittent	4	84	1) Dam and Pump	37.97733	-78.96677		UNP to Aquatic Life	17	
saua053	152.9	Augusta County	02070005	Mills Creek	Perennial			1) Flume 2) Dam and Pump	37.97146	-78.96530	October 1 through March 31	Aquatic Life, I-VI	0	1.75
saua052	152.9	Augusta County	02070005	Mills Creek	Perennial	33	149	1) Flume 2) Dam and Pump	37.97117	-78.96555	October 1 through March 31	Aquatic Life, I-VI	140	
saua051	152.9	Augusta County	02070005	UNT to Mills Creek	Intermittent	5	160	1) Dam and Pump	37.97089	-78.96549		UNT to Aquatic Life	20	

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
saua067	153.4	Augusta County	02070005	Orebank Creek	Perennial	16	222	1) Flume 2) Dam and Pump	37.96633	-78.95904	October 1 through March 31	Aquatic Life, I-IV	66	0.78
saua069	153.6	Augusta County	02070005	UNT to Back Creek	Intermittent	3	78	1) Flume 2) Dam and Pump	37.96424	-78.95648		UNT to Aquatic Life, V-VI	13	
saua068	153.6	Augusta County	02070005	UNT to Back Creek	Perennial	7	100	1) Flume 2) Dam and Pump	37.96423	-78.95618		UNT to Aquatic Life, V-VI	29	14.29
saua064	155.2	Augusta County	02070005	UNT to Back Creek	Intermittent	5	152	1) Dam and Pump	37.94463	-78.96116		UNT to Aquatic Life, V-VI	23	
saua065	155.3	Augusta County	02070005	UNT to Back Creek	Intermittent	5	132	Not Crossed by Centerline	37.94314	-78.96200		UNT to Aquatic Life, V-VI	21	
saua066	155.3	Augusta County	02070005	UNT to Back Creek	Intermittent	6	156	Not Crossed by Centerline	37.94260	-78.96240		UNT to Aquatic Life, V-VI	26	
saua062	155.8	Augusta County	02070005	UNT to Back Creek	Perennial	11	148	1) Dam and Pump	37.93702	-78.96813		UNT to Aquatic Life, V-VI	45	11.66
saua061	155.9	Augusta County	02070005	UNT to Back Creek	Intermittent	7	149	Not Crossed by Centerline	37.93652	-78.96846		UNT to Aquatic Life, V-VI	30	
saua060	155.9	Augusta County	02070005	UNT to Back Creek	Intermittent	8	175	1) Flume 2) Dam and Pump	37.93641	-78.96866		UNT to Aquatic Life, V-VI	35	
saua059	155.9	Augusta County	02070005	UNT to Back Creek	Intermittent	7	193	1) Flume 2) Dam and Pump	37.93617	-78.96917		UNT to Aquatic Life, V-VI	28	
saua058	156.0	Augusta County	02070005	UNT to Back Creek	Intermittent		23	Not Crossed by Centerline	37.93583	-78.97077		UNT to Aquatic Life, V-VI	0	
saua057	156.0	Augusta County	02070005	UNT to Back Creek	Intermittent	4	96	1) Flume 2) Dam and Pump	37.93529	-78.97101		UNT to Aquatic Life, V-VI	18	
saua056	156.2	Augusta County	02070005	UNT to Back Creek	Perennial	5	136	1) Flume 2) Dam and Pump	37.93393	-78.97263		UNT to Aquatic Life, V-VI	20	11.03
saua054	156.4	Augusta County	02070005	UNT to Back Creek	Intermittent	3	91	1) Flume 2) Dam and Pump	37.93108	-78.97601		UNT to Aquatic Life, V-VI	11	
snea051	166.2	Nelson County	02080203	UNT to Rockfish river	Perennial	5	93	1) Flume 2) Dam and Pump	37.85751	-78.86609		UNT to Aquatic Life, V-VI	22	2.50
snea050	166.3	Nelson County	02080203	UNT to Rockfish river	Perennial	9	76	1) Flume 2) Dam and Pump	37.85741	-78.86584		UNT to Aquatic Life, V-VI	39	1.19
snea052	166.7	Nelson County	02080203	UNT to Rockfish river	Perennial	9	138	1) Flume 2) Dam and Pump	37.85580	-78.85803		UNT to Aquatic Life, V-VI	40	0.67

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
snea001	180.2	Nelson County	02080203	UNT to Buffalo Creek	Perennial	22	145	1) Flume 2) Dam and Pump	37.70511	-78.76826		Unclassified	94	3.94
snec002	180.5	Nelson County	02080203	UNT to Buffalo Creek	Intermittent	8	252	1) Dam and Pump	37.70131	-78.76540		Unclassified	34	
snec003	180.9	Nelson County	02080203	UNT to Buffalo Creek	Intermittent	1	157	1) Dam and Pump	37.69723	-78.76339		Unclassified	5	
snec004	181.5	Nelson County	02080203	UNT to Mayo Creek	Intermittent	4	352	1) Dam and Pump	37.68932	-78.75778		Unclassified	17	
snec005	181.9	Nelson County	02080203	Mayo Creek	Perennial	13	214	1) Dam and Pump	37.68477	-78.75340		Unclassified	54	0.36
snec006	182.6	Nelson County	02080203	UNT to Mayo Creek	Intermittent	10	162	1) Dam and Pump	37.67549	-78.75155		Unclassified	41	
snep002	182.9	Nelson County	02080203	UNT to Mayo Creek	Perennial		32	Not Crossed by Centerline	37.67166	-78.74771		Unclassified	0	
snep001	182.9	Nelson County	02080203	UNT to Mayo Creek	Perennial	3	205		37.67176	-78.74761		Unclassified	13	0.34
snep003	182.9	Nelson County	02080203	UNT to Mayo Creek	Perennial		90	Not Crossed by Centerline	37.67132	-78.74749		Unclassified	0	
snep005	183.3	Nelson County	02080203	UNT to Mayo Creek	Perennial	3	246	1) Dam and Pump	37.66798	-78.74248		Unclassified	12	0.20
snep006	183.4	Nelson County	02080203	UNT to Mayo Creek	Intermittent	2	150	1) Dam and Pump	37.66683	-78.74115		Unclassified	10	
sbup015	184.8	Nelson and Buckingham Counties	02080203	James River	Perennial	387	75	HDD	37.66138	-78.71839	February 15 through June 30	Aquatic Life, Migratory Fish Spawning and Nursery	0	4201.86
sbup014	185.9	Buckingham County	02080203	UNT to James River	Perennial	3	148	1) Dam and Pump	37.65198	-78.70422		UNT to Aquatic Life, Migratory Fish Spawning and Nursery	13	0.27
sbup012	185.9	Buckingham County	02080203	UNT to James River	Intermittent	3	86	1) Dam and Pump	37.65126	-78.70366		UNT to Aquatic Life, Migratory Fish Spawning and Nursery	14	

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
sbup011	186.1	Buckingham County	02080203	UNT to James River	Intermittent	2	127	1) Dam and Pump	37.64954	-78.70228		UNT to Aquatic Life, Migratory Fish Spawning and Nursery	9	
sbup010	186.1	Buckingham County	02080203	UNT to James River	Perennial	7	162	1) Dam and Pump 2) Flume	37.64855	-78.70158		UNT to Aquatic Life, Migratory Fish Spawning and Nursery	27	0.19
sbup007	186.4	Buckingham County	02080203	UNT to James River	Perennial		152	Not Crossed by Centerline	37.64515	-78.69965		UNT to Aquatic Life, Migratory Fish Spawning and Nursery	0	
sbup005	187.6	Buckingham County	02080203	Sycamore Creek	Perennial	3	107	1) Dam and Pump	37.62943	-78.69345		Unclassified	13	0.94
sbup004	187.9	Buckingham County	02080203	UNT to Sycamore Creek	Perennial	2	161	1) Dam and Pump	37.62527	-78.69216		Unclassified	8	0.65
sbua002	191.0	Buckingham County	02080203	UNT to Ripley Creek	Perennial	18	166	1) Dam and Pump	37.59570	-78.65640		Unclassified	74	0.40
sbuc050	191.4	Buckingham County	02080203	UNT to Ripley Creek	Intermittent	4	426	1) Dam and Pump	37.59022	-78.65602		Unclassified	18	
sbuc004	193.1	Buckingham County	02080203	UNT to Matthews Creek	Perennial	5	187	1) Dam and Pump	37.57147	-78.64438		Unclassified	22	0.42
sbuc005	194.1	Buckingham County	02080203	North River	Perennial	34	127	1) Dam and Pump 2) Flume	37.55832	-78.64009		Aquatic Life	141	22.74
sbuc007	194.9	Buckingham County	02080203	UNT to North River	Intermittent	14	160	1) Dam and Pump 2) Flume	37.54963	-78.63146		UNT to Aquatic Life	59	
sbuk005	195.1	Buckingham County	02080203	UNT to North River	Perennial	7	127	1) Dam and Pump 2) Flume	37.54916	-78.62901		UNT to Aquatic Life	30	25.65

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
sbuk004	195.5	Buckingham County	02080203	UNT to North River	Ephemeral	3	171	1) Dam and Pump	37.54440	-78.62242		UNT to Aquatic Life	11	
sbuk003	196.1	Buckingham County	02080203	UNT to North River	Intermittent	1	76	1) Dam and Pump	37.54179	-78.61370		UNT to Aquatic Life	4	
sbuk001	196.3	Buckingham County	02080203	UNT to North River	Intermittent	2	137	1) Dam and Pump	37.54124	-78.61017		UNT to Aquatic Life	9	
sbuk006	196.9	Buckingham County	02080203	UNT to Slate River	Ephemeral	1	82	1) Dam and Pump	37.53374	-78.60301		UNT to Aquatic Life	4	
sbuk009	197.4	Buckingham County	02080203	UNT to Slate River	Perennial	9	254	1) Dam and Pump	37.52809	-78.59791		UNT to Aquatic Life	39	0.49
sbuk010	197.4	Buckingham County	02080203	UNT to Slate River	Ephemeral		31	Not Crossed by Centerline	37.52778	-78.59741		UNT to Aquatic Life	0	
sbuk012	197.9	Buckingham County	02080203	Slate River	Perennial	36	185	1) Dam and Pump 2) Flume	37.52309	-78.59191		Aquatic Life	153	43.35
sbuk013	198.1	Buckingham County	02080203	UNT to Slate River	Ephemeral	1	45	1) Dam and Pump	37.52160	-78.58919		UNT to Aquatic Life	5	
sbuk014	198.1	Buckingham County	02080203	UNT to Slate River	Perennial	4	280	1) Dam and Pump	37.52158	-78.58923		UNT to Aquatic Life	18	43.28
sbuk015	198.1	Buckingham County	02080203	UNT to Slate River	Ephemeral		73	Not Crossed by Centerline	37.52132	-78.58848		UNT to Aquatic Life	0	
sbua200	198.3	Buckingham County	02080203	UNT to Licky Branch	Intermittent	12	176	1) Dam and Pump	37.51840	-78.58747		Unclassified	52	
sbua202	198.5	Buckingham County	02080203	UNT to Licky Branch	Intermittent		37	Not Crossed by Centerline	37.51559	-78.58759		Unclassified	0	

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
sbua201	198.5	Buckingham County	02080203	Licky Branch	Perennial	19	218	1) Flume 2) Dam and Pump	37.51539	-78.58747		Unclassified	80	1.68
sbul012	199.4	Buckingham County	02080203	UNT to Licky Creek	Ephemeral		298	Not Crossed by Centerline	37.50573	-78.57897		Unclassified	0	
sbul013	200.3	Buckingham County	02080203	UNT to Pitman Creek	Intermittent	4	158	1) Dam and Pump	37.49214	-78.57704		Unclassified	15	
sbup002	201.2	Buckingham County	02080203	Horsepen Creek	Perennial	6	100	1) Dam and Pump	37.48683	-78.56567		Unclassified	24	0.60
sbup001	201.3	Buckingham County	02080203	UNT to Horsepen Creek	Intermittent	3	167	1) Dam and Pump	37.48547	-78.56347		Unclassified	13	
sbul014	201.8	Buckingham County	02080203	UNT to Horsepen Creek	Intermittent	4	163	1) Dam and Pump	37.48290	-78.55602		Unclassified	16	
sbul015	201.8	Buckingham County	02080203	UNT to Horsepen Creek	Perennial	8	90	1) Dam and Pump	37.48290	-78.55497		Unclassified	33	0.27
sbul004	202.7	Buckingham County	02080205	UNT to Willis River	Ephemeral	3	414	1) Dam and Pump	37.47860	-78.54154		UNT to Aquatic Life	12	
sbul003	203.6	Buckingham County	02080205	UNT to Willis River	Perennial	8	78	1) Dam and Pump	37.47089	-78.52780		UNT to Aquatic Life	34	1.93
sbul005	204.5	Buckingham County	02080205	UNT to Willis River	Ephemeral	2	151	1) Dam and Pump	37.46327	-78.51502		UNT to Aquatic Life	9	
sbul006	204.5	Buckingham County	02080205	UNT to Willis River	Ephemeral	1	154	1) Dam and Pump	37.46314	-78.51487		UNT to Aquatic Life	5	
sbul007	204.7	Buckingham County	02080205	UNT to Willis River	Perennial	13	199	1) Dam and Pump	37.46166	-78.51247		UNT to Aquatic Life	55	0.46

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
sbul008	204.8	Buckingham County	02080205	UNT to Willis River	Intermittent	5	139	1) Dam and Pump	37.46098	-78.51122		UNT to Aquatic Life	22	
sbul009	205.1	Buckingham County	02080205	Willis River	Perennial	25	125	1) Dam and Pump 2) Flume	37.45782	-78.50788		Aquatic Life	103	21.28
sbul010	205.2	Buckingham County	02080205	UNT to Willis River	Intermittent	7	241	1) Dam and Pump	37.45609	-78.50647		UNT to Aquatic Life	30	
sbuk041	205.6	Buckingham County	02080205	UNT to Little Willis River	Ephemeral		29	Not Crossed by Centerline	37.45165	-78.50211		UNT to Aquatic Life	0	
sbuk043	205.7	Buckingham County	02080205	UNT to Little Willis River	Perennial		6	Not Crossed by Centerline	37.45080	-78.50206		UNT to Aquatic Life	0	
sbuk042	205.7	Buckingham County	02080205	UNT to Little Willis River	Intermittent	4	2	Dam and Pump	37.45073	-78.50221		UNT to Aquatic Life	18	
sbuk043	205.7	Buckingham County	02080205	UNT to Little Willis River	Perennial	10	209	Dam and Pump	37.45071	-78.50212		UNT to Aquatic Life	41	39.13
sbuk044	205.7	Buckingham County	02080205	UNT to Little Willis River	Intermittent		56	Not Crossed by Centerline	37.45041	-78.50222		UNT to Aquatic Life	0	
sbuk045	205.9	Buckingham County	02080205	UNT to Little Willis River	Perennial	5	160	1) Dam and Pump	37.44800	-78.50121		UNT to Aquatic Life	20	0.19
sbuk046	205.9	Buckingham County	02080205	UNT to Little Willis River	Intermittent	4	142	1) Dam and Pump	37.44760	-78.50100		UNT to Aquatic Life	15	
sbul022	206.5	Buckingham County	02080205	UNT to Willis River	Intermittent		78	Not Crossed by Centerline	37.44029	-78.49418		UNT to Aquatic Life	0	
sbul021	206.9	Buckingham County	02080205	UNT to Willis River	Perennial	9	143	1) Dam and Pump	37.43718	-78.48960		UNT to Aquatic Life	37	0.48

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
sbuk024	207.1	Buckingham County	02080205	UNT to Bishop Creek	Intermittent		27	Not Crossed by Centerline	37.43515	-78.48561		Unclassified	0	
sbuk026	207.2	Buckingham County	02080205	UNT to Bishop Creek	Intermittent	3	179	1) Dam and Pump	37.43423	-78.48471		Unclassified	14	
sbuk027	207.3	Buckingham County	02080205	UNT to Bishop Creek	Ephemeral	2	135	1) Dam and Pump	37.43384	-78.48414		Unclassified	9	
sbuk028	207.3	Buckingham County	02080205	UNT to Bishop Creek	Intermittent	10	192	1) Dam and Pump	37.43306	-78.48317		Unclassified	43	
sbuk029	207.4	Buckingham County	02080205	UNT to Bishop Creek	Ephemeral	2	157	1) Dam and Pump	37.43236	-78.48220		Unclassified	9	
sbuk030	207.8	Buckingham County	02080205	Bishop Creek	Perennial	8	133	1) Dam and Pump	37.42885	-78.47694		Unclassified	34	4.13
sbuk031	208.2	Buckingham County	02080205	UNT to Little Willis River	Perennial	5	192	1) Dam and Pump	37.42520	-78.47033		UNT to Aquatic Life	22	0.33
sbuk032	208.3	Buckingham County	02080205	UNT to Little Willis River	Perennial		9	Not Crossed by Centerline	37.42479	-78.47051		UNT to Aquatic Life	0	
sbuk033	208.3	Buckingham County	02080205	UNT to Little Willis River	Ephemeral		98	Not Crossed by Centerline	37.42448	-78.47022		UNT to Aquatic Life	0	
sbuk035	208.6	Buckingham County	02080205	UNT to Little Willis River	Intermittent	4	140	1) Dam and Pump	37.41974	-78.46708		UNT to Aquatic Life	17	
sbuk020	208.9	Buckingham County	02080205	UNT to Little Willis River	Ephemeral		71	Not Crossed by Centerline	37.41573	-78.46562		UNT to Aquatic Life	0	
sbuk037	209.5	Buckingham County	02080205	Little Willis River	Perennial	16	158	1) Dam and Pump 2) Flume	37.41059	-78.45836		Aquatic Life	66	7.03

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
sbuk040	209.9	Buckingham County	02080205	UNT to Gillis Creek	Intermittent	16	209	Dam and Pump	37.40561	-78.45338		Unclassified	68	
sbuk019	210.1	Buckingham County	02080205	Gills Creek	Perennial	6	159	1) Dam and Pump	37.40335	-78.45176		Unclassified	27	9.04
sbuk018	211.0	Buckingham County	02080205	UNT to Little Willis River	Ephemeral	1	103	1) Dam and Pump	37.39427	-78.44384		Unclassified	6	
sbuk017	211.4	Buckingham County	02080205	Perkins Creek	Perennial	27	122	1) Dam and Pump 2) Flume	37.39182	-78.43703		Unclassified	114	3.55
sbuk016	211.7	Buckingham County	02080205	UNT to Perkins Creek	Ephemeral	3	104	1) Dam and Pump	37.38999	-78.43181		Unclassified	13	
scuk029	212.0	Cumberland County	02080205	UNT to Perkins Creek	Ephemeral	3	174	1) Dam and Pump	37.38683	-78.42645		Unclassified	13	
scuk027	212.2	Cumberland County	02080205	UNT to Perkins Creek	Intermittent	9	146	1) Dam and Pump 2) Flume	37.38553	-78.42436		Unclassified	39	
scuk026	212.4	Cumberland County	02080205	UNT to Perkins Creek	Intermittent	14	526	1) Dam and Pump	37.38398	-78.42197		Unclassified	59	
scuk001	212.9	Cumberland County	02080205	UNT to Little Willis River	Ephemeral	4	129	1) Dam and Pump	37.37943	-78.41344		Unclassified	17	
scuk002	213.0	Cumberland County	02080205	UNT to Little Willis River	Ephemeral		3	Not Crossed by Centerline	37.37943	-78.41190		Unclassified	0	
scuk004	213.7	Cumberland County	02080207	UNT to Dry Creek	Ephemeral	6	255	1) Dam and Pump	37.37103	-78.41036		Unclassified	23	
scuk005	213.9	Cumberland County	02080207	UNT to Dry Creek	Intermittent			Not Crossed by Centerline	37.36771	-78.40990		Unclassified	0	

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
scuk007	214.0	Cumberland County	02080207	UNT to Dry Creek	Ephemeral	2	96	1) Dam and Pump	37.36715	-78.40873		Unclassified	9	
scuk008	214.0	Cumberland County	02080207	UNT to Dry Creek	Ephemeral	2	115	1) Dam and Pump	37.36709	-78.40865		Unclassified	9	
scuk009	214.0	Cumberland County	02080207	UNT to Dry Creek	Intermittent		21	Not Crossed by Centerline	37.36678	-78.40886		Unclassified	0	
scuk006	214.0	Cumberland County	02080207	UNT to Dry Creek	Intermittent		35	Not Crossed by Centerline	37.36677	-78.40891		Unclassified	0	
scuk010	214.2	Cumberland County	02080207	UNT to Dry Creek	Intermittent	5	136	1) Dam and Pump	37.36492	-78.40595		Unclassified	19	
scuc001	214.3	Cumberland County	02080207	UNT to Dry Creek	Intermittent	4	171	1) Dam and Pump	37.36415	-78.40424		Unclassified	15	
scuc002	214.5	Cumberland County	02080207	UNT to Dry Creek	Ephemeral	6	481	1) Dam and Pump	37.36311	-78.40022		Unclassified	25	
scuc003	214.6	Cumberland County	02080207	UNT to Dry Creek	Intermittent	18	179	1) Dam and Pump	37.36291	-78.39818		Unclassified	76	
scuk030	215.0	Cumberland County	02080207	UNT to Dry Creek	Ephemeral	3	163	1) Dam and Pump	37.36411	-78.39185		Unclassified	11	
scuk032B	215.1	Cumberland County	02080207	UNT to Dry Creek	Intermittent		23	Not Crossed by Centerline	37.36408	-78.38995		Unclassified	0	
scuk032A	215.1	Cumberland County	02080207	UNT to Dry Creek	Ephemeral	4	107	1) Dam and Pump	37.36451	-78.38975		Unclassified	17	
scuk033	215.2	Cumberland County	02080207	Dry Creek	Perennial	10	227	1) Dam and Pump	37.36421	-78.38918		Unclassified	41	0.54

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
scuk035	215.2	Cumberland County	02080207	UNT to Dry Creek	Ephemeral		104	Not Crossed by Centerline	37.36410	-78.38903		Unclassified	0	
scuk037	215.4	Cumberland County	02080207	UNT to Dry Creek	Ephemeral	4	82	1) Dam and Pump	37.36358	-78.38530		Unclassified	17	
scuk039b	215.9	Cumberland County	02080207	UNT to Green Creek	Intermittent		43	Not Crossed by Centerline	37.36119	-78.37611		UNT to Aquatic Life	0	
scuk039a	215.9	Cumberland County	02080207	UNT to Green Creek	Ephemeral	3	284	Dam and Pump	37.36072	-78.37581		UNT to Aquatic Life	13	
scuk041	215.9	Cumberland County	02080207	UNT to Green Creek	Ephemeral		50	Not Crossed by Centerline	37.36069	-78.37615		UNT to Aquatic Life	0	
scuk042	216.2	Cumberland County	02080207	UNT to Green Creek	Perennial	10	171	1) Dam and Pump	37.36019	-78.37166		UNT to Aquatic Life	42	0.32
scua006	216.8	Cumberland County	02080207	UNT to Green Creek	Perennial	7	134	1) Dam and Pump	37.35669	-78.36041		UNT to Aquatic Life	29	0.48
scuc004	217.0	Cumberland County	02080207	UNT to Green Creek	Intermittent	7	146	1) Dam and Pump	37.35593	-78.35776		UNT to Aquatic Life	29	
scua001	217.4	Cumberland County	02080207	UNT to Green Creek	Intermittent		54	Not Crossed by Centerline	37.35243	-78.35248		UNT to Aquatic Life	0	
scua003	217.6	Cumberland County	02080207	UNT to Green Creek	Intermittent		111	Not Crossed by Centerline	37.35070	-78.35034		UNT to Aquatic Life	0	
scua004	217.6	Cumberland County	02080207	UNT to Green Creek	Perennial	9	277	1) Dam and Pump	37.35054	-78.34974		UNT to Aquatic Life	39	0.17
scua005	217.6	Cumberland County	02080207	UNT to Green Creek	Intermittent	2	157	1) Dam and Pump	37.34987	-78.34890		UNT to Aquatic Life	10	

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
scuk025	218.1	Cumberland County	02080207	UNT to Green Creek	Ephemeral	1	170	1) Dam and Pump	37.34509	-78.34417		UNT to Aquatic Life	6	
scuk024	218.1	Cumberland County	02080207	UNT to Green Creek	Perennial	20	237	1) Dam and Pump 2) Flume	37.34520	-78.34382		UNT to Aquatic Life	85	0.50
scuk023	218.2	Cumberland County	02080207	UNT to Green Creek	Intermittent	3	174	1) Dam and Pump	37.34432	-78.34275		UNT to Aquatic Life	13	
scuk022	218.4	Cumberland County	02080207	UNT to Green Creek	Intermittent	3	144	1) Dam and Pump	37.34176	-78.34008		UNT to Aquatic Life	13	
scuk021	218.6	Cumberland County	02080207	UNT to Green Creek	Ephemeral		114	Not Crossed by Centerline	37.33979	-78.33847		UNT to Aquatic Life	0	
scuk020	218.7	Cumberland County	02080207	UNT to Green Creek	Intermittent	3	295	1) Dam and Pump	37.33829	-78.33640		UNT to Aquatic Life	11	
scuk015	219.2	Cumberland County	02080207	UNT to Green Creek	Perennial	39	214	1) Dam and Pump 2) Flume	37.33401	-78.32997		UNT to Aquatic Life	164	4.77
scuk016	219.4	Cumberland County	02080207	UNT to Green Creek	Ephemeral		32	Not Crossed by Centerline	37.33221	-78.32720		UNT to Aquatic Life	0	
scuk017	219.4	Cumberland County	02080207	Green Creek	Perennial	43	210	1) Dam and Pump 2) Flume	37.33184	-78.32605		Aquatic Life	183	4.89
scuk018	219.5	Cumberland County	02080207	UNT to Green Creek	Intermittent	2	105	1) Dam and Pump	37.33130	-78.32530		UNT to Aquatic Life	10	
scuk019	219.6	Cumberland County	02080207	UNT to Green Creek	Intermittent	3	167	1) Dam and Pump	37.33079	-78.32454		UNT to Aquatic Life	14	
scuk014	219.8	Cumberland County	02080207	UNT to Green Creek	Intermittent	4	170	1) Dam and Pump	37.32893	-78.32158		UNT to Aquatic Life	17	

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
scuk013	219.8	Cumberland County	02080207	UNT to Green Creek	Intermittent		163	Not Crossed by Centerline	37.32886	-78.32110		UNT to Aquatic Life	0	
scuk012	220.3	Cumberland County	02080207	UNT to Green Creek	Ephemeral			1) Dam and Pump	37.32593	-78.31367		UNT to Aquatic Life	0	
scuk011	220.8	Cumberland and Prince Edward Counties	02080207	Appomattox River	Perennial	105	135	1) Cofferdam	37.32187	-78.30574	May 15 through July 31	Aquatic Life	441	471.29
spek003	220.8	Prince Edward County	02080207	UNT to Appomattox River	Perennial		9	Not Crossed by Centerline	37.32153	-78.30581		UNT to Aquatic Life	0	
spek002	221.0	Prince Edward County	02080207	UNT to Appomattox River	Ephemeral	3	155	1) Dam and Pump	37.32046	-78.30313		UNT to Aquatic Life	12	
spek001	221.1	Prince Edward County	02080207	UNT to Appomattox River	Ephemeral	1	133	1) Dam and Pump	37.31935	-78.30096		UNT to Aquatic Life	4	
spek004	221.6	Prince Edward County	02080207	UNT to Appomattox River	Perennial	8	191	1) Dam and Pump	37.31550	-78.29338		UNT to Aquatic Life	35	0.17
spek005	221.7	Prince Edward County	02080207	UNT to Appomattox River	Ephemeral	2	79	1) Dam and Pump	37.31448	-78.29113		UNT to Aquatic Life	7	
spek006	221.8	Prince Edward County	02080207	UNT to Appomattox River	Perennial	14	238	1) Dam and Pump	37.31438	-78.29111		UNT to Aquatic Life	58	0.20
spek007	222.0	Prince Edward County	02080207	UNT to Appomattox River	Intermittent	2	132	1) Dam and Pump	37.31258	-78.28715		UNT to Aquatic Life	8	
spek008	222.1	Prince Edward County	02080207	UNT to Appomattox River	Intermittent	2	115	1) Dam and Pump	37.31162	-78.28555		UNT to Aquatic Life	9	

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
spek009	222.2	Prince Edward County	02080207	UNT to Appomattox River	Perennial	4	130	1) Dam and Pump	37.31027	-78.28519		UNT to Aquatic Life	17	0.46
spek010	222.4	Prince Edward County	02080207	UNT to Appomattox River	Perennial	11	149	1) Dam and Pump	37.30821	-78.28379		UNT to Aquatic Life	47	0.24
spek011	222.5	Prince Edward County	02080207	UNT to Appomattox River	Intermittent	4	138	1) Dam and Pump	37.30647	-78.28263		UNT to Aquatic Life	18	
spek012	222.6	Prince Edward County	02080207	UNT to Appomattox River	Intermittent	2	157	1) Dam and Pump	37.30581	-78.28240		UNT to Aquatic Life	10	
spea006	223.4	Prince Edward County	02080207	UNT to Little Saylers Creek	Intermittent	4	158	1) Dam and Pump	37.30132	-78.26867		UNT to Aquatic Life	18	
spea002	223.8	Prince Edward County	02080207	UNT to Little Saylers Creek	Intermittent	2	69	1) Dam and Pump	37.29948	-78.26365		UNT to Aquatic Life	9	
spea003	223.9	Prince Edward County	02080207	UNT to Little Saylers Creek	Perennial	6	163	1) Dam and Pump	37.29859	-78.26114		UNT to Aquatic Life	27	0.26
spea004	223.9	Prince Edward County	02080207	UNT to Little Saylers Creek	Intermittent		8	Not Crossed by Centerline	37.29842	-78.26134		UNT to Aquatic Life	0	
spea005	224.1	Prince Edward County	02080207	UNT to Little Saylers Creek	Intermittent	2	142	1) Dam and Pump	37.29716	-78.25847		UNT to Aquatic Life	9	
spec001	225.2	Prince Edward County	02080207	UNT to Little Saylers Creek	Intermittent	3	168	1) Dam and Pump	37.28767	-78.24255		UNT to Aquatic Life	14	
spea007	225.5	Prince Edward County	02080207	UNT to Little Saylers Creek	Intermittent	2	180	1) Dam and Pump	37.28525	-78.23753		UNT to Aquatic Life	9	
snok001	226.6	Nottoway County	02080207	Saylers Creek	Perennial	12	135	1) Dam and Pump 2) Flume	37.27479	-78.22401		Unclassified	51	2.70

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
snok002	227.2	Nottoway County	02080207	UNT to Ellis Creek	Intermittent	4	103	Dam and Pump	37.27141	-78.21380		UNT to Aquatic Life	16	
snok003	227.6	Nottoway County	02080207	UNT to Ellis Creek	Intermittent	4	152	Dam and Pump	37.27027	-78.20837		UNT to Aquatic Life	15	
snom011	227.8	Nottoway County	02080207	UNT to Ellis Creek	Ephemeral	4	166	Dam and Pump	37.26920	-78.20502		UNT to Aquatic Life	15	
snok005	228.2	Nottoway County	02080207	Ellis Creek	Perennial	5	128	1) Dam and Pump 2) Flume	37.26594	-78.19711		Aquatic Life	21	6.17
snok004	228.6	Nottoway County	02080207	UNT to Ellis Creek	Intermittent		2	Not Crossed by Centerline	37.26349	-78.19183		UNT to Aquatic Life	0	
snok006	228.8	Nottoway County	02080207	UNT to Flat Creek	Intermittent	5	146	Dam and Pump	37.26151	-78.18758		UNT to Aquatic Life	21	
snok007	229.0	Nottoway County	02080207	UNT to Flat Creek	Perennial	5	172	Dam and Pump	37.26069	-78.18584		UNT to Aquatic Life	22	13.89
snok008	229.2	Nottoway County	02080207	Flat Creek	Perennial	38	321	1) Dam and Pump 2) Flume	37.25838	-78.18145		UNT to Aquatic Life	161	13.97
snok009	229.9	Nottoway County	02080207	UNT to Flat Creek	Ephemeral		94	Not Crossed by Centerline	37.25442	-78.17124		UNT to Aquatic Life	0	
snom007	230.7	Nottoway County	02080207	UNT to Little Creek	Perennial		30	Not Crossed by Centerline	37.25090	-78.15683		UNT to Aquatic Life	0	
snom006	230.7	Nottoway County	02080207	Little Creek	Perennial	10	145	1) Dam and Pump 2) Flume	37.25114	-78.15656		UNT to Aquatic Life	43	1.72
snom005	230.9	Nottoway County	02080207	UNT to Little Creek	Ephemeral	1	151	1) Dam and Pump	37.24974	-78.15401		UNT to Aquatic Life	4	
snol002	231.8	Nottoway County	02080207	UNT to West Creek	Ephemeral	3	229	1) Dam and Pump	37.24502	-78.13984		Unclassified	13	
snol001	231.8	Nottoway County	02080207	UNT to West Creek	Perennial	4	412	1) Dam and Pump	37.24482	-78.13918		Unclassified	18	0.38
snol003	231.9	Nottoway County	02080207	UNT to West Creek	Intermittent	7	219	1) Dam and Pump	37.24417	-78.13684		Unclassified	30	
snol005	232.0	Nottoway County	02080207	UNT to West Creek	Perennial		42	Not Crossed by Centerline	37.24335	-78.13563		Unclassified	0	
snol004	232.0	Nottoway County	02080207	West Creek	Perennial	7	231	1) Dam and Pump	37.24352	-78.13531		Unclassified	28	0.52

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
snol006	232.2	Nottoway County	02080207	UNT to West Creek	Ephemeral	2	164	1) Dam and Pump	37.24300	-78.13278		Unclassified	9	
snol007	232.4	Nottoway County	02080207	UNT to West Creek	Perennial	2	188	1) Dam and Pump	37.24248	-78.12940		Unclassified	9	1.69
snol008	232.4	Nottoway County	02080207	UNT to West Creek	Perennial	4	179	1) Dam and Pump	37.24215	-78.12794		Unclassified	17	1.75
snok021	232.7	Nottoway County	02080207	UNT to West Creek	Intermittent		12	Not Crossed by Centerline	37.24010	-78.12363		Unclassified	0	
snok020	232.7	Nottoway County	02080207	West Creek	Perennial	11	157	1) Dam and Pump 2) Flume	37.23973	-78.12368		Unclassified	46	2.08
snok022	232.8	Nottoway County	02080207	UNT to West Creek	Intermittent		141	Not Crossed by Centerline	37.23923	-78.12346		Unclassified	0	
snok024	233.0	Nottoway County	02080207	UNT to West Creek	Ephemeral	2	73	1) Dam and Pump	37.23746	-78.12054		Unclassified	10	
snok023	233.0	Nottoway County	02080207	UNT to West Creek	Intermittent	3	184	1) Dam and Pump	37.23738	-78.12035		Unclassified	13	
snok025	233.1	Nottoway County	02080207	UNT to West Creek	Ephemeral	5	205	1) Dam and Pump	37.23678	-78.11872		Unclassified	20	
snok026a	233.1	Nottoway County	02080207	UNT to West Creek	Ephemeral		96	Not Crossed by Centerline	37.23656	-78.11783		Unclassified	0	
snok027	233.4	Nottoway County	02080207	UNT to Little West Creek	Perennial	8	270	1) Dam and Pump	37.23394	-78.11465		Unclassified	33	0.32
snok028	234.2	Nottoway County	02080207	Little West Creek	Perennial	21	130	1) Dam and Pump 2) Flume	37.22538	-78.10528		Unclassified	87	0.92
snok029b	234.3	Nottoway County	02080207	UNT to Little West Creek	Intermittent	14	443	Dam and Pump	37.22459	-78.10424		Unclassified	58	
snom008	235.1	Nottoway County	02080207	UNT to Deep Creek	Ephemeral	2	144	Dam and Pump	37.21407	-78.09820		UNT to Aquatic Life	9	
snom009	235.2	Nottoway County	02080207	UNT to Deep Creek	Ephemeral	2	139	Dam and Pump	37.21233	-78.09784		UNT to Aquatic Life	9	
snom010	235.5	Nottoway County	02080207	UNT to Deep Creek	Intermittent	3	94	Dam and Pump	37.20804	-78.09619		UNT to Aquatic Life	14	
snok103	235.7	Nottoway County	02080207	UNT to Deep Creek	Ephemeral	6	138	Dam and Pump	37.20677	-78.09479		UNT to Aquatic Life	27	

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
snok102	235.7	Nottoway County	02080207	UNT to Deep Creek	Perennial	6	147	Dam and Pump	37.20623	-78.09392		UNT to Aquatic Life	26	9.54
snok100	236.0	Nottoway County	02080207	Deep Creek	Perennial	25	112	1) Dam and Pump 2) Flume	37.20270	-78.08996		Aquatic Life	104	10.12
snok101	236.1	Nottoway County	02080207	UNT to Deep Creek	Intermittent	5	161	Dam and Pump	37.20250	-78.09002		UNT to Aquatic Life	22	
snoc001	236.2	Nottoway County	02080207	UNT to Deep Creek	Perennial	8	274	Dam and Pump	37.20102	-78.08747		UNT to Aquatic Life	34	10.24
snol021	236.5	Nottoway County	02080207	UNT to Deep Creek	Intermittent	35	161	Dam and Pump	37.19892	-78.08315		UNT to Aquatic Life	147	
snol020	236.9	Nottoway County	02080207	UNT to Deep Creek	Intermittent	4	146	Dam and Pump	37.19738	-78.07737		UNT to Aquatic Life	17	
snol019	237.0	Nottoway County	02080207	UNT to Deep Creek	Perennial	5	150	Dam and Pump	37.19670	-78.07509		UNT to Aquatic Life	22	0.33
snok010	238.3	Nottoway County	02080207	UNT to Winningham Creek	Ephemeral	3	231	Dam and Pump	37.18480	-78.06120		Unclassified	12	
snok011	238.6	Nottoway County	02080207	Winningham Creek	Perennial	60	97	1) Cofferdam 2) Dam and Pump	37.18079	-78.05627		Unclassified	253	8.08
snok012	238.8	Nottoway County	02080207	UNT to Winningham Creek	Intermittent	3	197	Dam and Pump	37.17945	-78.05376		Unclassified	13	
snok014	239.1	Nottoway County	02080207	UNT to Winningham Creek	Perennial	6	131	Dam and Pump	37.17569	-78.05053		Unclassified	26	0.63
snok016	239.9	Nottoway County	02080207	UNT to Woody Creek	Perennial	6	213	Dam and Pump	37.16681	-78.04202		Unclassified	24	0.19
snok018	239.9	Nottoway County	02080207	UNT to Woody Creek	Ephemeral	2	149	Dam and Pump	37.16632	-78.04122		Unclassified	9	
onok001	240.0	Nottoway County	02080207	UNP to Woody Creek				Not Crossed by Centerline	37.16600	-78.04109		Unclassified	0	
snok019	240.6	Nottoway County	02080207	Woody Creek	Perennial	13	126	1) Flume 2) Dam and Pump	37.15962	-78.03286		Unclassified	54	7.01
snoc004	242.6	Nottoway County	02080207	UNT to Cellar Creek	Perennial	6	187	Dam and Pump	37.14097	-78.00586		Unclassified	25	0.16

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
snoc003	242.9	Nottoway County	02080207	Cellar Creek	Perennial	14	97	1) Dam and Pump 2) Flume	37.13975	-78.00085		Unclassified	60	7.84
snoc002	242.9	Nottoway County	02080207	UNT to Cellar Creek	Intermittent	3	109	1) Dam and Pump	37.13961	-78.00049		Unclassified	14	
snoa001	243.3	Nottoway County	02080207	UNT to Cellar Creek	Intermittent	8	203	1) Dam and Pump	37.13769	-77.99477		Unclassified	33	
snoa002	243.3	Nottoway County	02080207	UNT to Cellar Creek	Intermittent		21	Not Crossed by Centerline	37.13738	-77.99475		Unclassified	0	
snol009	244.2	Nottoway County	02080207	Less Creek	Perennial	5	159	1) Dam and Pump	37.13289	-77.97916		Unclassified	23	4.23
snol010	244.6	Nottoway County	02080207	UNT to Less Creek	Perennial	7	156	1) Dam and Pump	37.13083	-77.97221		Unclassified	29	0.42
snol011	244.9	Nottoway County	02080207	UNT to Less Creek	Ephemeral	2	210	1) Dam and Pump	37.12975	-77.96828		Unclassified	9	
snol012	245.1	Nottoway County	02080207	UNT to Less Creek	Intermittent	5	211	1) Dam and Pump	37.12871	-77.96508		Unclassified	21	
snol013	245.4	Nottoway County	02080207	UNT to Bland Creek	Intermittent	4	135	1) Dam and Pump	37.12755	-77.95909		Unclassified	19	
snol014	245.4	Nottoway County	02080207	UNT to Bland Creek	Ephemeral	2	173	1) Dam and Pump	37.12777	-77.95920		Unclassified	10	
snol015	245.5	Nottoway County	02080207	UNT to Bland Creek	Perennial	5	210	1) Dam and Pump	37.12770	-77.95717		Unclassified	20	0.96
snol016	245.6	Nottoway County	02080207	UNT to Bland Creek	Perennial	15	132	1) Dam and Pump	37.12772	-77.95616		Unclassified	63	0.96
snol017	245.6	Nottoway County	02080207	UNT to Bland Creek	Ephemeral		157	Not Crossed by Centerline	37.12742	-77.95462		Unclassified	0	
snol018	246.0	Nottoway County	02080207	UNT to Bland Creek	Perennial	6	101	1) Dam and Pump	37.12843	-77.94838		Unclassified	24	0.78
snok030b	247.2	Nottoway County	02080207	UNT to Bland Creek	Intermittent		506	Not Crossed by Centerline	37.12473	-77.93010		Unclassified	0	
snok031	247.2	Nottoway County	02080207	UNT to Bland Creek	Ephemeral	2	118	1) Dam and Pump	37.12435	-77.93019		Unclassified	9	
snok030a	247.2	Nottoway County	02080207	UNT to Bland Creek	Ephemeral		118	Not Crossed by Centerline	37.12405	-77.92936		Unclassified	0	

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
snom001	247.8	Nottoway County	03010201	UNT to Butterwood Creek	Ephemeral	3	358	1) Dam and Pump	37.12018	-77.92187		Unclassified	11	
snom002	248.2	Nottoway County	03010201	UNT to Twin Lakes	Intermittent	8	92	1) Dam and Pump	37.11869	-77.91475		Unclassified	34	
snom003	248.4	Nottoway County	03010201	UNT to Twin Lakes	Ephemeral	3	155	1) Dam and Pump	37.11876	-77.91112		Unclassified	13	
snom004	248.6	Nottoway County	03010201	UNT to Twin Lakes	Ephemeral	3	100	1) Dam and Pump	37.11895	-77.90742		Unclassified	14	
sdim002	249.1	Dinwiddie County	03010201	UNT to Butterwood Creek	Ephemeral	2	111	1) Dam and Pump	37.11906	-77.89838		UNT to Aquatic Life	8	
sdim001	249.1	Dinwiddie County	03010201	Butterwood Creek	Perennial	4	97	1) Dam and Pump	37.11917	-77.89817	March 15 through June 30	Aquatic Life	18	0.91
sdim003	249.6	Dinwiddie County	03010201	UNT to Butterwood Creek	Intermittent	2	163	1) Dam and Pump	37.11935	-77.88898		UNT to Aquatic Life	10	
sdim004	249.7	Dinwiddie County	03010201	UNT to Butterwood Creek	Intermittent	1	132	1) Dam and Pump	37.11899	-77.88775		UNT to Aquatic Life	4	
sdim005	249.9	Dinwiddie County	03010201	UNT to Butterwood Creek	Intermittent	10	196	1) Dam and Pump	37.11768	-77.88406		UNT to Aquatic Life	40	
sdim008	250.2	Dinwiddie County	03010201	UNT to Butterwood Creek	Ephemeral	5	114	1) Dam and Pump	37.11552	-77.87844		UNT to Aquatic Life	22	
sdim011	250.5	Dinwiddie County	03010201	UNT to Butterwood Creek	Ephemeral	2	157	1) Dam and Pump	37.11393	-77.87451		UNT to Aquatic Life	9	
sdim014	250.7	Dinwiddie County	03010201	UNT to Butterwood Creek	Intermittent	2	156	1) Dam and Pump	37.11275	-77.87218		UNT to Aquatic Life	9	
sdim013	251.2	Dinwiddie County	03010201	UNT to Butterwood Creek	Intermittent	3	148	1) Dam and Pump	37.10897	-77.86221		UNT to Aquatic Life	13	

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
sdim012	251.5	Dinwiddie County	03010201	UNT to Butterwood Creek	Intermittent	4	193	1) Dam and Pump	37.10693	-77.85813		UNT to Aquatic Life	17	
sdim015	251.6	Dinwiddie County	03010201	UNT to Butterwood Creek	Ephemeral		9	Not Crossed by Centerline	37.10642	-77.85739		UNT to Aquatic Life	0	
sdim016	251.7	Dinwiddie County	03010201	UNT to Butterwood Creek	Ephemeral	2	156	1) Dam and Pump	37.10499	-77.85693		UNT to Aquatic Life	10	
sdim017	251.8	Dinwiddie County	03010201	UNT to Butterwood Creek	Ephemeral	2	147	1) Dam and Pump	37.10364	-77.85617		UNT to Aquatic Life	9	
sdim018	252.0	Dinwiddie County	03010201	UNT to Butterwood Creek	Ephemeral	2	125	1) Dam and Pump	37.10005	-77.85370		UNT to Aquatic Life	9	
sdim019	252.1	Dinwiddie County	03010201	UNT to Butterwood Creek	Ephemeral	4	88	1) Dam and Pump	37.09930	-77.85311		UNT to Aquatic Life	17	
sdim020	252.6	Dinwiddie County	03010201	UNT to Butterwood Creek	Ephemeral	2	127	1) Dam and Pump	37.09335	-77.84897		UNT to Aquatic Life	9	
sdim021	252.7	Dinwiddie County	03010201	UNT to Butterwood Creek	Intermittent	2	107	1) Dam and Pump	37.09108	-77.84822		UNT to Aquatic Life	9	
sdib003	254.9	Dinwiddie County	03010201	UNT to Butterwood Creek	Intermittent	3	191	1) Dam and Pump	37.06655	-77.82555		UNT to Aquatic Life	13	
sdib002	255.0	Dinwiddie County	03010201	UNT to Butterwood Creek	Intermittent	2	144	1) Dam and Pump	37.06606	-77.82481		UNT to Aquatic Life	8	
sdib001	255.9	Dinwiddie County	03010201	UNT to Beaver Pond Creek	Intermittent	3	218	1) Dam and Pump	37.05468	-77.81821		Unclassified	13	
sdil001	256.7	Dinwiddie County	03010201	Beaver Pond Creek	Perennial	8	454	1) Dam and Pump	37.04688	-77.82757		Unclassified	32	3.90
sdil002	256.7	Dinwiddie County	03010201	UNT to Beaver Pond Creek	Perennial	3	167	1) Dam and Pump	37.04656	-77.82771		Unclassified	13	2.52

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
sdil003	256.9	Dinwiddie County	03010201	UNT to Beaver Pond Creek	Intermittent	4	153	1) Dam and Pump	37.04519	-77.83028		Unclassified	15	
sdil005	257.3	Dinwiddie County	03010201	UNT to Beaver Pond Creek	Intermittent	4	140	1) Dam and Pump	37.04055	-77.83529		Unclassified	17	
sdil007	257.5	Dinwiddie County	03010201	UNT to Beaver Pond Creek	Perennial	5	137	1) Dam and Pump	37.03813	-77.83603		Unclassified	21	0.89
sdil006	257.5	Dinwiddie County	03010201	UNT to Beaver Pond Creek	Intermittent	3	154	1) Dam and Pump	37.03795	-77.83611		Unclassified	14	
sdil009	257.6	Dinwiddie County	03010201	UNT to Beaver Pond Creek	Intermittent	5	257	1) Dam and Pump	37.03657	-77.83651		Unclassified	23	
sdil008	257.8	Dinwiddie County	03010201	Beaver Pond Creek	Perennial	16	140	1) Dam and Pump	37.03379	-77.83860		Unclassified	65	3.10
sdic003	258.2	Dinwiddie County	03010201	UNT to Beaver Pond Creek	Ephemeral	5	168	1) Dam and Pump	37.02854	-77.84086		Unclassified	19	
sdic005	258.3	Dinwiddie County	03010201	Beaver Pond Creek	Perennial	37	131	1) Dam and Pump or 2) Flume	37.02708	-77.84012		Unclassified	156	0.88
sdic004	258.4	Dinwiddie County	03010201	UNT to Beaver Pond Creek	Perennial	6	130	1) Dam and Pump	37.02659	-77.83977		Unclassified	26	3.23
sdic002	258.5	Dinwiddie County	03010201	UNT to Beaver Pond Creek	Intermittent	8	103	1) Dam and Pump	37.02525	-77.83799		Unclassified	32	
sdic006	258.6	Dinwiddie County	03010201	UNT to Beaver Pond Creek	Intermittent	9	94	1) Dam and Pump	37.02378	-77.83722		Unclassified	39	
sdic001	259.3	Dinwiddie County	03010201	Beaver Pond Creek	Perennial	4	144	1) Dam and Pump	37.01472	-77.83580		Unclassified	18	2.75
sdic008	260.3	Dinwiddie County	03010201	UNT to Tommeheton Creek	Intermittent	18	222	1) Dam and Pump	37.00069	-77.84229		UNT to Aquatic Life	76	
sdic007	260.7	Dinwiddie and Brunswick Counties	03010201	Nottoway River	Perennial	96	86	1) Cofferdam	36.99600	-77.83983	March15 through October 15	Aquatic Life	403	313.16
sbra201	260.8	Brunswick County	03010201	UNT to Nottoway River	Ephemeral	7	132	1) Dam and Pump	36.99525	-77.83961		UNT to Aquatic Life	30	

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
sbrc001	261.3	Brunswick County	03010201	UNT to Nottoway River	Ephemeral	1	61	1) Dam and Pump	36.98847	-77.83727		UNT to Aquatic Life	5	
sbra202	261.5	Brunswick County	03010201	UNT to Nottoway River	Intermittent	4	103	1) Dam and Pump	36.98495	-77.83456		UNT to Aquatic Life	16	
sbra212	261.8	Brunswick County	03010201	Miry Run	Perennial	7	213	1) Dam and Pump	36.98146	-77.83306		Unclassified	31	0.33
sbra203	262.5	Brunswick County	03010201	Hickory Run	Perennial	10	97	1) Dam and Pump	36.97206	-77.82707		Unclassified	40	1.81
sbra204	262.6	Brunswick County	03010201	UNT to Hickory Run	Intermittent	4	95	1) Dam and Pump	36.97183	-77.82711		Unclassified	17	
sbra205	262.9	Brunswick County	03010201	UNT to Hickory Run	Perennial	3	369	1) Dam and Pump	36.96750	-77.82322		Unclassified	12	0.58
sbra206	263.8	Brunswick County	03010201	UNT to Hickory Run	Ephemeral		25	Not Crossed by Centerline	36.95769	-77.81284		Unclassified	0	
sbra207	264.6	Brunswick County	03010201	UNT to Great Branch	Perennial	7	231	1) Dam and Pump	36.94868	-77.80508		Unclassified	30	0.65
sbra208	264.7	Brunswick County	03010201	UNT to Great Branch	Perennial	4	185	1) Dam and Pump	36.94715	-77.80397		Unclassified	15	0.68
sbra221	280.1	Brunswick County	03010204	UNT to Reedy Creek	Intermittent	3	176	1) Dam and Pump	36.76303	-77.70012		UNT to Aquatic Life	12	
sbra220	280.2	Brunswick County	03010204	UNT to Reedy Creek	Intermittent	3	178	1) Dam and Pump	36.76278	-77.69726		UNT to Aquatic Life	13	
sbra219	280.4	Brunswick County	03010204	UNT to Reedy Creek	Intermittent	2	77	1) Dam and Pump	36.76276	-77.69355		UNT to Aquatic Life	8	
sbra218	280.5	Brunswick County	03010204	UNT to Reedy Creek	Intermittent	6	336	1) Dam and Pump	36.76276	-77.69272		UNT to Aquatic Life	24	
sbra001	282.9	Brunswick County	03010204	UNT to Greensville Creek	Intermittent	4	168	1) Dam and Pump	36.74650	-77.65750		Unclassified	15	
sgra017	283.0	Greensville County	03010204	UNT to Greensville Creek	Intermittent		0	Not Crossed by Centerline	36.74561	-77.65587		Unclassified	0	
sgra016	283.0	Greensville County	03010204	Greensville Creek	Perennial	23	156	1) Flume 2) Dam and Pump	36.74532	-77.65589		Unclassified	95	1.17

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
sgra018	283.2	Greensville County	03010204	UNT to Greensville Creek	Intermittent	3	102	1) Dam and Pump	36.74426	-77.65422		Unclassified	14	
dgra001	283.3	Greensville County	03010204	UNT to Greensville Creek	Stream Centerline	7	129	1) Dam and Pump or 2) Flume	36.74271	-77.65283		Unclassified	27	
dgra002	283.4	Greensville County	03010204	UNT to Greensville Creek	Stream Centerline	11	281	1) Dam and Pump or 2) Flume	36.74220	-77.65254		Unclassified	46	
sgra015	284.2	Greensville County	03010204	UNT to Greensville Creek	Intermittent	5	359	1) Dam and Pump	36.73275	-77.64178		Unclassified	21	
sgra011	285.7	Greensville County	03010204	UNT to Meadows Branch	Intermittent	5	185	1) Dam and Pump	36.71594	-77.62548		Unclassified	19	
sgra012	285.9	Greensville County	03010204	UNT to Meherrin River	Intermittent	3	172	1) Dam and Pump	36.71397	-77.62360		UNT to Aquatic Life, Migratory Fish Spawning and Nursery	13	
sgra013	286.2	Greensville County	03010204	UNT to Meherrin River	Intermittent	4	152	1) Dam and Pump	36.70991	-77.62030		UNT to Aquatic Life, Migratory Fish Spawning and Nursery	15	
sgra014	286.2	Greensville County	03010204	UNT to Meherrin River	Intermittent	4	101	1) Dam and Pump	36.70983	-77.62001		UNT to Aquatic Life, Migratory Fish Spawning and Nursery	19	
sgra007	286.3	Greensville County	03010204	Meherrin River	Perennial	182	169	Open Cut	36.70815	-77.61958	February 15 through June 30, May 15 through July 31, August 15 through September 30	Aquatic Life, Migratory Fish Spawning and Nursery	763	737.43
sgra008	286.8	Greensville County	03010204	UNT to Meherrin River	Intermittent	11	186	1) Dam and Pump	36.70239	-77.61710		UNT to Aquatic Life, Migratory Fish Spawning and Nursery	44	

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
sgra009	287.1	Greensville County	03010204	UNT to Meherrin River	Intermittent	44	521	1) Dam and Pump	36.69779	-77.61515		UNT to Aquatic Life, Migratory Fish Spawning and Nursery	183	
sgra010	287.1	Greensville County	03010204	UNT to Meherrin River	Intermittent		48	Not Crossed by Centerline	36.69806	-77.61564		UNT to Aquatic Life, Migratory Fish Spawning and Nursery	0	
sgra001	288.5	Greensville County	03010204	UNT to Falling Run	Ephemeral	11	176	1) Dam and Pump	36.68276	-77.60076		Unclassified	47	
sgra002	288.5	Greensville County	03010204	Falling Run	Intermittent	8	186	1) Dam and Pump	36.68181	-77.60000		Unclassified	35	
sgra003	288.8	Greensville County	03010204	UNT to Falling Run	Intermittent	3	127	1) Dam and Pump	36.67921	-77.59926		Unclassified	13	
sgra004	290.0	Greensville County	03010204	UNT to Fountains Creek	Intermittent	3	161	1) Dam and Pump	36.66290	-77.59272		UNT to Migratory Fish Spawning and Nursery	14	
sgra005	290.4	Greensville County	03010204	UNT to Fountains Creek	Ephemeral	2	148	1) Dam and Pump	36.65940	-77.58773		UNT to Migratory Fish Spawning and Nursery	9	
dgrc001	290.4	Greensville County	03010204	UNT to Fountains Creek	Stream Centerline	1	222	1) Dam and Pump	36.65910	-77.58738		UNT to Migratory Fish Spawning and Nursery	4	
sgra006	294.2	Greensville County	03010204	UNT to Mill Swamp	Intermittent		21	Not Crossed by Centerline	36.62152	-77.54542		Unclassified	0	
sgrp002	295.7	Greensville County	03010204	UNT to Camey Swamp	Intermittent	6	161	1) Dam and Pump	36.60347	-77.53384		Unclassified	25	
sgrb001	296.9	Greensville County	03010204	UNT to Fountains Creek	Perennial	11	214	1) Dam and Pump	36.58252	-77.52913		UNT to Migratory Fish Spawning and Nursery	45	0.98

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
sgrp004	299.4	Greensville County	03010204	Fontaine Creek	Perennial	19	107	1) Dam and Pump 2) Flume	36.55400	-77.51120	February 15 through June 30	Aquatic Life, Migratory Fish Spawning and Nursery	79	169.53
sgrp005	299.4	Greensville County	03010204	Fontaine Creek	Perennial	14	102	1) Dam and Pump 2) Flume	36.55371	-77.51098	February 15 through June 30	Aquatic Life, Migratory Fish Spawning and Nursery	57	170.37
sgro001	299.6	Greensville County	03010204	Fontaine Creek	Intermittent	31	128	1) Dam and Pump 2) Flume	36.55159	-77.51014	February 15 through June 30	Aquatic Life, Migratory Fish Spawning and Nursery	129	
sgro002	299.6	Greensville County	03010204	Fontaine Creek	Perennial	30	91	1) Dam and Pump 2) Flume	36.55160	-77.51020	February 15 through June 30	Aquatic Life, Migratory Fish Spawning and Nursery	126	169.53
AP-3														
sgrp001	12.4	Greensville County	03010204	Meherrin River	Perennial	116	77	Cofferdam	36.54700	-77.29897	February 15 through June 30	Aquatic Life, Migratory Fish Spawning and Nursery	280	1097.39
ssop002	13.4	Southampton County	03010204	UNT to Meherrin River	Perennial	6	75	1) Dam and Pump 2) Flume	36.55497	-77.28466		UNT to Migratory Fish Spawning and Nursery	14	6.76
ssop001	13.6	Southampton County	03010204	UNT to Meherrin River	Perennial		0	Not Crossed by Centerline	36.55650	-77.28302		UNT to Migratory Fish Spawning and Nursery	0	
ssop003	14.4	Southampton County	03010204	UNT to Meherrin River	Perennial	7	76	1) Dam and Pump	36.56576	-77.27718		UNT to Migratory Fish Spawning and Nursery	17	0.62
dsoa006	22.8	Southampton County	03010201	UNT to Darden Run	Stream Centerline	11	57		36.62666	-77.14805		Unclassified	26	

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
ssoa001	23.7	Southampton County	03010201	UNT to Darden Pond	Perennial	6	78	Dam and Pump	36.63507	-77.13622		Unclassified	14	0.44
ssol006	27.4	Southampton County	03010201	UNT to Nottoway River	Ephemeral	4	94	1) Dam and Pump	36.64129	-77.07389		UNT to Aquatic Life, Migratory Fish Spawning and Nursery, EFH	9	
ssol007	27.8	Southampton County	03010201	UNT to Nottoway River	Ephemeral		2	Not Crossed by Centerline	36.64246	-77.06711		UNT to Aquatic Life, Migratory Fish Spawning and Nursery, EFH	0	
ssoa006	31.3	Southampton County	03010201	UNT to Nottoway River	Intermittent	2	79	1) Dam and Pump	36.62911	-77.01173		UNT to Aquatic Life, Migratory Fish Spawning and Nursery, EFH	5	
ssol015	32.6	Southampton County	03010201	Nottoway River	Perennial	240	76	HDD	36.63421	-76.99071	March 15 through July 31 and August 15 through October 15	Aquatic Life, Migratory Fish Spawning and Nursery, EFH	0	313.16
ssol009	33.0	Southampton County	03010201	UNT to Nottoway River	Intermittent	5	76	1) Dam and Pump	36.63816	-76.98478		UNT to Aquatic Life, Migratory Fish Spawning and Nursery, EFH	12	
ssol010	33.1	Southampton County	03010201	UNT to Nottoway River	Intermittent	4	75	1) Dam and Pump	36.63860	-76.98356		UNT to Aquatic Life, Migratory Fish Spawning and Nursery, EFH	10	
ssol011	33.2	Southampton County	03010201	UNT to Nottoway River	Intermittent	11	80	1) Dam and Pump 2) Flume	36.63954	-76.98162		UNT to Aquatic Life, Migratory Fish Spawning and Nursery, EFH	26	

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
ssoc006	33.9	Southampton County	03010201	UNT to Nottoway River	Perennial	27	77	1) Dam and Pump 2) Flume	36.64222	-76.97113		UNT to Aquatic Life, Migratory Fish Spawning and Nursery, EFH	64	0.05
dsoc001	33.9	Southampton County	03010201	UNT to Nottoway River	Ditch Centerline	6	59	1) Dam and Pump 2) Flume	36.64271	-76.97054		UNT to Aquatic Life, Migratory Fish Spawning and Nursery, EFH	14	
ssoc008	33.9	Southampton County	03010201	UNT to Nottoway River	Intermittent	12	141	1) Dam and Pump	36.64262	-76.97028		UNT to Aquatic Life, Migratory Fish Spawning and Nursery, EFH	28	
dsoc002	34.3	Southampton County	03010201	UNT to Nottoway River	Ditch Centerline	10	94	1) Dam and Pump 2) Flume	36.64374	-76.96437		UNT to Aquatic Life, Migratory Fish Spawning and Nursery, EFH	24	
ssoc009	34.4	Southampton County	03010201	UNT to Nottoway River	Intermittent	4	78	1) Dam and Pump	36.64381	-76.96212		UNT to Aquatic Life, Migratory Fish Spawning and Nursery, EFH	10	
ssol012	35.7	Southampton County	03010201	UNT to Nottoway River	Intermittent	5	112	1) Dam and Pump	36.63868	-76.93989		UNT to Aquatic Life, Migratory Fish Spawning and Nursery, EFH	13	
dsoa001	35.9	Southampton County	03010202	UNT to Blackwater River	Stream Centerline	2	77	1) Dam and Pump	36.63896	-76.93655		UNT to Aquatic Life, Migratory Fish Spawning and Nursery, EFH	5	
dsoa002	35.9	Southampton County	03010202	UNT to Blackwater River	Stream Centerline	2	57	1) Dam and Pump	36.63889	-76.93646		UNT to Aquatic Life, Migratory Fish Spawning	5	

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
												and Nursery, EFH		
ssol013	36.3	Southampton County	03010202	UNT to Blackwater River	Perennial	16	80	1) Flume	36.63851	-76.92911		UNT to Aquatic Life, Migratory Fish Spawning and Nursery, EFH	39	0.07
ssol014	36.6	Southampton County	03010202	UNT to Blackwater River	Intermittent	4	94	1) Dam and Pump	36.63810	-76.92388		UNT to Aquatic Life, Migratory Fish Spawning and Nursery, EFH	9	
ssoa010	38.6	City of Suffolk	03010202	Blackwater River	Perennial	205	80	HDD	36.63054	-76.89126	February 15 through June 30	Aquatic Life, Migratory Fish Spawning and Nursery, EFH	0	715.85
ssua004	39.4	City of Suffolk	03010202	UNT to Blackwater River	Perennial	5	79	1) Dam and Pump	36.63370	-76.87814		UNT to Aquatic Life, Migratory Fish Spawning and Nursery, EFH	12	5.82
dsua001	39.5	City of Suffolk	03010202	UNT to Blackwater River	Stream Centerline	4	75	1) Dam and Pump	36.63452	-76.87612		UNT to Aquatic Life, Migratory Fish Spawning and Nursery, EFH	10	
ssua005	39.7	City of Suffolk	03010202	UNT to Blackwater River	Intermittent	3	80	1) Dam and Pump	36.63434	-76.87267		UNT to Aquatic Life, Migratory Fish Spawning and Nursery, EFH	8	
ssua007	40.1	City of Suffolk	03010202	UNT to Blackwater River	Perennial	8	101	1) Dam and Pump	36.63332	-76.86540		UNT to Aquatic Life, Migratory Fish Spawning and Nursery, EFH	19	0.03
ssua008	40.2	City of Suffolk	03010202	UNT to Blackwater River	Perennial	7	99	1) Dam and Pump	36.63374	-76.86436		UNT to Aquatic Life, Migratory	17	0.80

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
												Fish Spawning and Nursery, EFH		
ssup007	55.0	City of Suffolk	02080208	UNT to Pitchkettle Creek	Ephemeral	6	120	1) Dam and Pump	36.69146	-76.64426		UNT to wildlife	13	
ssup005	55.2	City of Suffolk	02080208	UNT to Pitch kettle Creek	Ephemeral	5	89	1) Dam and Pump	36.69258	-76.64173		UNT to wildlife	11	
ssup004	56.6	City of Suffolk	02080208	UNT to Lake Kilby	Perennial		101	Not Crossed by Centerline	36.70545	-76.62293		Unclassified	0	
ssup006	56.9	City of Suffolk	02080208	Pitchkettle Creek	Perennial		12	Not Crossed by Centerline	36.70709	-76.61786		Wildlife	0	
ssup001	58.3	City of Suffolk	02080208	UNT to Shingle Creek	Ephemeral	2	76	1) Dam and Pump	36.70504	-76.59576		UNT to Aquatic Life	5	
osup001	58.3	City of Suffolk	02080208	Unnamed Pond	Pond	256		1) Dam and Pump	36.70475	-76.59540		Unclassified	614	
ssup003	58.6	City of Suffolk	02080208	UNT to Shingle Creek	Ephemeral		96	Not Crossed by Centerline	36.70266	-76.59060		UNT to Aquatic Life	0	
ssup002	58.7	City of Suffolk	02080208	UNT to Shingle Creek	Ephemeral	3	76	1) Dam and Pump	36.70277	-76.58957		UNT to Aquatic Life	7	
ssuo001	59.1	City of Suffolk	02080208	UNT to Shingle Creek	Perennial	7	87	1) Dam and Pump	36.70274	-76.58248		UNT to Aquatic Life	17	0.45
ssur001	64.5	City of Suffolk	02080208	UNT to Bernetts Mill	Perennial	14	78	1) Dam and Pump 2) Flume	36.75058	-76.51692		Aquatic Life	34	0.04
ssur002	64.6	City of Suffolk	02080208	UNT to Bernetts Mill	Perennial	20	274	1) Dam and Pump 2) Flume	36.75186	-76.51497		UNT to Aquatic Life	47	0.21
ssur003	64.6	City of Suffolk	02080208	UNT to Dismal Swamp	Perennial		19	Not Crossed by Centerline	36.75166	-76.51517		Unclassified	0	
dsur003	64.6	City of Suffolk	02080208	UNT to Dismal Swamp	Ephemeral	4	42	1) Dam and Pump	36.75206	-76.51487		Unclassified	10	
ssuo002	64.9	City of Suffolk	02080208	UNT to Bernetts Mill	Perennial	149	1152	Open Cut	36.75666	-76.51200		UNT to Aquatic Life	358	3.69
ssuo005	67.6	City of Suffolk	02080208	UNT to East Ditch	Perennial	15	76	1) Dam and Pump 2) Flume	36.77098	-76.47145		Unclassified	37	0.11

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
schr006	70.2	City of Chesapeake	02080208	UNT to Dismal Swamp	Perennial	12	91	1) Dam and Pump 2) Flume	36.76328	-76.42731		Wildlife	29	0.15
schr005	70.2	City of Chesapeake	02080208	UNT to Dismal Swamp	Intermittent	9	98	1) Dam and Pump 2) Flume	36.76284	-76.42675		Wildlife	22	
schr004	70.5	City of Chesapeake	02080208	UNT to Dismal Swamp	Perennial	17	96	1) Dam and Pump 2) Flume	36.76026	-76.42302		Wildlife	41	0.20
schr003	70.9	City of Chesapeake	02080208	UNT to Dismal Swamp	Perennial	14	128	1) Dam and Pump 2) Flume	36.75670	-76.41784		Wildlife	34	0.11
schr001	71.6	City of Chesapeake	02080208	UNT to Dismal Swamp	Perennial	43	157	1) Dam and Pump 2) Flume	36.75780	-76.39932		Wildlife	103	2.01
schr001	72.4	City of Chesapeake	02080208	UNT to Dismal Swamp	Perennial			Not Crossed by Centerline	36.75885	-76.39277		Wildlife	0	1.66
AP-5														
sgrc102	0.4	Greensville County	03010204	UNT to Greensville Creek	Perennial	8	134	1) Dam and Pump 2) Flume	36.72675	-77.64425		Unclassified	19	0.28
sgrc101	0.7	Greensville County	03010204	UNT to Greensville Creek	Ephemeral	2	136	1) Dam and Pump 2) Flume	36.72406	-77.64898		Unclassified	6	
sgrc100	0.8	Greensville County	03010204	UNT to Greensville Creek	Perennial	8	115	1) Dam and Pump	36.72309	-77.65084		Unclassified	19	2.79
DESKTOP DELINEATED FEATURES														
AP-1														
DKSC_VA_001	83.6	Highland County	02070001	Collins Run	Intermittent	5	128	N/A	38.49070	-79.68808			21	
DKSA_VA_022a	90.3	Highland County	02080201	UNT to Jackson River	Intermittent	7	424	N/A	38.41922	-79.62962			31	
DKSA_VA_020	90.3	Highland County	02080201	UNT to Jackson River	Intermittent	6	177	N/A	38.41853	-79.62919			24	

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
DKSA_VA_021	90.8	Highland County	02080201	UNT to Jackson River	Intermittent	6	153	N/A	38.41188	-79.62610			25	
DKSA_VA_023a	90.9	Highland County	02080201	UNT to Jackson River	Intermittent		42	N/A	38.41109	-79.62542			0	
DKSA_VA_022b	93.3	Highland County	02080201	UNT to Jackson River	Perennial	11	150	N/A	38.38922	-79.59817			44	4.42
DKSA_VA_023b	101.2	Highland County	02080201	UNT to Bullpasture River	Intermittent	5	126	N/A	38.32921	-79.50998			21	2.87
DKSA_VA_024b	114.1	Augusta County	02080202	Ramseys Draft	Perennial	10	132	N/A	38.28051	-79.33993			44	16.57
DKSA_VA_025	116.5	Augusta County	02080202	Bradley Branch	Perennial	11	188	N/A	38.28056	-79.29801			47	12.21
DKSA_VA_026	116.7	Augusta County	02080202	Calfpasture River	Perennial	10	151	N/A	38.28139	-79.29410			42	12.04
DKSA_VA_027	123.9	Augusta County	02070005	UNT to Elk Run	Intermittent	8	172	N/A	38.28242	-79.17847			32	
DKSA_VA_029	129.2	Augusta County	02070005	Jennings Branch	Perennial	90	125	N/A	38.22107	-79.14441			377	34.84
DKSA_VA_031	136.0	Augusta County	02070005	UNT to Lewis Creek	Intermittent	5	137	N/A	38.13394	-79.13281			23	
DKSA_VA_033	138.7	Augusta County	02070005	UNT to Folly Mills Creek	Intermittent	14	598	N/A	38.10343	-79.10719			60	
DKSA_VA_035	139.2	Augusta County	02070005	Folly Mills Creek	Perennial	12	153	N/A	38.09732	-79.10197			49	10.46
DKSA_VA_036	139.6	Augusta County	02070005	UNT to Folly Mills Creek	Perennial	11	132	N/A	38.09184	-79.09905			44	3.32
DKSA_VA_038	145.6	Augusta County	02070005	UNT to South River	Intermittent	7	172	N/A	38.03604	-79.01930			30	
DKSA_VA_039	146.3	Augusta County	02070005	UNT to South River	Intermittent	10	266	N/A	38.02834	-79.01172			43	
DKSA_VA_041	153.1	Augusta County	02070005	UNT to Mills Creek	Perennial	12	135	N/A	37.96814	-78.96446			48	0.15
DKSA_VA_042	153.2	Augusta County	02070005	UNT to Mills Creek	Intermittent	5	132	N/A	37.96747	-78.96269			21	

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
DKSA_VA_045	153.7	Augusta County	02070005	UNT to Back Creek	Intermittent	7	147	N/A	37.96254	-78.95604			28	
DKSA_VA_043	153.8	Augusta County	02070005	Back Creek	Perennial	16	543	N/A	37.96084	-78.95515			65	14.29
DKSA_VA_044	153.8	Augusta County	02070005	Back Creek	Perennial	10	60	N/A	37.96328	-78.95500			43	14.29
DKSA_VA_048	154.4	Augusta County	02070005	UNT to Back Creek	Intermittent	6	201	N/A	37.95378	-78.95362			25	
DKSA_VA_047	154.8	Augusta County	02070005	UNT to Back Creek	Intermittent	5	138	N/A	37.94996	-78.95652			21	
DKSA_VA_049	154.9	Augusta County	02070005	UNT to Back Creek	Intermittent	6	138	N/A	37.94788	-78.95738			23	
DKSA_VA_050	155.0	Augusta County	02070005	UNT to Back Creek	Intermittent	5	125	N/A	37.94692	-78.95853			21	
DKSA_VA_054	155.5	Augusta County	02070005	UNT to Back Creek	Intermittent	6	143	N/A	37.94055	-78.96461			24	
DKSA_VA_053	155.6	Augusta County	02070005	UNT to Back Creek	Intermittent	5	128	N/A	37.93913	-78.96603			22	
DKSA_VA_060	156.7	Augusta County	02070005	UNT to Back Creek	Intermittent	5	185	N/A	37.92774	-78.97835			22	
DKSA_VA_061	157.0	Augusta County	02070005	UNT to South Fork Back Creek	Intermittent	5	167	N/A	37.92541	-78.98174			22	
DKSA_VA_063	157.4	Augusta County	02070005	UNT to South Fork Back Creek	Intermittent	182	555	N/A	37.91988	-78.98349			763	
DKSA_VA_065	157.5	Augusta County	02070005	UNT to South Fork Back Creek	Intermittent	7	127	N/A	37.91811	-78.98195			28	
DKSA_VA_066	157.6	Augusta County	02070005	UNT to South Fork Back Creek	Intermittent	13	301	N/A	37.91779	-78.98194			56	
DKSA_VA_064	157.8	Augusta County	02070005	UNT to South Fork Back Creek	Intermittent	12	311	N/A	37.91446	-78.97966			49	
DKSA_VA_067	158.6	Nelson County	02080203	UNT to South Fork Rockfish River	Intermittent	34	406	N/A	37.90340	-78.97189			142	
DKSA_VA_068	158.9	Nelson County	02080203	South Fork Rockfish River	Intermittent	5	162	N/A	37.90164	-78.97014			23	

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
DKSA_VA_069	162.4	Nelson County	02080203	Spruce Creek	Perennial	10	179	N/A	37.88695	-78.91351			43	2.68
DKSA_VA_070	163.1	Nelson County	02080203	Spruce Creek	Perennial	11	285	N/A	37.88341	-78.90188			48	17.59
DKSA_VA_071	163.2	Nelson County	02080203	UNT to South Fork Rockfish River	Intermittent		95	N/A	37.88283	-78.90019			0	
DKSA_VA_072	163.7	Nelson County	02080203	South Fork Rockfish River	Perennial	15	187	N/A	37.88167	-78.89194			63	19.12
DKSA_VA_073	163.9	Nelson County	02080203	UNT to South Fork Rockfish River	Intermittent	5	126	N/A	37.87997	-78.89038			21	
DKSA_VA_074	164.4	Nelson County	02080203	UNT to South Fork Rockfish River	Intermittent	5	126	N/A	37.87261	-78.88683			21	
DKSA_VA_075	165.3	Nelson County	02080203	UNT to Rockfish River	Intermittent		207	N/A	37.86229	-78.88084			0	
DKSA_VA_076	165.4	Nelson County	02080203	UNT to Rockfish River	Intermittent	5	132	N/A	37.86164	-78.88042			22	
DKSA_VA_077	165.5	Nelson County	02080203	UNT to Rockfish River	Intermittent	5	125	N/A	37.86047	-78.87880			21	
DKSA_VA_078	165.9	Nelson County	02080203	UNT to Rockfish River	Perennial	14	171	N/A	37.85903	-78.87109			60	2.45
DKSA_VA_081	167.2	Nelson County	02080203	UNT to Rockfish River	Intermittent	5	55	N/A	37.85065	-78.85292			22	
DKSA_VA_082	167.6	Nelson County	02080203	UNT to Rockfish River	Intermittent	5	129	N/A	37.84720	-78.84714			22	
DKSA_VA_084	168.4	Nelson County	02080203	UNT to Davis Creek	Intermittent	7	184	N/A	37.84019	-78.83601			31	
DKSA_VA_085	168.8	Nelson County	02080203	Davis Creek	Perennial	10	176	N/A	37.83812	-78.83093			42	17.13
DKSA_VA_086	168.9	Nelson County	02080203	Muddy Creek	Perennial	11	140	N/A	37.83726	-78.82991			46	17.19
DKSA_VA_087	169.7	Nelson County	02080203	UNT to Rockfish River	Perennial	14	219	N/A	37.82944	-78.81715			59	2.12

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
DKSA_VA_088	169.9	Nelson County	02080203	UNT to Rockfish River	Intermittent	8	209	N/A	37.82852	-78.81443			35	
DKSA_VA_089	170.7	Nelson County	02080203	UNT to Rockfish River	Intermittent	6	265	N/A	37.82496	-78.80132			25	
DKSA_VA_090	170.9	Nelson County	02080203	UNT to Rockfish River	Intermittent	5	129	N/A	37.82196	-78.80002			22	
DKSA_VA_091	171.3	Nelson County	02080203	UNT to Rockfish River	Intermittent	5	126	N/A	37.81608	-78.79938			21	
DKSA_VA_093	171.8	Nelson County	02080203	UNT to Rockfish River	Perennial	13	164	N/A	37.80988	-78.79998			55	2.96
DKSA_VA_094	172.4	Nelson County	02080203	UNT to Rockfish River	Intermittent	7	191	N/A	37.80038	-78.79807			31	
DKSC_VA_002	173.2	Nelson County	02080203	UNT to Dutch Creek	Intermittent	5	135	N/A	37.79252	-78.78947			23	
DKSA_VA_099	175.2	Nelson County	02080203	UNT to Dutch Creek	Perennial	18	219	N/A	37.76635	-78.78854			77	5.40
DKSA_VA_100	175.6	Nelson County	02080203	Dutch Creek	Perennial	10	131	N/A	37.76113	-78.78710			44	9.38
DKSA_VA_105	178.9	Nelson County	02080203	UNT to Buffalo Creek	Intermittent	5	168	N/A	37.72059	-78.77958			23	
DKSC_VA_003	184.7	Nelson County	02080203	James River	Perennial	10	75	N/A	37.66157	-78.71958			42	4201.86
DKSC_VA_004	186.8	Buckingham County	02080203	UNT to Sycamore Creek	Intermittent	6	138	N/A	37.64088	-78.69598			25	
DKSC_VA_005	186.8	Buckingham County	02080203	UNT to Sycamore Creek	Intermittent	5	130	N/A	37.63959	-78.69608			22	
DKSA_VA_127	190.1	Buckingham County	02080203	Walton Fork	Perennial	11	133	N/A	37.60275	-78.66919			46	1.52
DKSC_VA_006	204.4	Buckingham County	02080205	Willis River	Intermittent	13	538	N/A	37.46397	-78.51546			57	

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
DKSA_VA_130	206.1	Buckingham County	02080205	UNT to Willis River	Intermittent	5	93	N/A	37.44531	-78.49884			22	
DKSA_VA_131	214.8	Cumberland County	02080207	UNT to Dry Creek	Intermittent	7	124	N/A	37.36346	-78.39494			29	
DKSA_VA_132	223.2	Prince Edward County	02080207	Little Saylers Creek	Perennial	17	154	N/A	37.30285	-78.27254			70	9.06
DKSA_VA_133	231.0	Nottoway County	02080207	Little Creek	Intermittent	6	167	N/A	37.24923	-78.15324			23	
DKSA_VA_134	237.4	Nottoway County	02080207	UNT to Deep Creek	Intermittent	8	186	N/A	37.19489	-78.06800			32	
DKSA_VA_135	241.6	Nottoway County	02080207	Watson Creek	Perennial	10	93	N/A	37.14988	-78.02074			43	2.71
DKSA_VA_136	241.6	Nottoway County	02080207	UNT to Watson Creek	Intermittent	92	885	N/A	37.14846	-78.01881			384	
DKSA_VA_137	242.1	Nottoway County	02080207	UNT to Watson Creek	Intermittent	9	226	N/A	37.14403	-78.01401			39	
DKSA_VA_138	253.7	Dinwiddie County	03010201	Butterwood Creek	Perennial	11	139	N/A	37.08034	-77.83809			47	11.51
DKSA_VA_139	256.2	Dinwiddie County	03010201	UNT to Beaver Pond Creek	Intermittent	36	979	N/A	37.04956	-77.82354			153	
DKSA_VA_140	256.5	Dinwiddie County	03010201	UNT to Beaver Pond Creek	Intermittent		99	N/A	37.04848	-77.82521			0	
DKSC_VA_007	265.1	Brunswick County	03010201	UNT to Great Branch	Intermittent	5	138	N/A	36.94427	-77.79694			23	
DKSC_VA_008	265.2	Brunswick County	03010201	UNT to Great Branch	Intermittent	6	143	N/A	36.94477	-77.79610			24	
DKSC_VA_009	265.6	Brunswick County	03010201	UNT to Great Branch	Intermittent	5	133	N/A	36.94194	-77.78837			21	
DKSC_VA_010	265.8	Brunswick County	03010201	UNT to Great Branch	Intermittent	5	125	N/A	36.94096	-77.78505			21	
DKSC_VA_011	266.1	Brunswick County	03010201	UNT to Waqua Creek	Intermittent	5	125	N/A	36.93927	-77.78087			21	

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
DKSC_VA_012	266.3	Brunswick County	03010201	UNT to Waqua Creek	Intermittent	5	132	N/A	36.93841	-77.77771			21	
DKSC_VA_013	266.5	Brunswick County	03010201	UNT to Waqua Creek	Intermittent	5	126	N/A	36.93609	-77.77413			21	
DKSC_VA_014	266.9	Brunswick County	03010201	UNT to Waqua Creek	Intermittent	6	245	N/A	36.93478	-77.76686			23	
DKSC_VA_015	267.4	Brunswick County	03010201	Waqua Creek	Perennial	10	132	N/A	36.93033	-77.76610			44	37.01
DKSC_VA_016	267.9	Brunswick County	03010201	Big Branch	Perennial	10	127	N/A	36.92298	-77.76521			42	3.92
DKSC_VA_018	268.7	Brunswick County	03010201	UNT to Waqua Creek	Intermittent	5	130	N/A	36.91237	-77.76198			21	
DKSC_VA_017	268.9	Brunswick County	03010201	UNT to Waqua Creek	Intermittent	5	130	N/A	36.91009	-77.76176			22	
DKSC_VA_019	270.5	Brunswick County	03010201	Beaver Branch	Perennial	10	150	N/A	36.88728	-77.75237			43	3.12
DKSC_VA_020	272.0	Brunswick County	03010201	Sturgeon Creek	Perennial	10	127	N/A	36.86705	-77.74478			43	36.43
DKSC_VA_021	272.9	Brunswick County	03010201	UNT to Spring Branch	Intermittent	6	166	N/A	36.85465	-77.74102			26	
DKSC_VA_022	273.0	Brunswick County	03010201	Spring Branch	Perennial	10	290	N/A	36.85207	-77.74063			43	2.51
DKSC_VA_024	274.2	Brunswick County	03010201	UNT to Spring Branch	Intermittent	5	160	N/A	36.83593	-77.74052			23	
DKSC_VA_023	274.3	Brunswick County	03010201	Spring Branch	Intermittent	8	214	N/A	36.83451	-77.74072			32	
DKSC_VA_025	274.8	Brunswick County	03010204	Reedy Creek	Intermittent	17	377	N/A	36.82659	-77.74184			71	
DKSC_VA_026	275.0	Brunswick County	03010204	Reedy Creek	Intermittent	8	193	N/A	36.82518	-77.74131			34	
DKSC_VA_027a	275.0	Brunswick County	03010204	UNT to Reedy Creek	Intermittent	5	41	N/A	36.82485	-77.74084			21	
DKSC_VA_027b	276.2	Brunswick County	03010204	UNT to Reedy Creek	Intermittent	7	176	N/A	36.81017	-77.73012			30	

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
DKSC_VA_028	276.7	Brunswick County	03010204	UNT to Reedy Creek	Intermittent	5	127	N/A	36.80347	-77.72718			21	
DKSC_VA_029	277.6	Brunswick County	03010204	UNT to Reedy Creek	Intermittent	7	157	N/A	36.79056	-77.72103			28	
DKSC_VA_030	277.9	Brunswick County	03010204	UNT to Reedy Creek	Intermittent	5	125	N/A	36.78695	-77.71910			21	
DKSC_VA_031	278.3	Brunswick County	03010204	UNT to Reedy Creek	Intermittent	7	172	N/A	36.78113	-77.71724			31	
DKSC_VA_032	278.6	Brunswick County	03010204	UNT to Reedy Creek	Intermittent	6	134	N/A	36.77729	-77.71484			23	
DKSC_VA_033	278.9	Brunswick County	03010204	UNT to Reedy Creek	Intermittent	5	139	N/A	36.77488	-77.71172			23	
DKSC_VA_035	279.3	Brunswick County	03010204	UNT to Reedy Creek	Intermittent	6	133	N/A	36.76928	-77.70706			24	
DKSB_VA_034	279.7	Brunswick County	03010204	UNT to Reedy Creek	Intermittent	5	127	N/A	36.76428	-77.70576			22	
AP-3														
DKSB_VA_041	15.0	Southampton County	03010204	UNT to Buckhorn Swamp	Perennial	10	75	N/A	36.57019	-77.26659			24	3.32
DKSB_VA_018	15.4	Southampton County	03010204	UNT to Buckhorn Swamp	Perennial	10	75	N/A	36.57238	-77.26077			24	2.87
DKSB_VA_017	15.9	Southampton County	03010204	UNT to Buckhorn Swamp	Perennial	11	82	N/A	36.57564	-77.25268			26	1.16
DKSB_VA_042	16.5	Southampton County	03010204	Buckhorn Swamp	Perennial	18	183	N/A	36.57977	-77.24249			44	0.10
DKSB_VA_043	17.8	Southampton County	03010204	Tarrara Creek	Perennial	13	97	N/A	36.58772	-77.22174			32	0.15
DKSB_VA_044	17.9	Southampton County	03010204	UNT to Tarrara Creek	Perennial	16	119	N/A	36.58850	-77.22070			37	52.41

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
DKSB_VA_045	19.0	Southampton County	03010204	UNT to Tarrara Creek	Intermittent	5	75	N/A	36.59509	-77.20350			12	
DKSB_VA_046	19.2	Southampton County	03010204	UNT to Tarrara Creek	Perennial	10	75	N/A	36.59644	-77.20064			24	1.38
DKSB_VA_047	21.0	Southampton County	03010204	UNT to Tarrara Creek	Perennial	10	77	N/A	36.61048	-77.17380			24	4.21
DKSB_VA_048	34.6	Southampton County	03010201	UNT to Nottoway River	Canal/Ditch	8	122	N/A	36.64347	-76.95936			20	
DKSB_VA_049	41.2	City of Suffolk	03010202	UNT to Blackwater River	Perennial	12	93	N/A	36.64651	-76.85882			30	3.04
DKSB_VA_050	42.3	City of Suffolk	03010202	UNT to Blackwater River	Perennial	18	127	N/A	36.65951	-76.85221			43	0.75
DKSB_VA_051	42.6	City of Suffolk	03010202	UNT to Blackwater River	Intermittent	6	91	N/A	36.66481	-76.85139			15	
DKSB_VA_052	44.2	City of Suffolk	03010202	UNT to Kingsale Swamp	Perennial	15	107	N/A	36.66886	-76.82550			36	2.42
DKSB_VA_053	44.7	City of Suffolk	03010202	UNT to Kingsale Swamp	Intermittent	101	257	N/A	36.66891	-76.81477			242	
DKSB_VA_054	49.5	City of Suffolk	03010203	UNT to Quaker Swamp	Perennial	21	154	N/A	36.67994	-76.73686			49	10.70
DKSB_VA_056	51.0	City of Suffolk	03010203	UNT to Quaker Swamp	Perennial	15	203	N/A	36.68609	-76.71217			37	0.43
DKSB_VA_055	53.2	City of Suffolk	02080208	UNT to Speights Run	Perennial	12	83	N/A	36.69021	-76.67364			28	1.68
DKSB_VA_023	61.7	City of Suffolk	02080208	UNT to Shingle Creek	Perennial	11	78	N/A	36.72419	-76.55049			25	0.20
DKSB_VA_027	61.8	City of Suffolk	02080208	UNT to Shingle Creek	Canal/Ditch	6	88	N/A	36.72546	-76.54884			14	
DKSB_VA_024	62.3	City of Suffolk	02080208	UNT to Shingle Creek	Canal/Ditch	8	121	N/A	36.73136	-76.54550			19	

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)
DKOB_VA_012	62.9	City of Suffolk	02080208	Unnamed Pond	Pond	56		N/A	36.73752	-76.53863			135	
DKSB_VA_025	63.2	City of Suffolk	02080208	Unnamed Ditch	Canal/Ditch	5	82	N/A	36.74020	-76.53560			13	
DKSB_VA_028	63.5	City of Suffolk	02080208	UNT to North Ditch	Canal/Ditch	6	95	N/A	36.74253	-76.53019			15	
DKSB_VA_021	73.9	City of Chesapeake	02080208	Deep Creek	Perennial	12	101	N/A	36.76223	-76.36564			30	0.37
DKOB_VA_011	75.4	City of Chesapeake	02080208	Unnamed Pond	Pond	21		N/A	36.76432	-76.34212			51	
DKOB_VA_010	75.5	City of Chesapeake	02080208	Unnamed Pond	Pond	10		N/A	36.76453	-76.34080			24	
DKSB_VA_020	76.5	City of Chesapeake	02080208	Deep Creek Canal	Perennial	10	79	N/A	36.76457	-76.32336			24	0.10
DKOB_VA_007	77.7	City of Chesapeake	02080208	Unnamed Pond	Pond	248		N/A	36.77207	-76.30741			596	
DKOB_VA_006	78.2	City of Chesapeake	02080208	Unnamed Pond	Pond	164		N/A	36.77350	-76.30036			394	
DKOB_VA_004	78.4	City of Chesapeake	02080208	South Branch Elizabeth River	Perennial	851	90	HDD	36.77454	-76.29541			0	98.15
DKOB_VA_005	78.7	City of Chesapeake	02080208	Unnamed Pond	Pond	67		N/A	36.77499	-76.29184			160	
AP-4														
DKSB_VA_033	0.1	Brunswick County	03010204	UNT to Reedy Creek	Intermittent	6	80	N/A	36.76574	-77.70897			13	
Norfolk District Totals						**7,693**	**83,631**							

TABLE B-2 (cont'd)

Waterbodies Crossed by the Atlantic Coast Pipeline within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)[b]	Construction Method[c,d]	Latitude	Longitude	Timing Restrictions[e]	State Water Quality Classification[f]	Volume of Fill Below OHWM[g] (cubic yards)	Subaqueous Crossing Drainage Area (Sq. Miles)

[a] Waterbodies with a Feature ID starting with dks represent waterbodies that are based on desktop review, and widths have been assumed as 10 feet wide for perennial and 5 feet wide for intermittent waterbodies in this dataset.

[b] Affected Stream Length is a linear length of the waterbody, generally the centerline of the stream or one bank length within the project area. Waterbodies with an Affected Stream Length of N/A are ponds that were not assess for stream length impacts. Ponds were not evaluated for affected bank length.

[c] Impact types, as listed in the JPA, for all crossings are F, EX, NT, V, and MC with the exception of those constructed with the horizontal directional drill method which will have no impact. Additionally no dune/beach impact areas occur. Subaqueous impacts will be calculated for the final draft and will determine impact SB, as described in the JPA.

[c] Not Crossed by Centerline = Feature is not crossed by the project centerline; however, these waterbodies are included within the construction workspace and will likely experience temporary disturbance of banks or bridging or matting through to allow equipment to pass along the construction right-of-way.

Wetlands delineated using desktop data have been given a value of N/A for the construction method until construction methods are determined once field surveys have been completed.

[e] Timing restrictions are based on readily available data from agency consultation letters or online data. Timing restriction information has not been evaluated for desktop features. Evaluations will be made once surveys are complete for these features.

[f] Virginia State Water Quality Classifications

Virginia Trout Waters Classes:

Classes I, II, III, IV are wild natural trout streams ranking from highest to lowest quality

Classes V, VI, VII, VIII are stockable trout streams ranking from highest to lowest quality

State Water Quality Classifications were determined using Virginia Department of Environmental Quality GIS dataset, 2012 Integrated WQ Report Rivers, January 27, 2014 available for download from the Virginia Environmental Geographic Information System (VEGIS) website at: http://www.deq.virginia.gov/ConnectWithDEQ/VEGIS/VEGISDatasets.aspx. State regulations require the classification to extend into adjacent tributaries, indicated by UNT (unnamed tributary) to [Stream Class] to indicate connected tributaries to classified waters.

Unclassified – waters that do not have an assigned classification, or are not unnamed tributaries to classified waters.

State Water Quality Classification information has not been evaluated for desktop features. Evaluations will be made once surveys are complete for these features.

[g] Ordinary High Water Mark

Note: The totals shown in this table may not equal the sum of addends due to rounding

TABLE B-3

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline Above Ground Facilities within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	City/County	Hydrologic Unit Code (HUC8)	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres)	PFO Conversion (acres) [c]	PSS Conversion (acres)	Permanent Loss (acres)	Construction Method [b]	Latitude	Longitude	Temporary Sidecast Fill Volume (cubic Yards)
AP-1													
wbub050f	191.4	Buckingham County	02080203	PFO	122	0.47	0.08	0.00	0.00	Open Cut (facility work and pipeline)	37.590264	-78.656262	N/A
wbub050e	191.5	Buckingham County	02080203	PEM	0	0.84	0.00	0.00	0.00	Not Crossed by Centerline (facility work)	37.589753	-78.655697	N/A
wbub051s	191.9	Buckingham County	02080203	PSS	59	1.29	0.00	0.01	0.00	Open Cut (facility work and pipeline)	37.586237	-78.65482	N/A
AP-3													
dkwc_va_031	79.3	City of Chesapeake	02080208	PFO	0	0.00	0.31	0.00	0.31	Fill	36.773404	-76.280886	N/A
Norfolk District Totals					**181**	**2.6**	**0.39**	**0.01**	**0.31**				

[a] Wetland types according to Cowardin et al. (1979):
PEM = palustrine emergent
PFO = palustrine forested
PSS = palustrine scrub-shrub

[b] Impact types, as listed in the JPA, for all crossings are F, EX, NT, V, and MC with the exception of those constructed with the horizontal directional drill method which will have no impact. Additionally there are no dune/beach impact associated with the ACP.

Note: The totals shown in this table may not equal the sum of addends due to rounding.

TABLE B-4

Waterbodies Crossed and Crossing Methods for the Atlantic Coast Pipeline Above Ground Facilities within the U.S. Army Corps of Engineers – Norfolk District

Facility/ Unique ID	Milepost	County	HUC 8	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Affected Bank Length (feet)	Construction Impact Type[b,c]	Latitude	Longitude	Timing Restrictions[d]	Volume of Fill Below OHWM[e]	Subaqueous Crossing Drainage Area (acres)
No waterbodies are crossed by aboveground facilities in the Norfolk District.													

[a] Waterbodies with a Feature ID starting with NHD represent waterbodies that are based on desktop data from the National Hydrography Dataset, and widths have been assumed as 10 feet wide for perennial and 5 feet wide for intermittent waterbodies in this dataset.

[b] Construction Impact Type, associated with facilities construction are identified. (TBD- these impacts are under review and will be provided by project engineering).

[c] Impact types, as listed in the JPA, for all crossings are F, EX, NT, V, and MC with the exception of those constructed with the horizontal directional drill method which will have no impact. Additionally no dune/beach impact areas occur. Subaqueous impacts will be calculated for the final draft and will determine impact SB, as described in the JPA.

TBD = indicates the construction crossing method is to be determined by engineering, equation to calculate volume of temporary fill is yet to be provided by engineering, subaqueous crossings are yet to be determined by NRG based on watershed size.

[d] Timing restrictions are based on readily available data from agency consultation letters or online data.

[e] Ordinary High Water Mark

Note: The totals shown in this table may not equal the sum of addends due to rounding

TABLE B-5

Atlantic Coast Pipeline Project – Commonwealth of Virginia
Waterbody Impact Summary Table

Basin/Sub-basin (HUC 6 and 8 Numbers)		Number of Feature Crossings by Regime	Affected Length (Feet)	Permanent Loss (Feet)
020700				
02070001				
	Ephemeral	0	0	0
	Intermittent	2	227	0
	Perennial	1	150	0
	Pond	0	0	0
	Canal/Ditch	0	0	0
	Sub-Basin Total	**3**	**377**	**0**
02070005				
	Ephemeral	1	125	0
	Intermittent	42	7253	0
	Perennial	19	2741	0
	Pond	0	0	0
	Canal/Ditch	0	0	0
	Other	2	144	0
	Sub-Basin Total	**64**	**10263**	**0**
Basin Total		**67**	**10640**	**0**
020802				
02080201				
	Ephemeral	2	259	0
	Intermittent	10	1720	0
	Perennial	13	1411	0
	Pond	0	0	0
	Canal/Ditch	0	0	0
	Sub-Basin Total	**25**	**3390**	0
02080202				
	Ephemeral	2	114	0
	Intermittent	4	516	0
	Perennial	10	1717	0
	Pond	0	0	0
	Canal/Ditch	0	0	0
	Sub-Basin Total	**16**	**2347**	**0**
02080203				
	Ephemeral	6	700	0
	Intermittent	36	6024	0
	Perennial	37	5857	0
	Pond	0	0	0

TABLE B-5 (cont'd)

Atlantic Coast Pipeline Project – Commonwealth of Virginia
Waterbody Impact Summary Table

Basin/Sub-basin (HUC 6 and 8 Numbers)		Number of Feature Crossings by Regime	Affected Length (Feet)	Permanent Loss (Feet)
	Canal/Ditch	0	0	0
	Sub-Basin Total	**79**	**12581**	**0**
02080205				
	Ephemeral	13	1722	0
	Intermittent	15	2708	0
	Perennial	13	1693	0
	Pond	0	0	0
	Canal/Ditch	0	0	0
	Sub-Basin Total	**41**	**6123**	**0**
02080207				
	Ephemeral	35	5174	0
	Intermittent	54	8495	0
	Perennial	45	7564	0
	Pond	0	0	0
	Canal/Ditch	0	0	0
	Sub-Basin Total	**134**	**21234**	**0**
02080208				
	Ephemeral	6	499	0
	Intermittent	1	98	0
	Perennial	18	2702	0
	Pond	7	0	0
	Canal/Ditch	4	386	0
	Sub-Basin Total	**36**	**3685**	**0**
Basin Total		**331**	**49360**	**0**
030102				
03010201				
	Ephemeral	18	2129	0
	Intermittent	42	6747	0
	Perennial	23	3777	0
	Pond	0	0	0
	Canal/Ditch	4	332	0
	Sub-Basin Total	**87**	**12985**	**0**
03010202				
	Ephemeral	0	0	0
	Intermittent	4	522	0
	Perennial	8	766	0
	Pond	0	0	0
	Canal/Ditch	3	209	0
	Sub-Basin Total	**15**	**1497**	**0**

TABLE B-5 (cont'd)

Atlantic Coast Pipeline Project – Commonwealth of Virginia
Waterbody Impact Summary Table

Basin/Sub-basin (HUC 6 and 8 Numbers)		Number of Feature Crossings by Regime	Affected Length (Feet)	Permanent Loss (Feet)
03010203				
	Ephemeral	0	0	0
	Intermittent	0	0	0
	Perennial	2	357	0
	Pond	0	0	0
	Canal/Ditch	0	0	0
	Sub-Basin Total	**2**	**357**	**0**
03010204				
	Ephemeral	3	460	0
	Intermittent	35	5601	0
	Perennial	20	2099	0
	Pond	0	0	0
	Canal/Ditch	3	632	0
	Sub-Basin Total	**61**	**8792**	**0**
Basin Total		**165**	**23,631**	**0**
TOTAL		**563**	**83,631**	**0**

[a] Includes all waterbodies within the Project area which will be affected by construction activities.

Note: The totals shown in this table may not equal the sum of addends due to rounding

TABLE B-6

Atlantic Coast Pipeline Project – Commonwealth of Virginia
Wetland Impact Summary Table

Basin/Sub-basin (HUC 6 and 8 Numbers)	Cowardin Type[a]	Number of Open Cut Crossings[b]	Cumulative Crossing Length (Feet)	Temporary Impact (Acres)	Wetland Conversion (Acres)	Permanent Loss (Acres)
020700						
02070001						
	PEM Wetlands	1	0	0.01	0.00	0.00
	PFO Wetlands	0	0	0.00	0.00	0.00
	PSS Wetlands	0	0	0.00	0.00	0.00
	PUB Wetlands	0	0	0.00	0.00	0.00
	E2E Wetlands	0	0	0.00	0.00	0.00
	Sub-Basin Total	**1**	**0**	**0.01**	**0.00**	**0.00**
02070005						
	PEM Wetlands	13	1000	2.97	0.00	0.00
	PFO Wetlands	11	1368	3.16	0.93	0.00
	PSS Wetlands	2	40	0.08	0.01	0.00
	PUB Wetlands	0	0	0.00	0.00	0.00
	E2E Wetlands	0	0	0.00	0.00	0.00
	Sub-Basin Total	**26**	**2408**	**6.21**	**0.94**	**0.00**
Basin Total		**27**	**2408**	**6.22**	**0.94**	**0.00**
020802						
02080201						
	PEM Wetlands	20	1479	3.56	0.00	0.00
	PFO Wetlands	0	0	0.00	0.00	0.00
	PSS Wetlands	1	60	0.15	0.01	0.00
	PUB Wetlands	0	0	0.00	0.00	0.00
	E2E Wetlands	0	0	0.00	0.00	0.00
	Sub-Basin Total	**21**	**1539**	**3.71**	**0.01**	**0.00**

TABLE B-6 (cont'd)

Atlantic Coast Pipeline Project – Commonwealth of Virginia
Wetland Impact Summary Table

Basin/Sub-basin (HUC 6 and 8 Numbers)	Cowardin Type[a]	Number of Open Cut Crossings[b]	Cumulative Crossing Length (Feet)	Temporary Impact (Acres)	Wetland Conversion (Acres)	Permanent Loss (Acres)
02080202						
	PEM Wetlands	5	149	0.52	0.00	0.00
	PFO Wetlands	4	455	1.23	0.30	0.00
	PSS Wetlands	0	0	0.00	0.01	0.00
	PUB Wetlands	0	0	0.00	0.00	0.00
	E2E Wetlands	0	0	0.00	0.00	0.00
	Sub-Basin Total	**9**	**604**	**1.75**	**0.31**	**0.00**
02080203						
	PEM Wetlands	11	717	2.62	0.00	0.00
	PFO Wetlands	27	2444	7.50	1.70	0.00
	PSS Wetlands	6	285	2.12	0.07	0.00
	PUB Wetlands	0	0	0.00	0.00	0.00
	E2E Wetlands	0	0	0.00	0.00	0.00
	Sub-Basin Total	**44**	**3446**	**12.24**	**1.77**	**0.00**
02080205						
	PEM Wetland	5	565	1.13	0.00	0.00
	PFO Wetlands	11	733	1.53	0.49	0.00
	PSS Wetlands	0	0	0.00	0.00	0.00
	PUB Wetlands	0	0	0.00	0.00	0.00
	E2E Wetlands	0	0	0.00	0.00	0.00
	Sub-Basin Total	**16**	**1298**	**2.66**	**0.49**	**0.00**
02080207						
	PEM Wetlands	17	1482	3.16	0.03	0.00
	PFO Wetlands	45	4377	9.31	2.95	0.00
	PSS Wetlands	6	344	0.69	0.08	0.00

TABLE B-6 (cont'd)

Atlantic Coast Pipeline Project – Commonwealth of Virginia
Wetland Impact Summary Table

Basin/Sub-basin (HUC 6 and 8 Numbers)	Cowardin Type[a]	Number of Open Cut Crossings[b]	Cumulative Crossing Length (Feet)	Temporary Impact (Acres)	Wetland Conversion (Acres)	Permanent Loss (Acres)
	PUB Wetlands	0	0	0.00	0.00	0.00
	E2E Wetlands	0	0	0.00	0.00	0.00
	Sub-Basin Total	**68**	**6203**	**13.16**	**3.06**	**0.00**
02080208						
	PEM Wetlands	30	11792	24.51	0.00	0.00
	PFO Wetlands	32	43937	73.75	34.89	0.31
	PSS Wetlands	4	1634	2.41	0.37	0.00
	PUB Wetlands	0	0	0.00	0.00	0.00
	E2E Wetlands	0	0	0.00	0.00	0.00
	Sub-Basin Total	**65**	**57363**	**100.67**	**35.26**	**0.31**
Basin Total		**224**	**70453**	**134.19**	**40.89**	**0.31**
030102						
03010201						
	PEM Wetlands	21	3458	6.79	0.00	0.00
	PFO Wetlands	74	13801	29.77	9.48	0.00
	PSS Wetlands	12	3125	5.49	0.71	0.00
	PUB Wetlands	1	98	0.26	0.00	0.00
	E2E Wetlands	0	0	0.00	0.00	0.00
	Sub-Basin Total	**108**	**20482**	**42.31**	**10.19**	**0.00**
03010202						
	PEM Wetlands	5	576	1.21	0.00	0.00
	PFO Wetlands	20	9988	17.91	6.87	0.00
	PSS Wetlands	3	194	0.33	0.05	0.00
	PUB Wetlands	0	0	0.00	0.00	0.00
	E2E Wetlands	0	0	0.00	0.00	0.00
	Sub-Basin Total	**28**	**10758**	**19.45**	**6.92**	**0.00**

TABLE B-6 (cont'd)

Atlantic Coast Pipeline Project – Commonwealth of Virginia
Wetland Impact Summary Table

Basin/Sub-basin (HUC 6 and 8 Numbers)	Cowardin Type[a]	Number of Open Cut Crossings[b]	Cumulative Crossing Length (Feet)	Temporary Impact (Acres)	Wetland Conversion (Acres)	Permanent Loss (Acres)
03010203						
	PEM Wetlands	6	153	0.84	0.00	0.00
	PFO Wetlands	10	10764	18.28	7.37	0.00
	PSS Wetlands	0	0	0.00	0.00	0.00
	PUB Wetlands	0	0	0.00	0.00	0.00
	E2E Wetlands	0	0	0.00	0.00	0.00
	Sub-Basin Total	**16**	**10917**	**19.12**	**7.37**	**0.00**
03010204						
	PEM Wetlands	21	5606	8.36	0.00	0.00
	PFO Wetlands	82	34488	64.58	22.52	0.00
	PSS Wetlands	13	6939	14.99	1.57	0.00
	PUB Wetlands	1	0	0.08	0.00	0.00
	E2E Wetlands	0	0	0.00	0.00	0.00
	Sub-Basin Total	**117**	**47032**	**88.01**	**24.09**	**0.00**
Basin Total		**269**	**89189**	**168.89**	**48.57**	**0.00**
Total		**520**	**162,050**	**309.37**	**90.40**	**0.31**

[a] Cowardin classification. PEM – palustrine emergent, PSS – palustrine scrub-shrub, PFO – palustrine forested.

[b] Includes all wetlands within the Project area which will be affected by construction activities including both survey and desktop delineated features. Wetlands that are not crossed by the centerline or are crossed via HDD are not included.

Note: The totals shown in this table may not equal the sum of addends due to rounding

LEGEND

- PERMANENT RIGHT-OF-WAY
- TEMPORARY RIGHT-OF-WAY
- TOPSOIL SEGRAGATION AREA
- EXTRA WORK SPACE
- WETLAND
- STREAM
- LIMITS OF DISTURBANCE
- CONTOUR
- SILT FENCE
- SILT SOCK
- ROCK CONSTRUCTION ENTRANCE
- TRENCH PLUG
- WATER BAR
- TEMPORARY SLOPE BREAKER

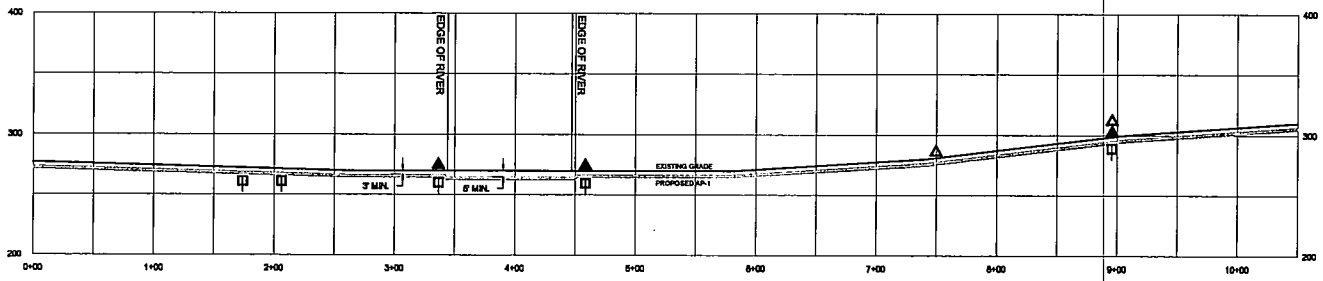
WATERBODY IMPACT		
WATERBODY #	TEMP. IMPACT	PERMANENT IMPACT
SCUK011	0.22 ACRES	0.0 ACRES

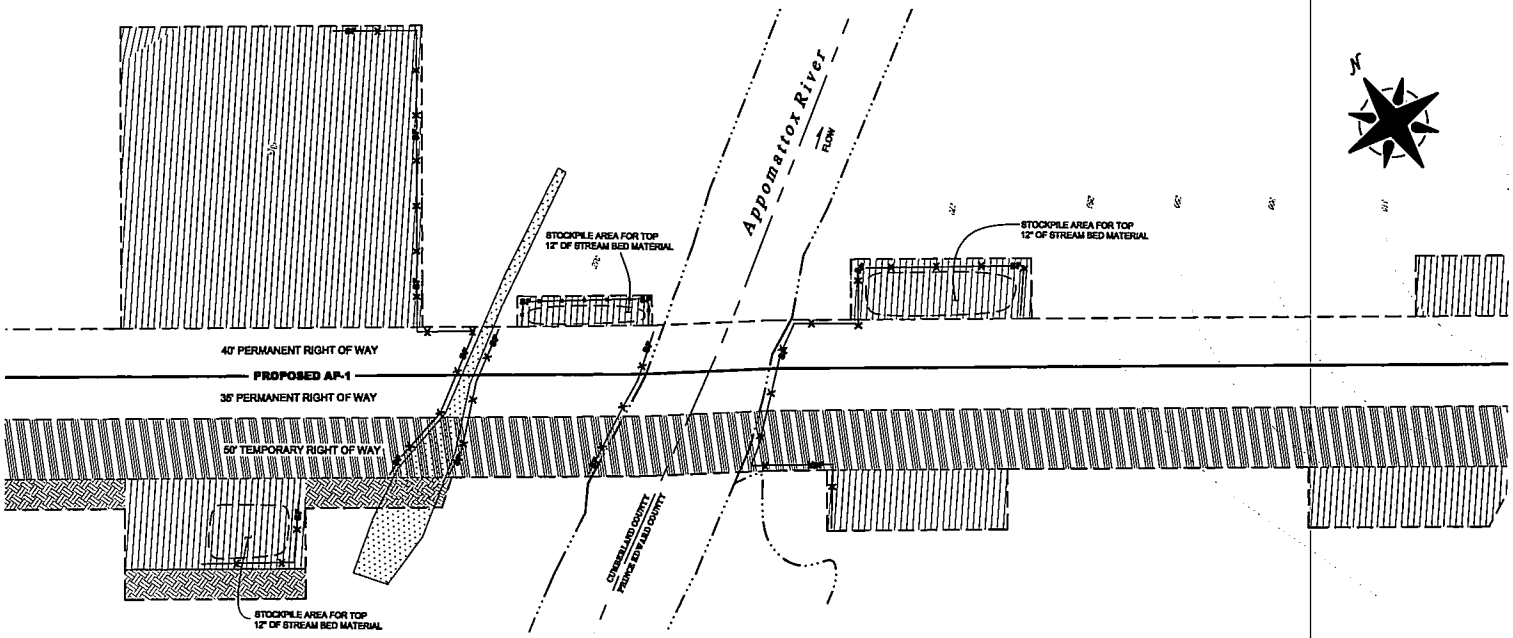
WATERBODY IMPACT

WATERBODY CONSTRUCTION NOTES:

1. CROSSING TO BE COMPLETED VIA THE USE OF A COFFERDAM.
2. CONSTRUCTION TO BE PREFORMED IN LOW FLOW PERIODS. FLOW SHALL BE MAINTAINED AT ALL TIMES.
3. RIP RAP (OR OTHER NON-ERODIBLE MATERIALS) TO BE PLACED IN SEMICIRCLE ALONG SIDE OF STREAM.
4. DISCHARGE ALL WATER THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE.
5. STABILIZE WATER WATERBODY BANKS AND INSTALL TEMPORARY SEDIMENT BARRIERS WITHIN 24-HOURS OF COMPLETING IN-STREAM CONSTRUCTION ACTIVITIES.
6. RETURN ALL WATERBODY BANKS TO PRE-CONSTRUCTION CONTOURS OR TO A STABLE ANGLE OF REPOSE AS APPROVED BY THE ENVIRONMENTAL INSPECTOR.
7. INSTALL TRENCH PLUGS AND WATERBARS AS DIRECTED BY THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN ON BOTH SIDES OF THE WATERWAY, AND AS DEPICTED ON THIS PLAN.
8. PIPELINE SHALL BE WEIGHTED WITH PIPESAK OR APPROVED EQUAL IN RIVER CROSSING TO ACHIEVE NEGATIVE BUOYANCY.

RECEIVED
SEP 16 2015
MARINE RESOURCES COMMISSION





PLAN VIEW

50' 0 50' 100'

SCALE:1"=50'

GENERAL NOTES AND COMMENTS:

REFERENCE

ELEVATION DATA FROM THE USGS GIS DATA CLEARING HOUSE.

PIPELINE SURVEY INFORMATION PROVIDED BY GAI CONSULTANTS.

STREAM AND WETLAND DATA COLLECTED BY NATIONAL RESOURCE GROUP, LLC.

MAPPING DATUM-VA STATE PLANE SOUTH-NAD 83
CONTOUR INTERVAL - 10 FEET

SYM.	DATE	BY	REVISION INFORMATION
A	7/13/15	RRC	ISSUED FOR REVIEW

PROJECT/TASK APP.

SEAL

DRAWN:	RRC/RLR	7/13/15
CHECKED:	RVS / DLM	7/13/15
APP. FOR IND:		
APP. FOR CONST.:		
SCALE:	AS SHOWN	

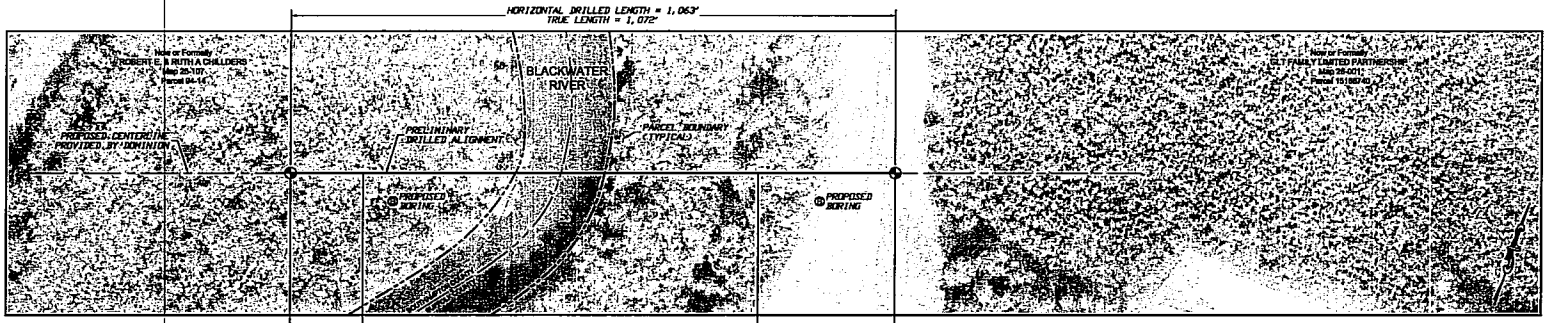
Atlantic Coast Pipeline, LLC

445 West Main St. Clarksburg, West Virginia 26301 / Phone: (304) 623-8000

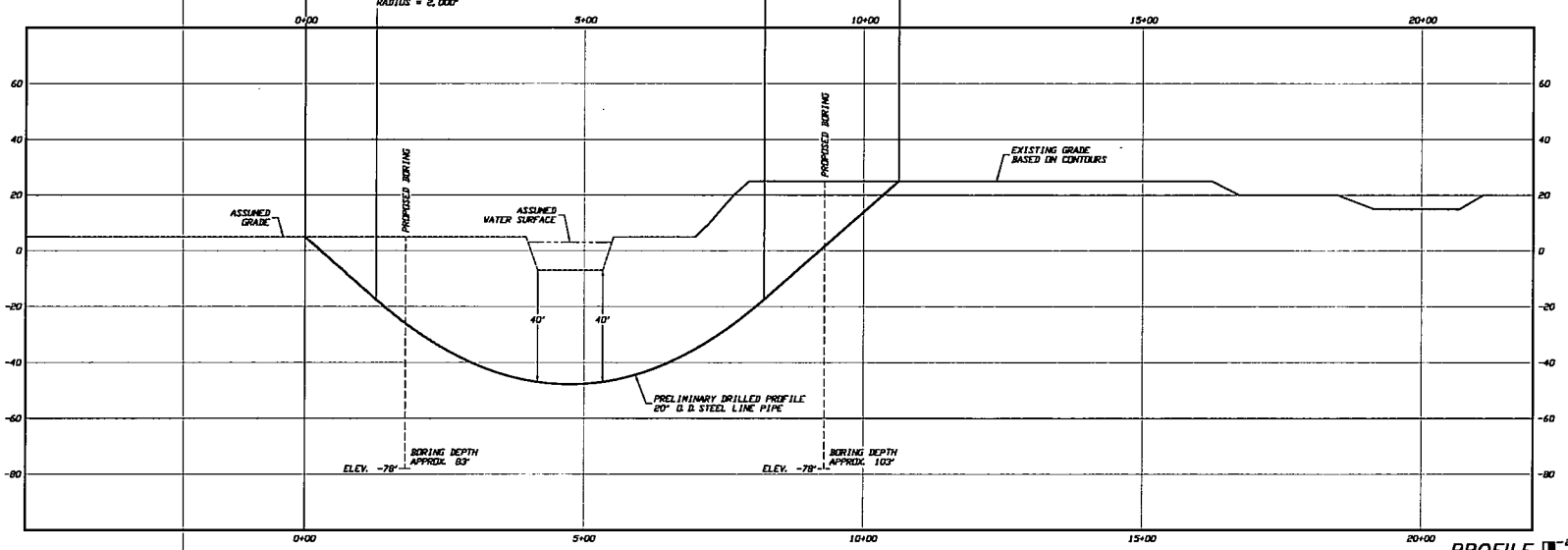
TITLE: **AP-1 SITE SPECIFIC PLAN FOR APPOMATTOX RIVER**

DISTRICT: COUNTY: CUMBERLAND STATE: VA GROUP DWG. NO. 1 REV. A

DRAWING: DOM/ACP/Site Specific/Appomattox River



PLAN
SCALE: 1"=100'



PROFILE
SCALE: 1"=100' HORIZONTAL
1"= 20' VERTICAL

GENERAL LEGEND
DRILLED PATH ENTRY/EXIT POINT

ATLANTIC COAST PIPELINE PROJECT

PLAN AND PROFILE
20-INCH PIPELINE CROSSING OF THE BLACKWATER RIVER
BY HORIZONTAL DIRECTIONAL DRILLING

LOCATION: SOUTHAMPTON & SUFFOLK COUNTIES, VIRGINIA

DRAWN	DATE	CHECKED	APPROVED	SCALE	DRAWING LABEL	REVISION
KMN	09/05/15	JSP	JSP	SHOWN FOR D-SIZED PLOT	BLACKWATER	P2

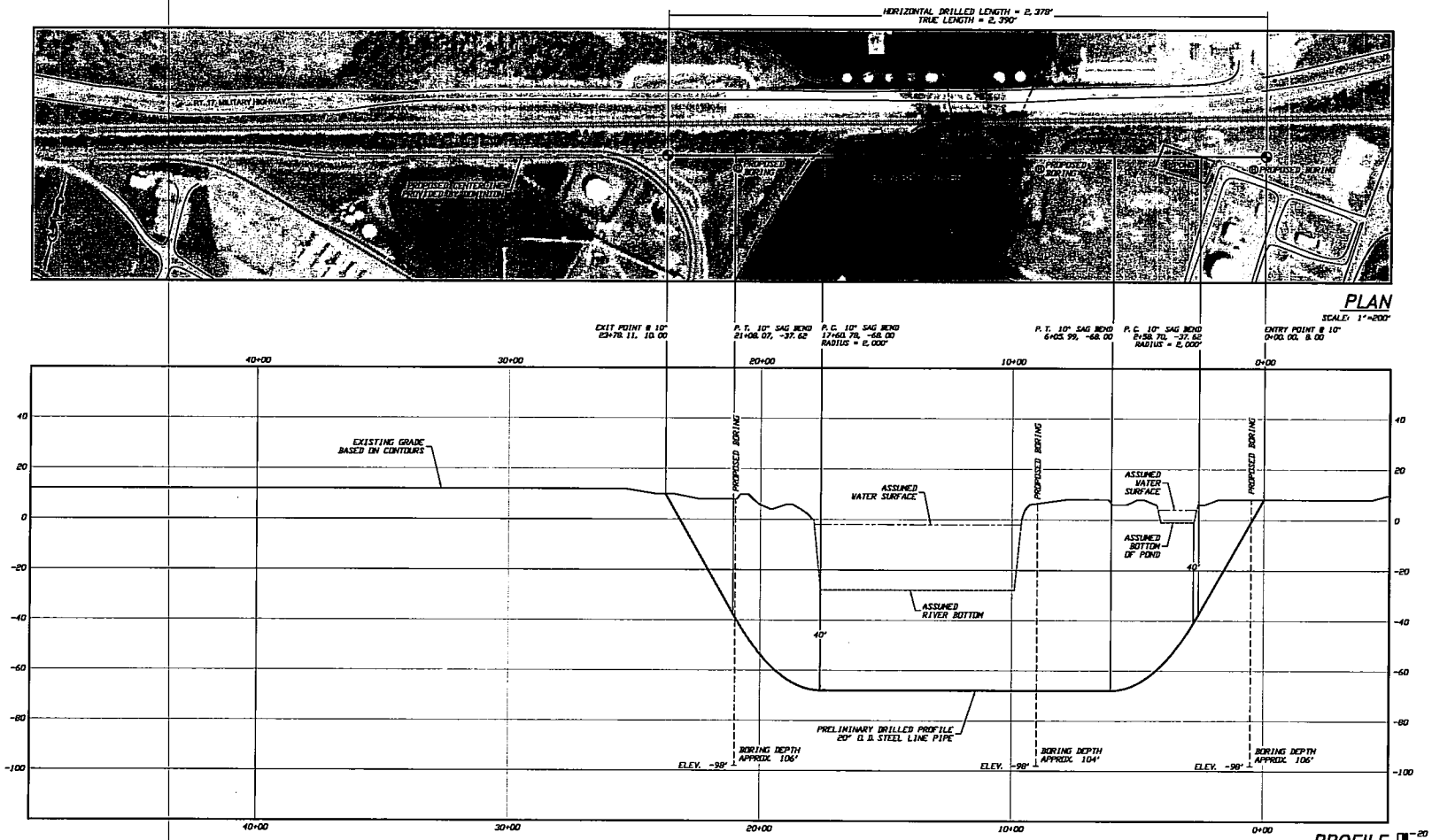
NO.	DATE	REVISION DESCRIPTION	BY	CHKD	APP.

John D. Hair, P.E.
Consulting Engineer
2424 East 21st Street
Suite 610
Tulsa, Oklahoma 74114

PRELIMINARY

PROJECT NO.
Dominion\1508
MILE POST
AP3-039

RECEIVED
SEP 16 2015
MARINE RESOURCES COMMISSION



ATLANTIC COAST PIPELINE PROJECT

PLAN AND PROFILE
20-INCH PIPELINE CROSSING OF THE ELIZABETH RIVER (PRIMARY)
BY HORIZONTAL DIRECTIONAL DRILLING

LOCATION: PORTSMOUTH COUNTY, VIRGINIA

DRAWN	DATE	CHECKED	APPROVED	SCALE SHOWN (D-SIZED)	DWG PLOT	DRAWING LABEL	REVISION
KMN	05/26/15	JSP	JSP			ELIZABETH PRIMARY	P0

NO.	DATE	REVISION DESCRIPTION	BY	CHECK	APP.

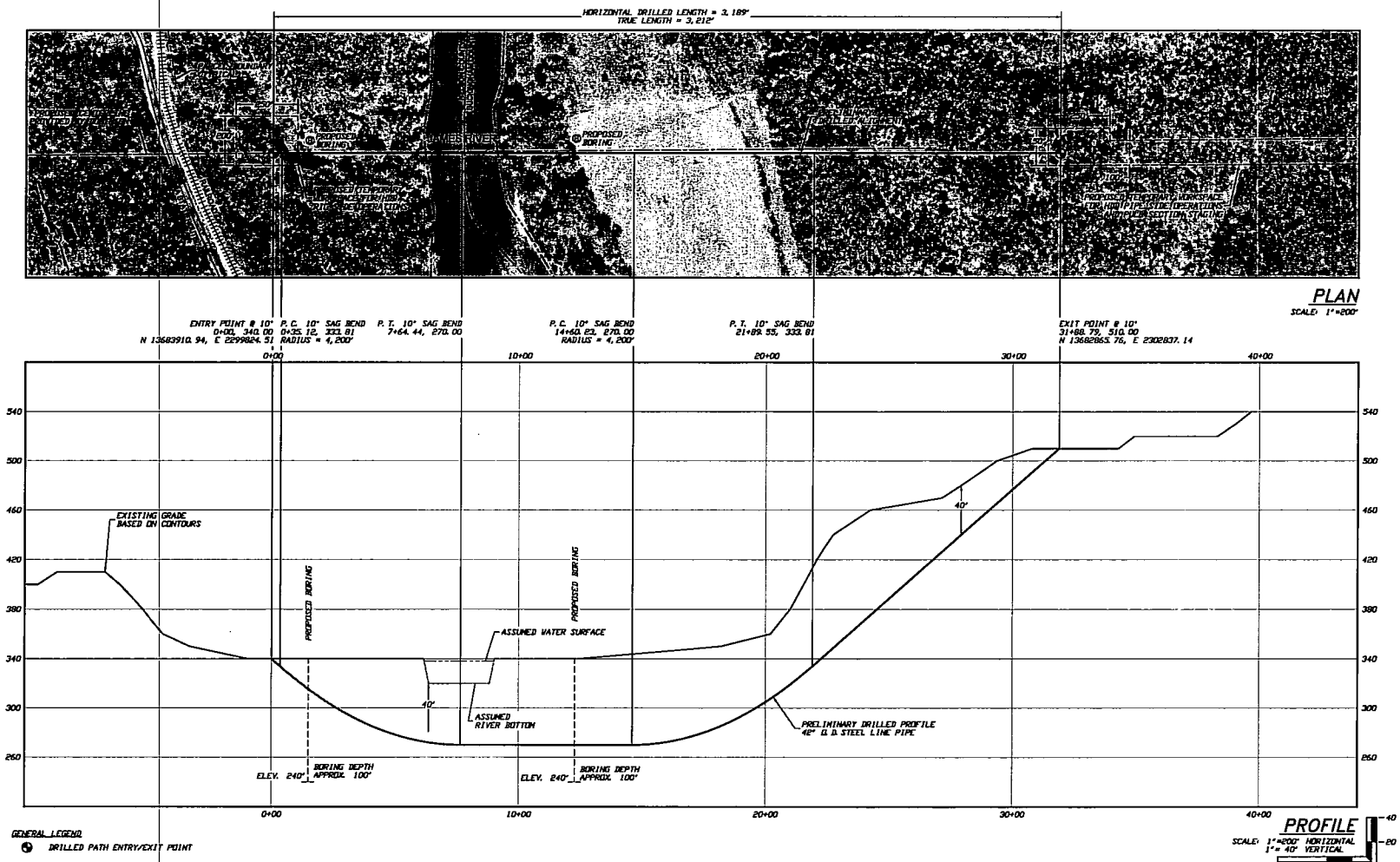
John D. Hair, P.E.
Consulting Engineer
2404 East 21st Street
Suite 510
Tulsa, Oklahoma 74114

PROJECT NO.
Dominion\1508

MILE POST
AP3-077

PRELIMINARY

RECEIVED
SEP 16 2015
MARINE RESOURCES COMMISSION



GENERAL LEGEND

DRILLED PATH ENTRY/EXIT POINT

ATLANTIC COAST PIPELINE PROJECT

PLAN AND PROFILE
42-INCH PIPELINE CROSSING OF THE JAMES RIVER (ALTERNATE)
BY HORIZONTAL DIRECTIONAL DRILLING

LOCATION: BUCKINGHAM & NELSON COUNTIES, VIRGINIA			
DRAWN KAM	DATE 06/14/15	CHECKED JSP	APPROVED JSP
SCALE SHOWN FOR D-SIZED PLOT	DRAWING LABEL JAMES ALTERNATE	REVISION P2	

NO.	DATE	REVISION DESCRIPTION	BY	CHKD	APP.
P2	09/3/15	EXTENDED CROSSING BASED ON NEW EXIT SITE	KAM	JMS	
P1	07/17/15	ADD PROPOSED TEMPORARY WORKSPACE	KAM	JSP	JSP

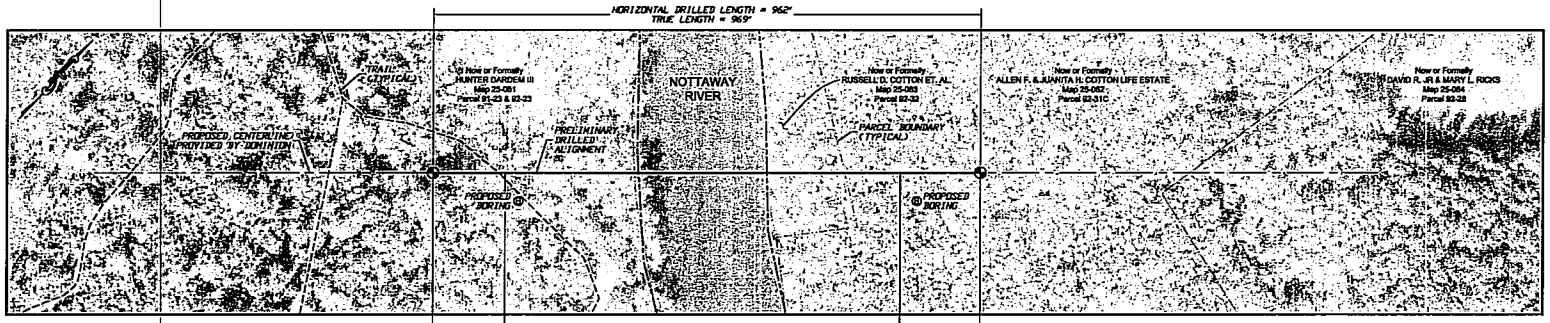
PRELIMINARY

John D. Hair, P.E.
Consulting Engineer
2424 East 21st Street
Suite 510
Tulsa, Oklahoma 74114

PROJECT NO.
Dominion\1508

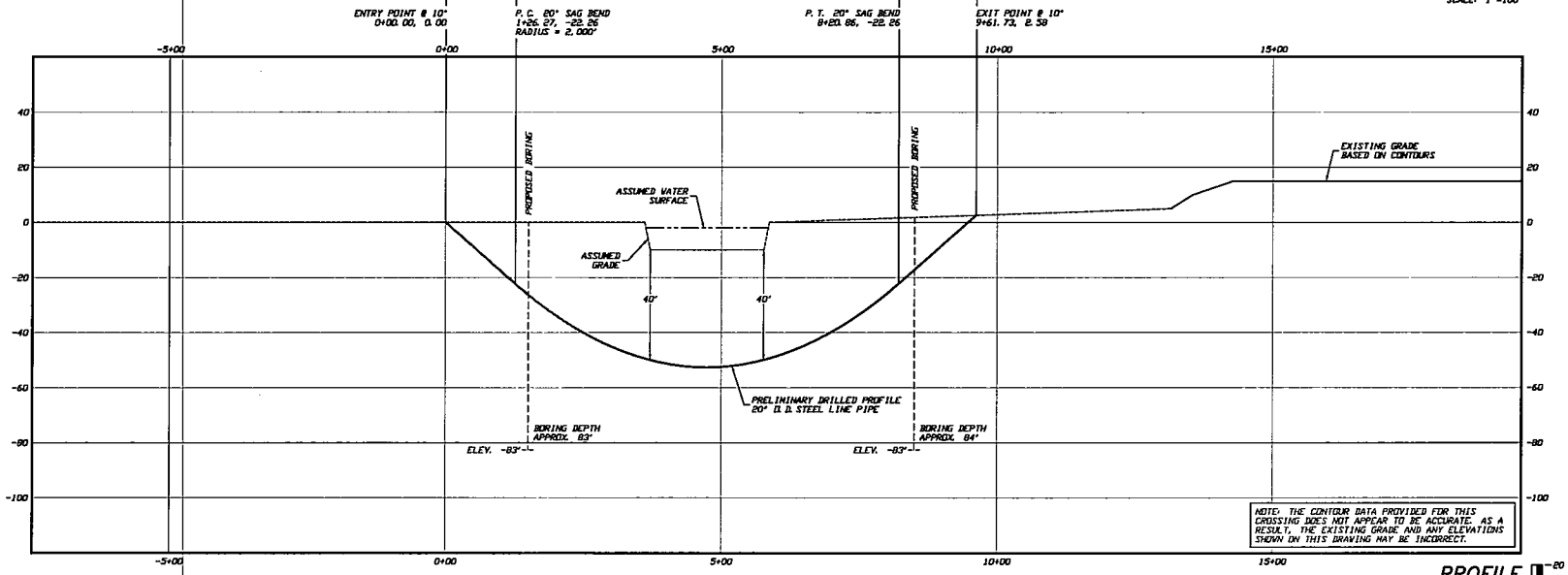
MILE POST
AP1-180

RECEIVED
SEP 16 2015
MARINE RESOURCES COMMISSION



PLAN

SCALE: 1"=100'



GENERAL LEGEND

DRILLED PATH ENTRY/EXIT POINT

PROFILE

SCALE: 1"=100' HORIZONTAL
1"= 20' VERTICAL

20 10 0
200 100 50 0

ATLANTIC COAST PIPELINE PROJECT

PLAN AND PROFILE
20-INCH PIPELINE CROSSING OF THE NOTTAWAY RIVER
BY HORIZONTAL DIRECTIONAL DRILLING

LOCATION: SOUTHAMPTON COUNTY, VIRGINIA

DRAWN	DATE	CHECKED	APPROVED	SCALE	DRAWING LABEL	REVISION
KAM	06/04/15	JSP	JSP	SHOWN FOR D-SIZED PLOT	NOTTAWAY	PD

NO.	DATE	REVISION DESCRIPTION	BY	CHKD	APP.

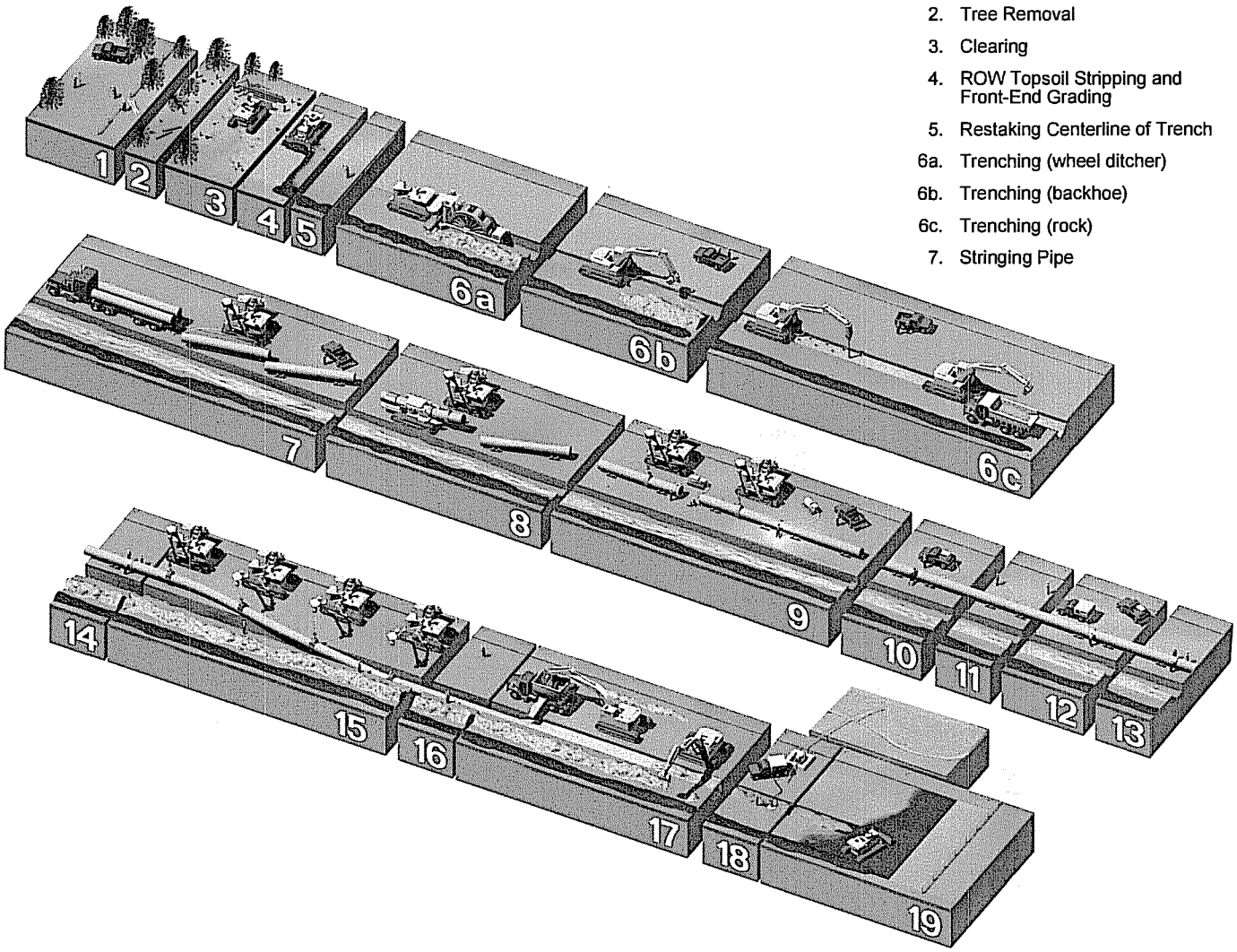
John D. Hair, P.E.
Consulting Engineer
2424 East 21st Street
Suite 510
Tulsa, Oklahoma 74114

PROJECT NO.
Dominion\1508

MILE POST
AP3-033

PRELIMINARY

RECEIVED
SEP 16
MARINE RES
COMMISSION



1. Survey and Staking
2. Tree Removal
3. Clearing
4. ROW Topsoil Stripping and Front-End Grading
5. Restaking Centerline of Trench

6a. Trenching (wheel ditcher)
6b. Trenching (backhoe)
6c. Trenching (rock)

7. Stringing Pipe
8. Field Bending Pipe
9. Line-Up, Initial Weld
10. Fill & Cap, Final Weld
11. As-Built Footage
12. X-Ray Inspection, Weld Repair
13. Coating Field Welds
14. Inspection & Repair of Coating
15. Lowering Pipe into Trench
16. As-Built Survey
17. Pad, Backfill, Rough Grade
18. Hydrostatic Testing, Final Tie-in
19. Replace Topsoil, Final Clean-Up, Full Restoration

RECEIVED
SEP 16 2015
MARINE RESOURCES COMMISSION

For environmental review purposes only.

Atlantic Coast Pipeline
Dominion

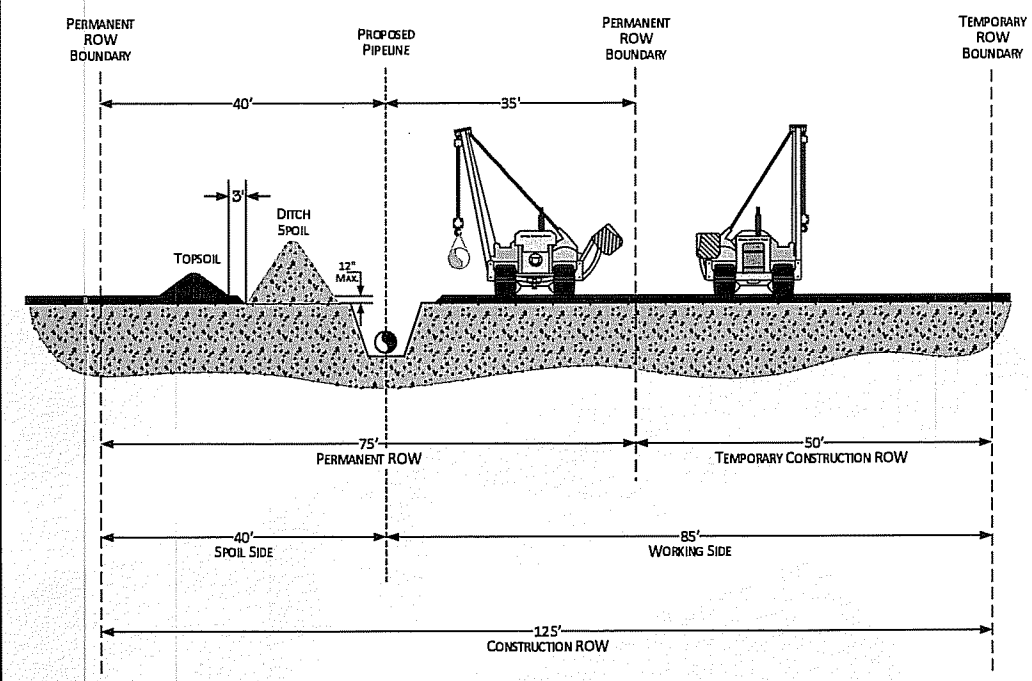
Atlantic Coast Pipeline and Supply Header Project
Typical Pipeline Construction Sequence

NATURAL RESOURCE GROUP
an ERM Group company

K:_CLIENT_PROJECTS\D-F\DOM\ACP\TYPICAL_CONSTRUCTION\TYP_CON_SEQUENCE.VSD, Date: 10/15/2014, REVISED: 8/5/2015

DRAWN BY: McGregor

Figure J-1



PROFILE

NOTES:

1. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 125' WIDE CONSISTING OF 75' OF PERMANENT RIGHT-OF-WAY AND 50' OF TEMPORARY CONSTRUCTION RIGHT-OF-WAY. ADDITIONAL TEMPORARY WORKSPACE WILL BE NECESSARY AT MAJOR ROAD, RAIL, RIVER CROSSINGS, SIDESLOPES, WHERE FULL RIGHT-OF-WAY TOPSOIL STRIPPING IS CONDUCTED, AND OTHER SPECIAL CIRCUMSTANCES AS REQUIRED.

RECEIVED
SEP 16 2015
MARINE RESOURCES COMMISSION

For environmental review purposes only.

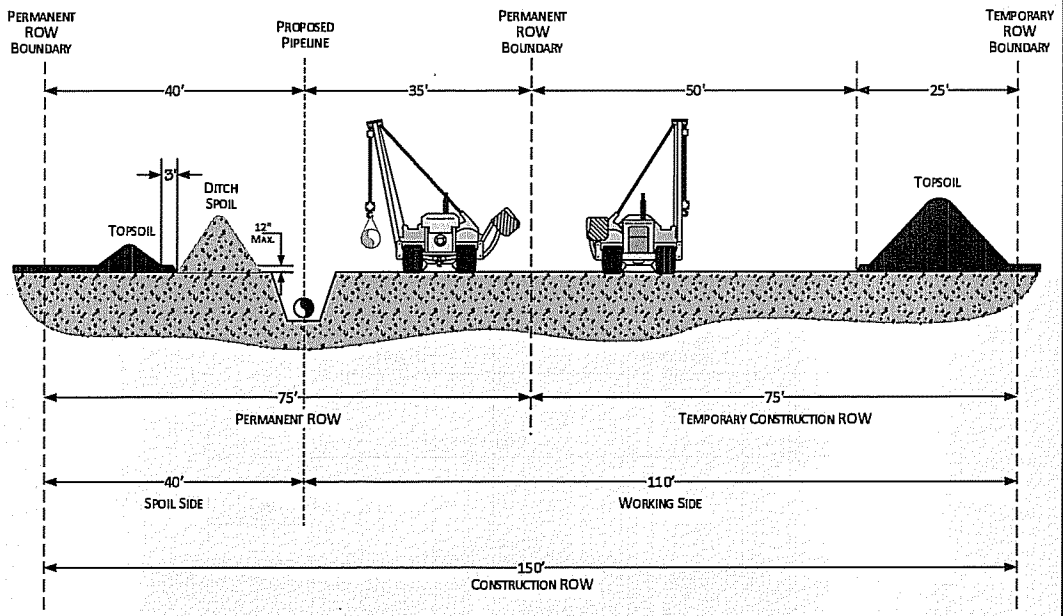
Atlantic Coast Pipeline

Atlantic Coast Pipeline
AP-1 (42" Outside Diameter)
Typical Construction Right-of-Way
Non-Agricultural Areas

NATURAL RESOURCE GROUP
an ERM Group company

K:_CLIENT_PROJECTS\D-FDOMACP\TYPICAL_CONSTRUCTION\TYP_CON_NONAG_AP_1.VSD, Date: 5/23/2007, REVISED: 4/15/2015 DRAWN BY: GIS

Figure J-2



PROFILE

NOTES:

1. IN AGRICULTURAL AREAS WHERE FULL WIDTH TOPSOIL STRIPPING IS REQUIRED, AN ADDITIONAL 25' OF TEMPORARY WORKSPACE WILL BE REQUIRED. IN THIS SCENARIO, THE CONSTRUCTION RIGHT-OF-WAY WILL BE 150' WIDE, CONSISTING OF 75' OF PERMANENT RIGHT-OF-WAY AND 75' OF TEMPORARY CONSTRUCTION RIGHT-OF-WAY. ADDITIONAL TEMPORARY WORKSPACE WILL BE NECESSARY AT MAJOR ROAD, RAIL, RIVER CROSSINGS, SIDESLOPES, AND OTHER SPECIAL CIRCUMSTANCES AS REQUIRED.

For environmental review purposes only.

Atlantic Coast Pipeline

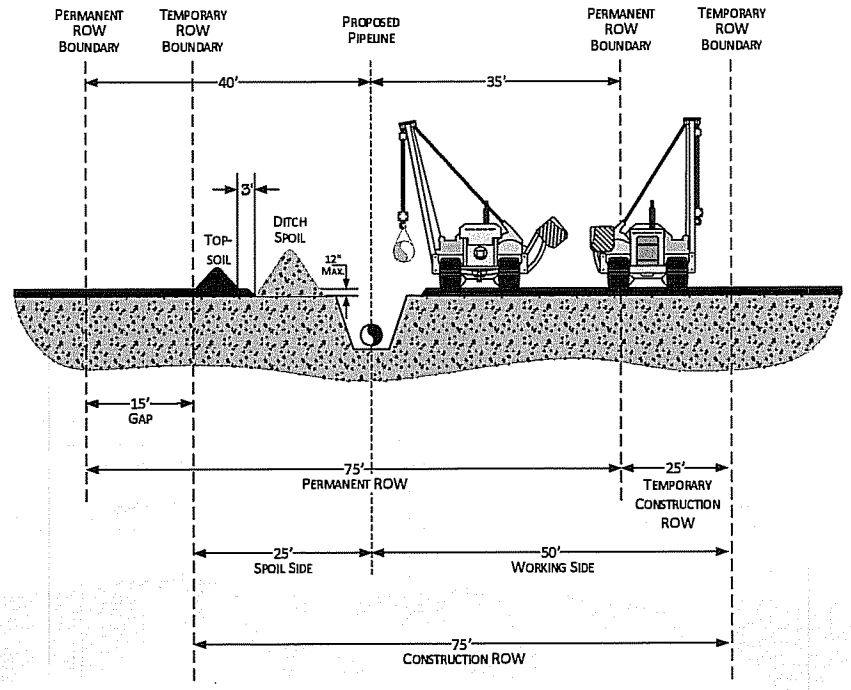
Atlantic Coast Pipeline
AP-1 (42" Outside Diameter)
Typical Construction Right-of-Way
Agricultural Areas

NATURAL RESOURCE GROUP
an ERM Group company

K:_CLIENT_PROJECTS\D-F\DOM\ACP\TYPICAL_CONSTRUCTION\TYP_CON_AG_AP_1.VSD, Date: 5/23/2007, REVISED: 4/15/2015 DRAWN BY: GIS

Figure J-3

RECEIVED
SEP 16 2015
MARINE RESOURCES COMMISSION



PROFILE

NOTES:

1. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 75' WIDE WITH 25' ON THE SPOIL SIDE AND 50' ON THE WORKING SIDE. THE PERMANENT ROW WILL BE 75' WIDE WITH 40' ON THE SPOIL SIDE AND 35' ON THE WORKING SIDE. THIS WILL LEAVE A 15' GAP BETWEEN THE AREA OF DISTURBANCE DURING CONSTRUCTION AND THE BOUNDARY OF THE PERMANENT ROW. NO IMPACT IS EXPECTED IN THIS AREA.

For environmental review purposes only.

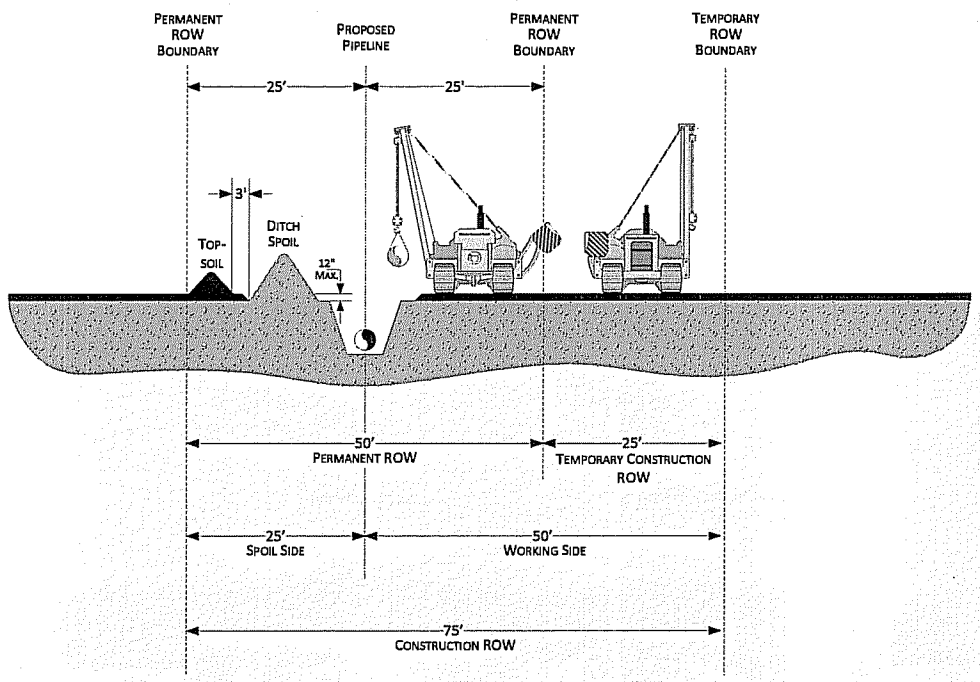
Atlantic Coast Pipeline

Atlantic Coast Pipeline
AP-1 (42" Outside Diameter)
Typical Construction Right-of-Way In Wetlands

NATURAL RESOURCE GROUP
an ERM Group company

K:_CLIENT_PROJECTS\D-F\DOMACP\TYPICAL_CONSTRUCTION\TYP_CON_WETLAND_AP_1.VSD, Date: 5/23/2007, REVISED: 4/15/2015 DRAWN BY: GIS

RECEIVED
SEP 16 2015
MARINE RESOURCES COMMISSION



PROFILE

NOTES:

1. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 75' WIDE CONSISTING OF 50' OF PERMANENT RIGHT-OF-WAY AND 25' OF TEMPORARY CONSTRUCTION RIGHT-OF-WAY. ADDITIONAL TEMPORARY WORKSPACE WILL BE NECESSARY AT MAJOR ROAD, RAIL, RIVER CROSSINGS, SIDESLOPES, WHERE FULL RIGHT-OF-WAY TOPSOIL STRIPPING IS CONDUCTED, AND OTHER SPECIAL CIRCUMSTANCES AS REQUIRED.

For environmental review purposes only.

Atlantic Coast Pipeline

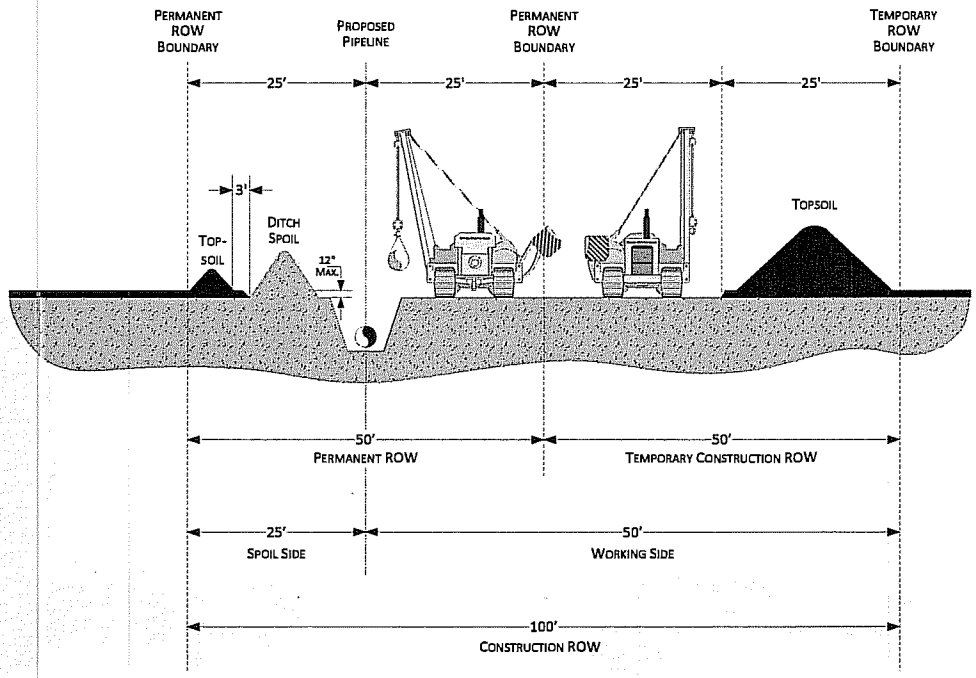
Atlantic Coast Pipeline
AP-3 (20" Outside Diameter), and
AP-4 and AP-5 (16" Outside Diameter)
Typical Construction Right-of-Way
Non-Agricultural Areas and Wetlands

NATURAL RESOURCE GROUP
an ERM Group company

K:_CLIENT_PROJECTS\D-F\DOM\ACP\TYPICAL_CONSTRUCTION\TYP_CON_NONAG_AP_3.VSD, | REVISED: 4/15/2015 DRAWN BY: McGregor

Figure J-5

RECEIVED
SEP 16 2015
MARINE RESOURCES COMMISSION



PROFILE

NOTES:

1. IN AGRICULTURAL AREAS WHERE FULL WIDTH TOPSOIL STRIPPING IS REQUIRED, AN ADDITIONAL 25' OF TEMPORARY WORKSPACE WILL BE REQUIRED. IN THIS SCENARIO, THE CONSTRUCTION RIGHT-OF-WAY WILL BE 100' WIDE, CONSISTING OF 50' OF PERMANENT RIGHT-OF-WAY AND 50' OF TEMPORARY CONSTRUCTION RIGHT-OF-WAY. ADDITIONAL TEMPORARY WORKSPACE WILL BE NECESSARY AT MAJOR ROAD, RAIL, RIVER CROSSINGS, SIDESLOPES, AND OTHER SPECIAL CIRCUMSTANCES AS REQUIRED.

For environmental review purposes only.

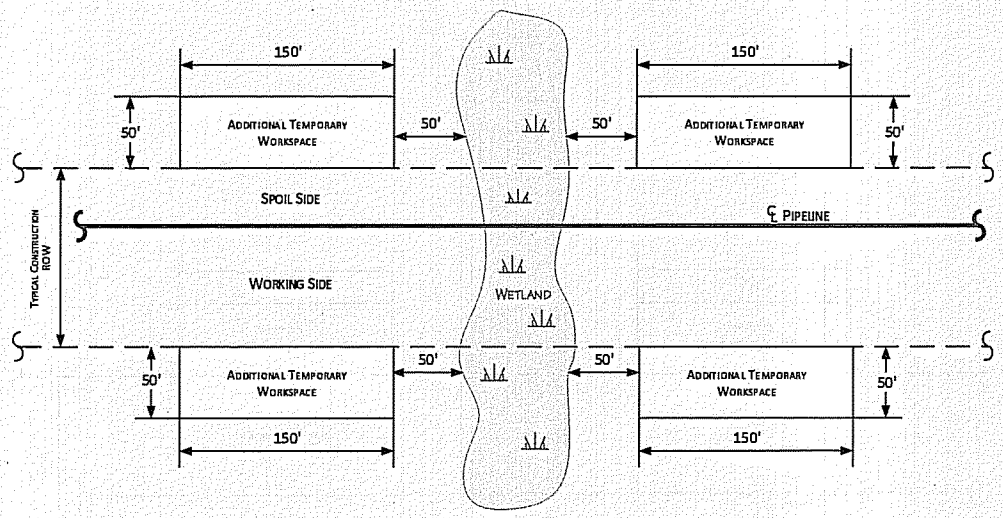
Atlantic Coast Pipeline

Atlantic Coast Pipeline
AP-3 (20" Outside Diameter), and
AP-4 and AP-5 (16" Outside Diameter)
Typical Construction Right-of-Way
Agricultural Areas

NATURAL RESOURCE GROUP
an ERM Group company

K:_CLIENT_PROJECTS\D-FDOM\ACP\TYPICAL_CONSTRUCTION\TYP_CON_AG_AP_3.VSD, Date: 5/23/2007, REVISED: 4/15/2015 DRAWN BY: GIS

RECEIVED
SEP 16 2015
MARINE RESOURCES COMMISSION



For environmental review purposes only.

Atlantic Coast Pipeline

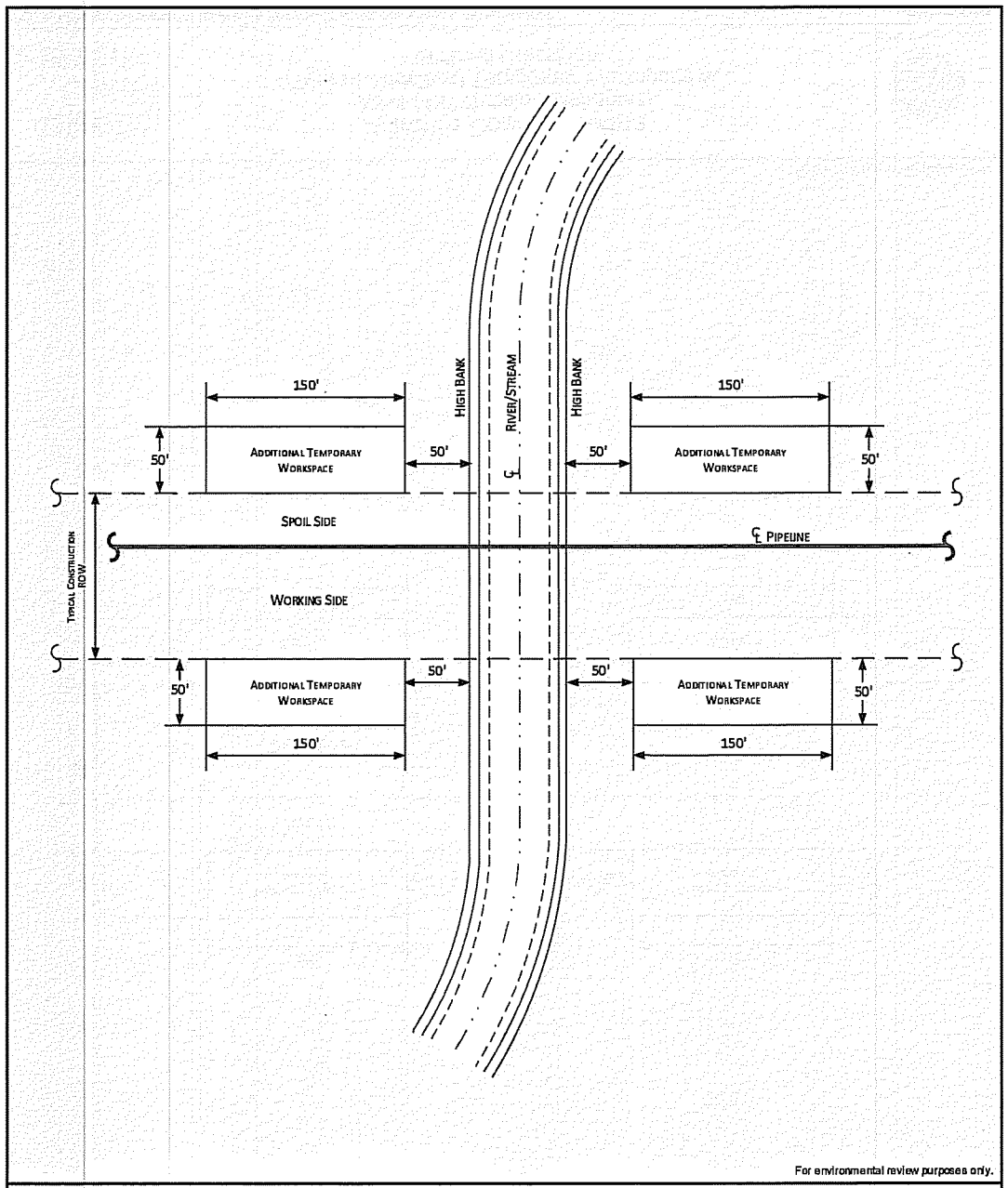
Atlantic Coast Pipeline
AP-1 (42" Outside Diameter)
Typical Additional Temporary Workspace at Wetland Crossings

an ERM Group company

K:_CLIENT_PROJECTS\D-F\DOM\ACP\CROSSINGS\XING_WETLAND_LARGE.VSD, Date: 10/10/2014, REVISED: 4/15/2015 DRAWN BY: McGregor

Figure J-7

RECEIVED
SEP 16 2015
MARINE RESOURCES COMMISSION



For environmental review purposes only.

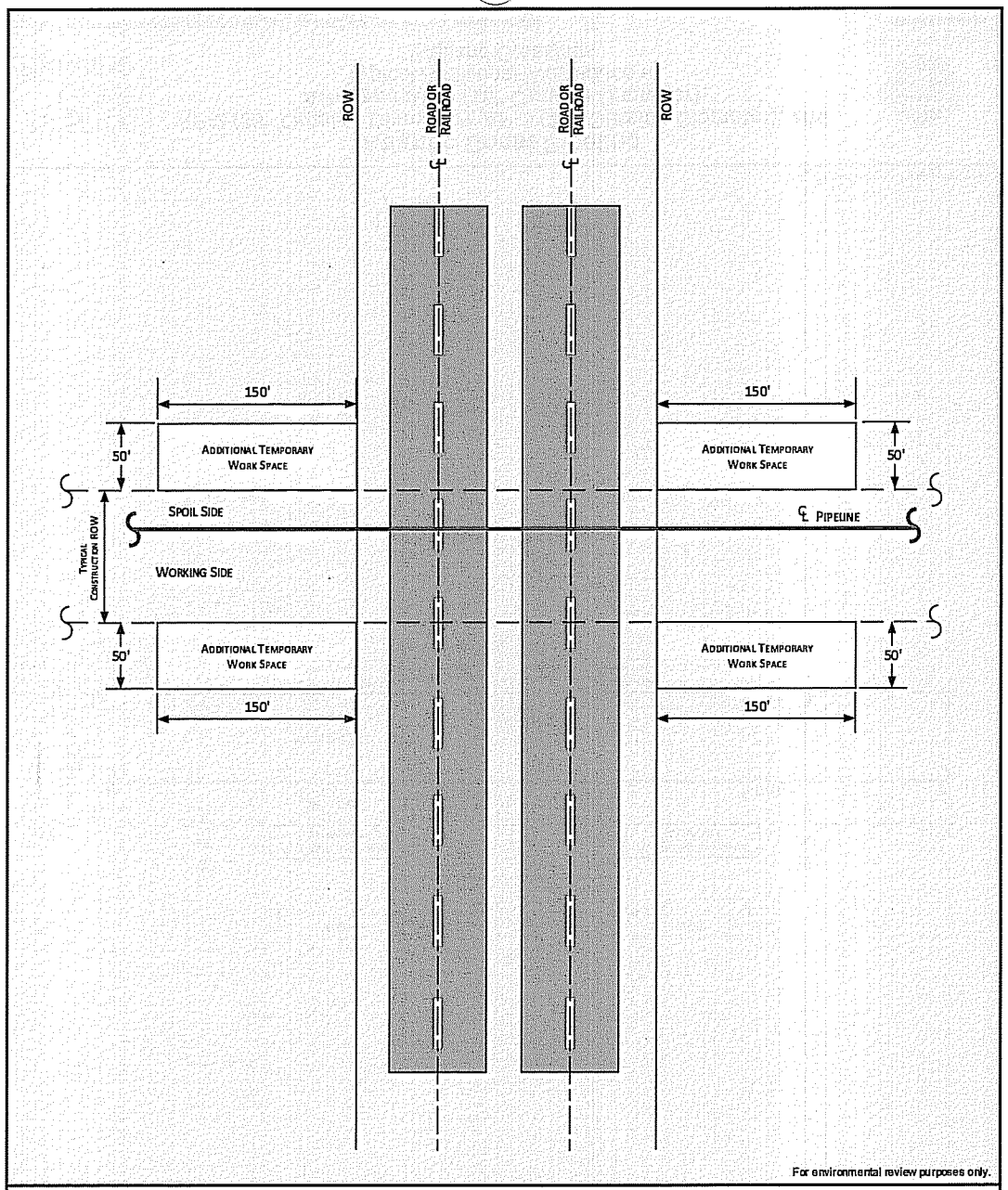
Atlantic Coast Pipeline

Atlantic Coast Pipeline
AP-1 (42" Outside Diameter)
Typical Additional Temporary Workspace at
Waterbody Crossings Greater Than 10 Feet Wide

NATURAL RESOURCE GROUP
an EFM Group company

K:_CLIENT_PROJECTS\D-FIDOM\ACP\CROSSINGS\XING_STREAM_LARGE.VSD, Date: 10/10/2014, REVISED: 4/15/2015 DRAWN BY: McGregor

RECEIVED
SEP 16 2015
MARINE RESOURCES COMMISSION



Atlantic Coast Pipeline

Atlantic Coast Pipeline

AP-1 (42" Outside Diameter)

Typical Additional Temporary Workspace at Bored Crossings for Two-Lane Roads and Railroads

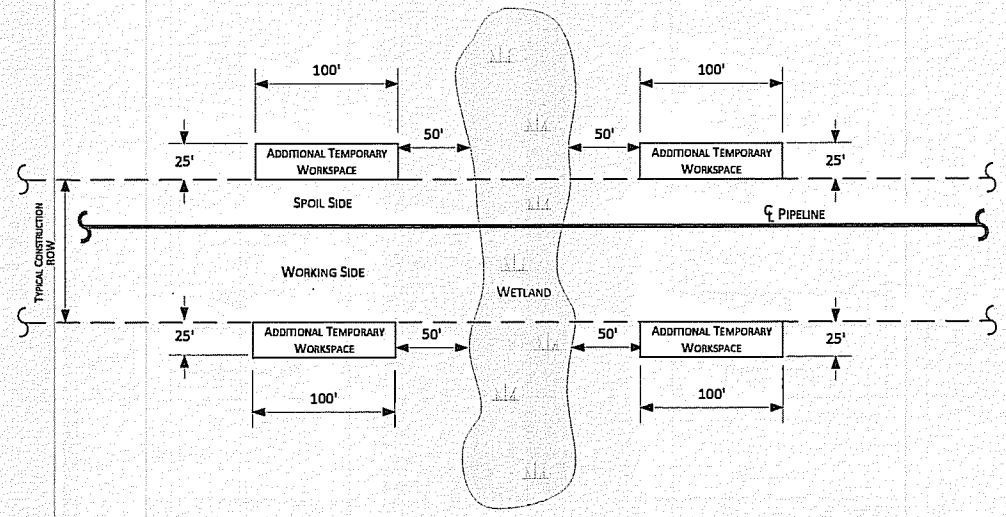
an ERM Group company

K:_CLIENT_PROJECTS\D-F\DOM\ACP\CROSSINGS\XING_BORED_ROADS_AP1.VSD, Date: 10/10/2014, REVISED: 4/15/2015

DRAWN BY: McGregor

Figure J-9

RECEIVED
SEP 16 2015
MARINE RESOURCES COMMISSION



For environmental review purposes only.

Atlantic Coast Pipeline

Atlantic Coast Pipeline

AP-2 (36" Outside Diameter), AP-3 (20" Outside Diameter), and AP-4 and AP-5 (16" Outside Diameter)

Typical Additional Workspace at Wetland Crossings

NATURAL RESOURCE GROUP

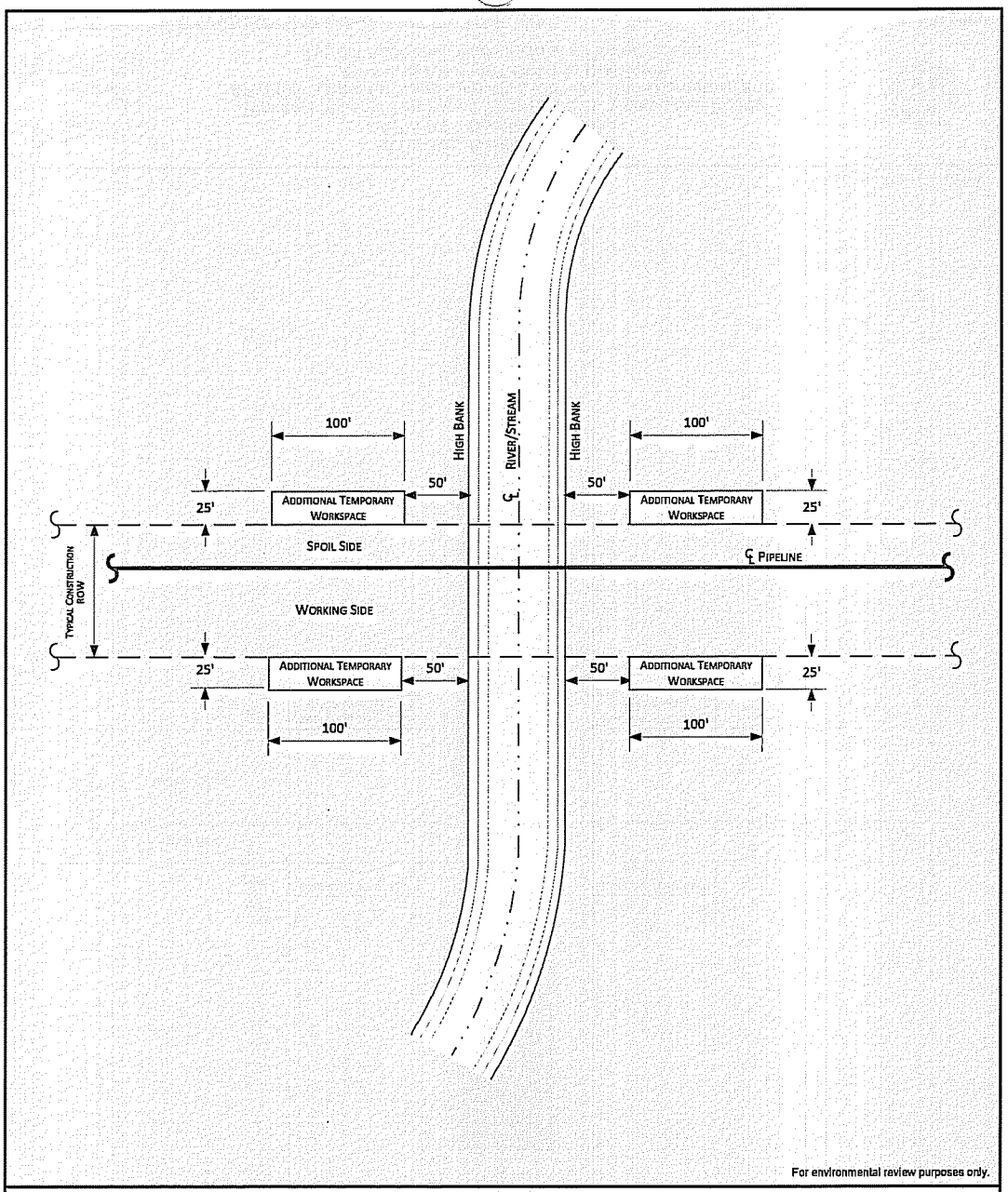
an ERM Group company

K:_CLIENT_PROJECTS\D-F\DOM\ACP\CROSSINGS\XING_WETLAND_SMALL.VSD, Date: 10/10/2014, REVISED: 4/15/2015

DRAWN BY: McGregor

Fig. J-10

RECEIVED
SEP 16 2015
MARINE RESOURCES COMMISSION



For environmental review purposes only.

Atlantic Coast Pipeline

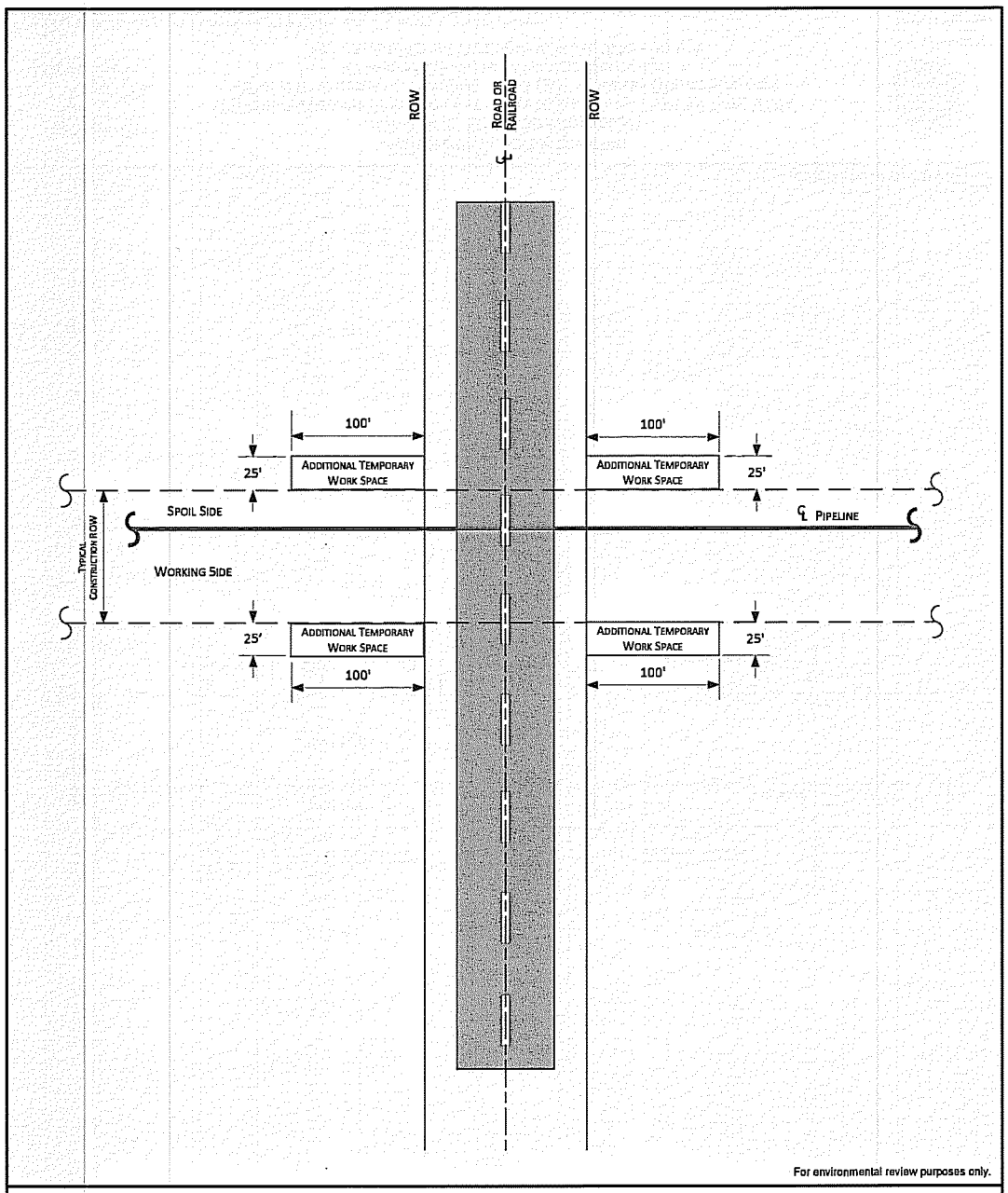
Atlantic Coast Pipeline
AP-1 (42" Outside Diameter)
Typical Additional Workspace at Waterbodies Less Than 10 Feet Wide
AP-2 (36" Outside Diameter), AP-3 (20" Outside Diameter), and
AP-4 and AP-5 (16" Outside Diameter)
Typical Additional Workspace at All Waterbodies

NATURAL RESOURCE GROUP
an ERM Group company

K:_CLIENT_PROJECTS\D-F\DOM\ACP\CROSSINGS\XING_STREAM_SMALL.VSD, Date: 10/10/2014, REVISED: 4/15/2015 DRAWN BY: McGregor

Figure J-11

RECEIVED
SEP 16 2015
MARINE RESOURCES COMMISSION



For environmental review purposes only.

Atlantic Coast Pipeline℠

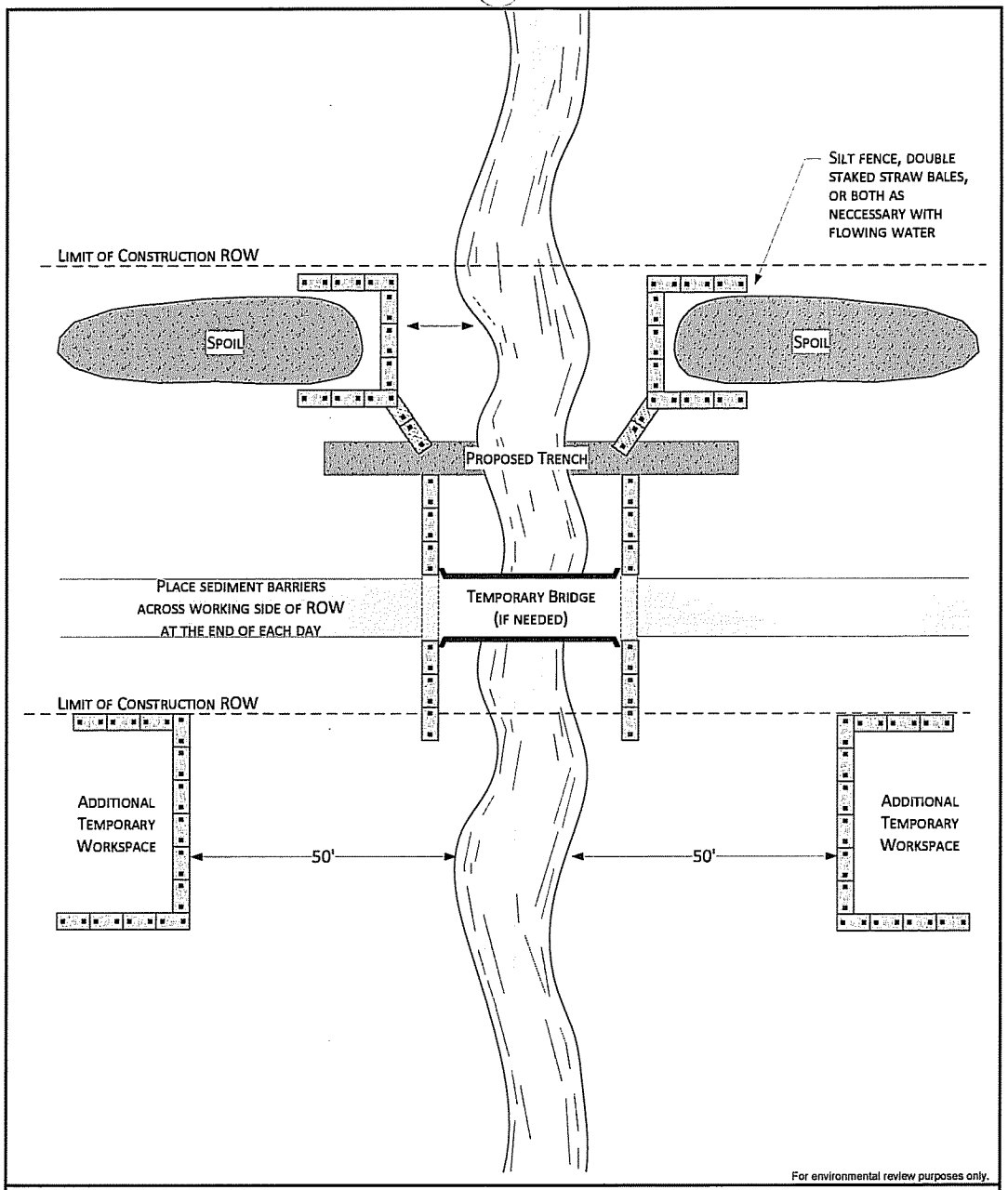
Atlantic Coast Pipeline
AP-1 (42" Outside Diameter)
Typical Additional Temporary Workspace at Single-Lane Roads
AP-2 (36" Outside Diameter), AP-3 (20" Outside Diameter), and AP-4 and AP-5 (16" Outside Diameter)
Typical Additional Workspace at all Bored Roads

NATURAL RESOURCE GROUP
an ERM Group company

K:_CLIENT_PROJECTS\D-F\DOM\ACP\CROSSINGS\XING_BORED_ROADS_ALL.VSD, Date: 10/10/2014, REVISED: 4/15/2015 DRAWN BY: McGregor

Fig. J-12

RECEIVED
SEP 16 2015
MARINE RESOURCES COMMISSION



For environmental review purposes only.

Atlantic Coast Pipeline

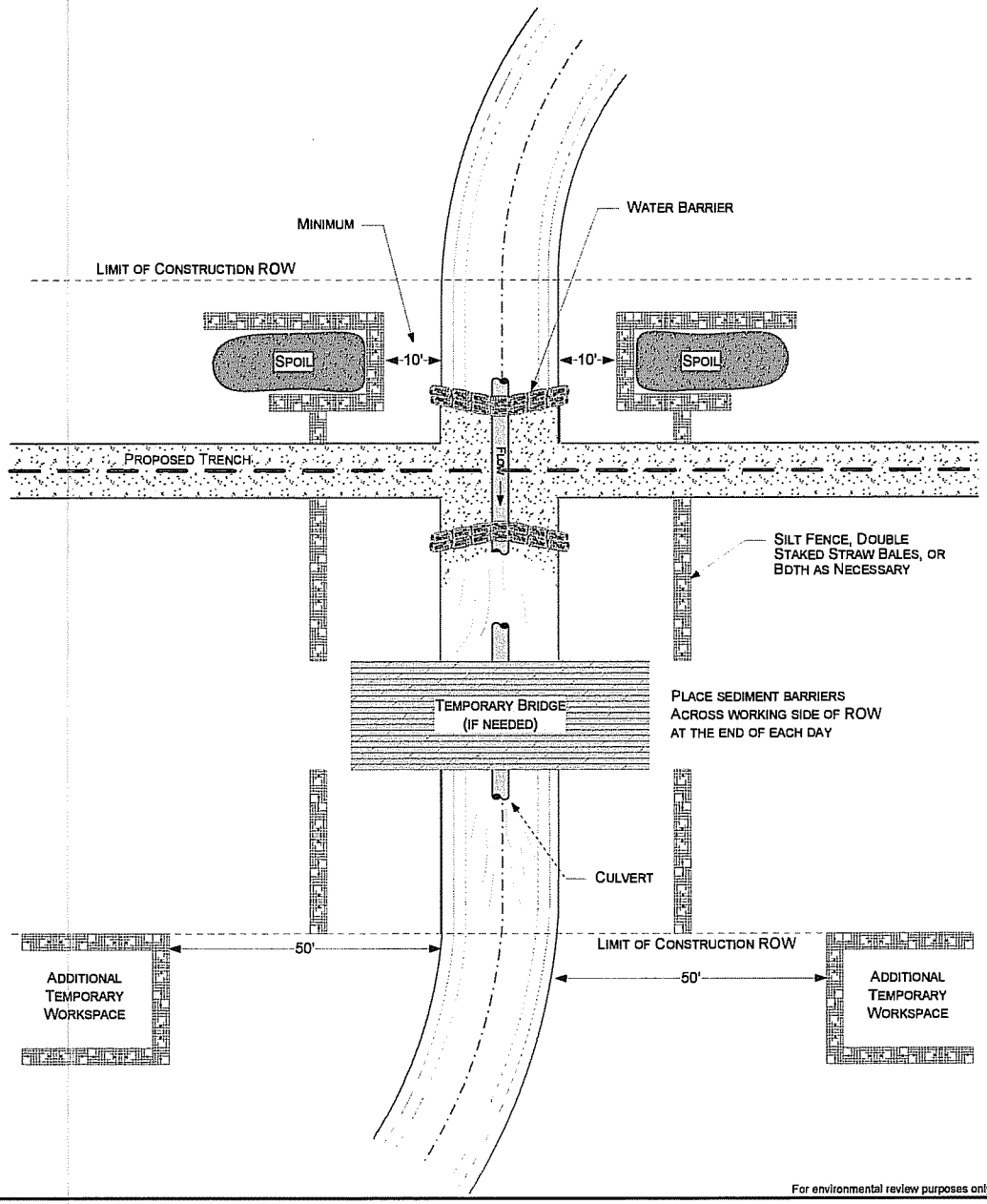
Atlantic Coast Pipeline
AP-1 (42" Outside Diameter), AP-2 (36" Outside Diameter), AP-3 (20" Outside Diameter), and AP-4 and AP-5 (16" Outside Diameter)
Typical Waterbody Crossing
Open Cut Method

NATURAL RESOURCE GROUP
an ERM Group company

K:_CLIENT_PROJECTS\D-F\DOM\ACP\CROSSINGS\XING_STREAM_OPEN_CUT.VSD, Date: 10/10/2014, REVISED: 4/15/2015 DRAWN BY: McGregor

Figure J-13

RECEIVED
SEP 16 2015
MARINE RESOURCES COMMISSION



For environmental review purposes only.

Atlantic Coast Pipeline

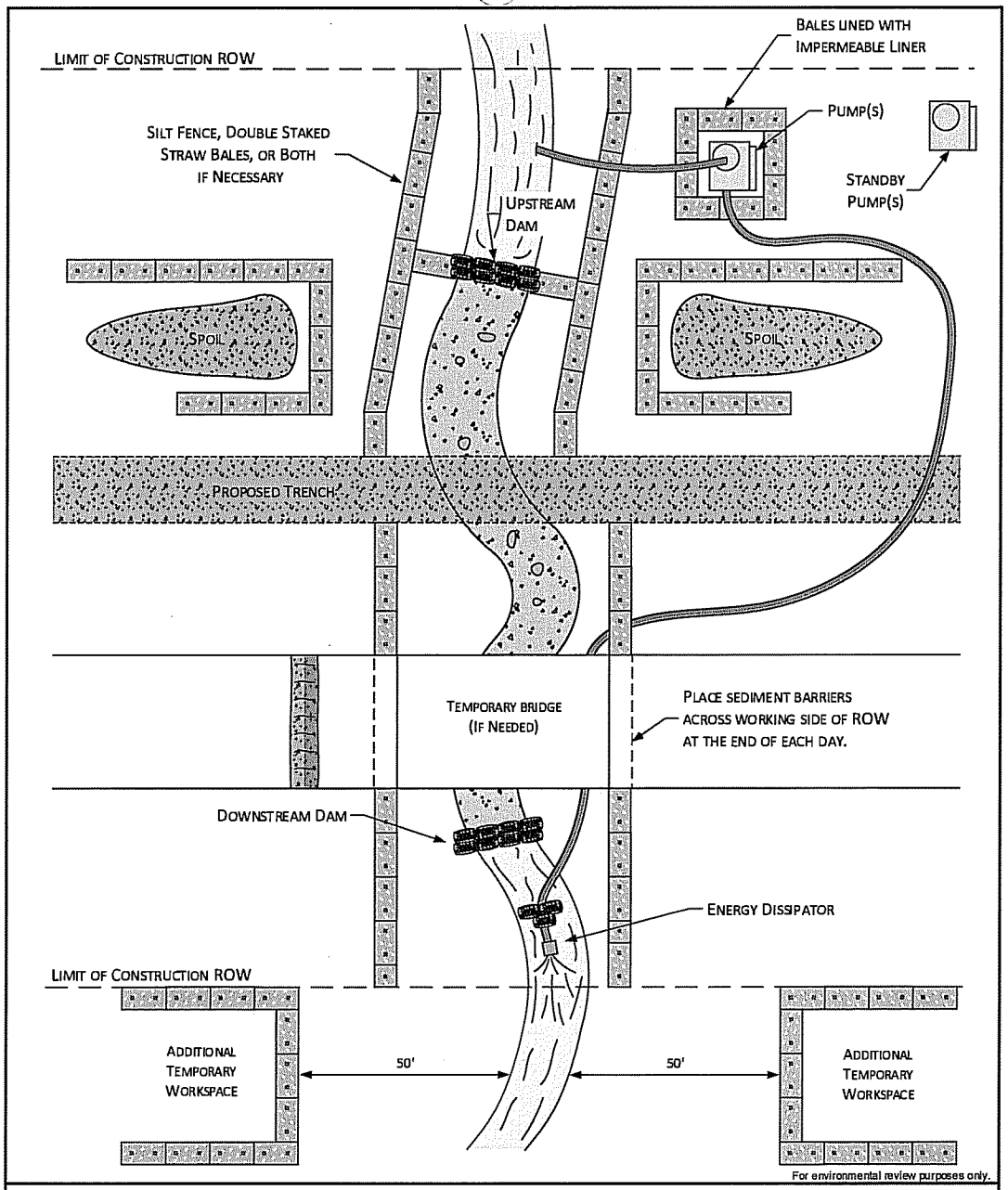
Atlantic Coast Pipeline
AP-1 (42" Outside Diameter), AP-2 (36" Outside Diameter), AP-3 (20" Outside Diameter), and AP-4 and AP-5 (16" Outside Diameter)
Typical Waterbody Crossing
Flume Method

NATURAL RESOURCE GROUP
an ERM Group company

K:_CLIENT_PROJECTS\D-F\DOM\ACP\CROSSINGS\XING_STREAM_FLUME.VSD, Date: 10/10/2014, REVISED: 4/15/2015 DRAWN BY: McGregor

Fig J-14

RECEIVED
SEP 16 2015
MARINE RESOURCES COMMISSION



Atlantic Coast Pipeline

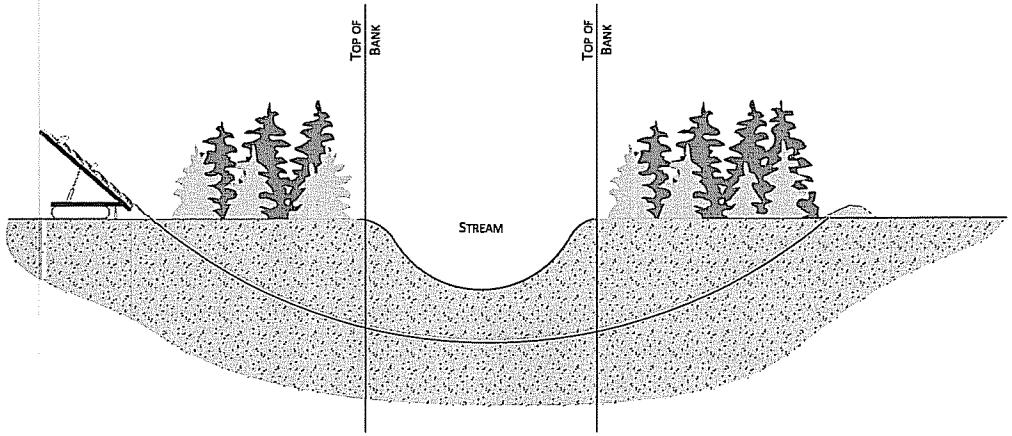
Atlantic Coast Pipeline
Typical Waterbody Crossing
Dam and Pump Method

NATURAL RESOURCE GROUP
an ERM Group company

K:_CLIENT_PROJECTS\D-F\DOM\ACP\CROSSINGS\XING_STREAM_DAM_AND_PUMP.VSD, Date: 10/10/2014, REVISED: 4/15/2015 DRAWN BY: McGregor

Figure J-15

RECEIVED
SEP 16 2015
MARINE RESOURCES COMMISSION



For environmental review purposes only.

Atlantic Coast Pipeline

Atlantic Coast Pipeline
AP-1 (42" Outside Diameter), AP-2 (36" Outside Diameter), AP-3 (20" Outside Diameter), and AP-4 and AP-5 (16" Outside Diameter)
Typical Waterbody Crossing
Directional Drill Method

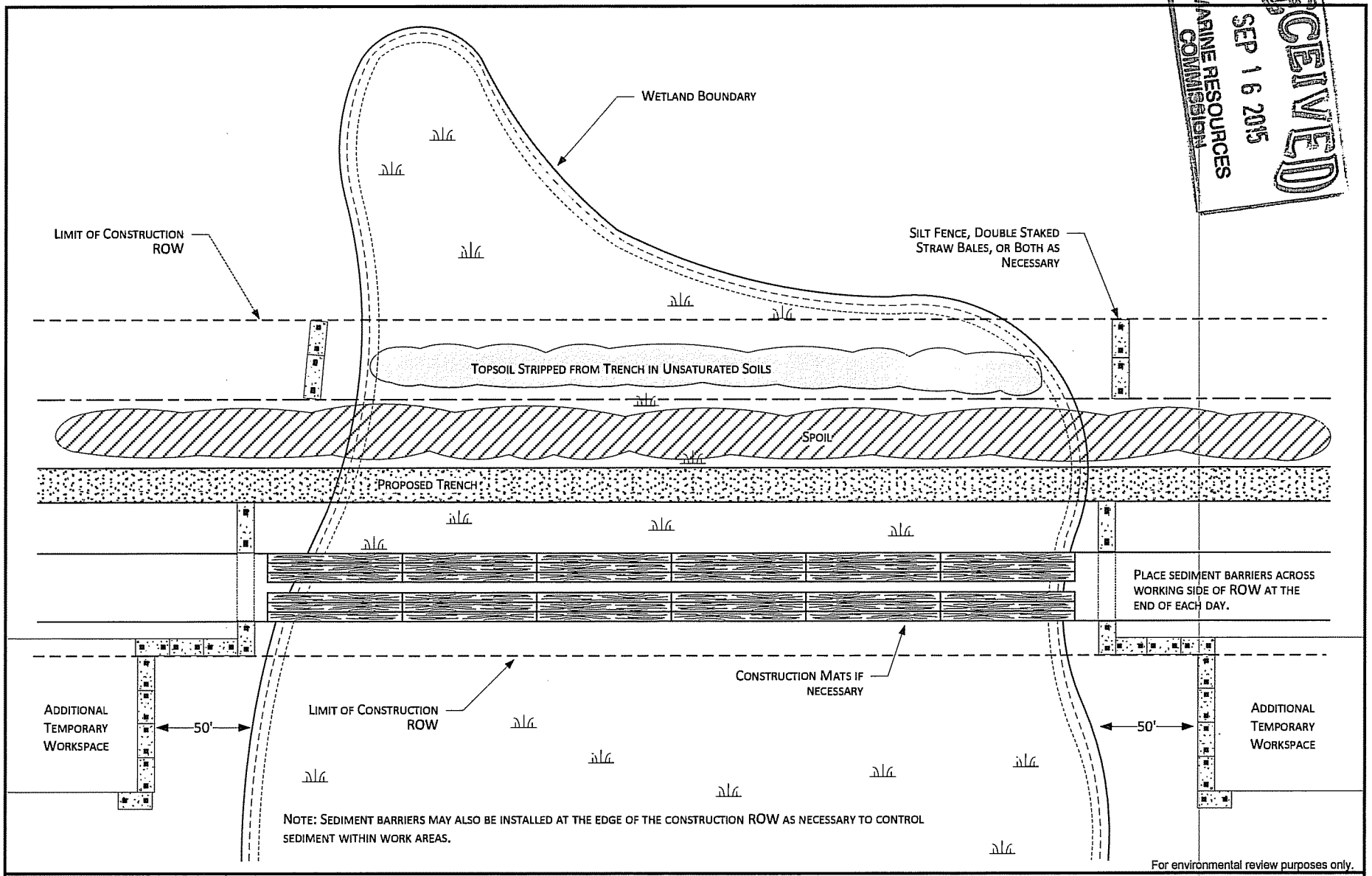
NATURAL RESOURCE GROUP
an ERM Group company

K:_CLIENT_PROJECTS\D-F\DOM\ACP\CROSSINGS\XING_STREAM_HDD.VSD, Date: 10/10/2014, REVISED: 4/15/2015 DRAWN BY: McGregor

Fig J-16

RECEIVED
SEP 16 2015
MARINE RESOURCES COMMISSION

RECEIVED
SEP 16 2015
MARINE RESOURCES COMMISSION



For environmental review purposes only.

Atlantic Coast Pipeline SM

Atlantic Coast Pipeline

AP-1 (42" Outside Diameter), AP-2 (36" Outside Diameter), AP-3 (20" Outside Diameter), and AP-4 and AP-5 (16" Outside Diameter)

Typical Wetland Crossing
Open Cut Method

NATURAL RESOURCE GROUP
an ERM Group company

K:_CLIENT_PROJECTS\D-F\DOM\ACP\CROSSINGS\XING_WETLAND_OPEN_CUT.VSD, Date: 10/10/2014, REVISED: 4/15/2015

DRAWN BY: McGregor

Figure J-17