

The construction of additional roads, clearing of vegetation and timber, and related activities would likely result in more resource impacts, than if cut timber were allowed to decompose in place in areas that have not already been subject to ground disturbing activities. If the respective landowners are agreeable to this option, DCR recommends this course of action to minimize impacts to natural heritage resources, consistent with the no tree removal action that will occur on the USFS lands and allowing native forest to regenerate. DCR recommends that at sites that were previously unforested, and where the ground layer has been severely altered, the reseeded measure identified below in the proposed Atlantic Coast Pipeline Restoration Plan (Appendix H), is necessary to restore habitat for pollinators including the rusty patched bumble bee. DCR recommends the minimization of pre-construction clearing, grading and vegetation removal within the rusty patched bumble bee high potential zone. Due to the legal status of the rusty patched bumble bee, DCR recommends coordination with USFWS to ensure compliance with protected species legislation.

Appendix H- T & E Conservation Measures- Re-seed all construction ROW areas (temporary and permanent) within the HPZ (Habitat Protection Zone) and the dispersal zone with pollinator friendly native seed mixes consistent with recommendations for plant restoration by GWNF. Include species preferred by RPBB.

Karst

This project has intersected the DCR predictive suitable habitat model identifying potential habitat for the Madison cave isopod (*Antrolana lira*, G2G4/S2/LT/LT). Therefore, DCR recommends coordination with the U.S. Fish and Wildlife Service (USFWS) and Virginia's regulatory authority for the management and protection of this species, the VDWR, to ensure compliance with protected species legislation

In zones where trees are already cut and need to be cleared, DCR recommends that any additional cutting be limited to the absolute amount minimum necessary to allow access for the proposed restoration activities and all efforts be made to limit ground disturbance. In particular, DCR recommends protection of areas where sensitive resources such as wetlands were previously buffered, not allowing timber removal. Ideally, existing rootstock and understory vegetation would be left in place to facilitate faster natural regeneration of vegetation that will in turn help stabilize the soil and reduce impacts. DCR recommends exceptions only occur in situations where landowners have agreed to other terms or courses of action and these actions are consistent with valid active permits. DCR recommends that Erosion and Sediment Control Devices (ESC) that meet or exceed the applicable permit requirements be in place before the commencement of these activities. Maintenance and inspection, cleaning and or replacement of these ESC devices is critical to their proper performance. DCR recommends the ESC devices remain in place during the duration of the project in operational condition.

Trees to be Felled

According to the information in our files, the Matthew Creek Stream Conservation Unit (SCU) is within the tree felling area. SCUs identify stream reaches that contain aquatic natural heritage resources, including 2 miles upstream and 1 mile downstream of documented occurrences, and all tributaries within this reach. SCUs are also given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain. The Matthew Creek SCU has been given a biodiversity ranking of B4, which represents a site of moderate significance. The natural heritage resource associated with this site is:

SP-Middle James-Buffalo Third Order Stream Aquatic Natural Community G3/S3/NL/NL

The documented Aquatic Natural Community is based on Virginia Commonwealth University's **INSTAR** (*Interactive Stream Assessment Resource*) database, which includes over 2,000 aquatic (stream and river) collections statewide for fish and macroinvertebrate. These data represent fish and macroinvertebrate assemblages, instream habitat, and stream health assessments. The associated Aquatic Natural Community is significant on multiple levels. First, this stream is a grade A, per the VCU-Center for Environmental Sciences (CES), indicating its relative regional significance, considering its aquatic community composition and the

present-day conditions of other streams in the region. This stream reach also holds a “Healthy” stream designation per the INSTAR Virtual Stream Assessment (VSS) score. This score assesses the similarity of this stream to ideal stream conditions of biology and habitat for this region. Lastly, this stream contributes to high Biological Integrity at the watershed level (6th order) based on number of native/non-native, pollution-tolerant/intolerant and rare, threatened or endangered fish and macroinvertebrate species present.

Threats to the significant Aquatic Natural Community and the surrounding watershed include water quality degradation related to point and non-point pollution, water withdrawal and introduction of non-native species. To minimize adverse impacts to the aquatic ecosystem as a result of the proposed activities, DCR recommends the implementation of and strict adherence to applicable state and local erosion and sediment control/storm water management laws and regulations, establishment/enhancement of riparian buffers with native plant species and maintaining natural stream flow.

In Appendix H T & E Conservation Measures-“*All tree felling Time of Year Restrictions for all bat species, Bombus affinis (Rusty Patched Bumble Bee), and migratory bird species should be strictly adhered to.*” DCR supports adherence to time-of-year restrictions as proposed by regulatory agencies.

Cut Trees to Remain on the Ground

According to the information in our files, Peak Run Forest trail-Jackson River Pastures, Shady Lane Forest and Rt.640 Mill Creek Conservation Sites are documented within the areas of cut trees to remain on the ground, and have been given a biodiversity significance ranking of B3, which represents a site of high biodiversity significance. The natural heritage resource of concern at these sites is:

<i>Bombus affinis</i>	rusty patched bumble bee	G1/S1/LE/NL
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In areas where trees have been felled by hand with no ground disturbing activities to date, leaving these trees in place will likely result in the least impact to the soil and erosion reduction. In sensitive and vulnerable areas, the reduction in erosion and sediment transport is particularly important. The construction of additional roads, clearing of vegetation and timber, and related activities would likely result in additional natural heritage resource impacts than if the cut timber were allowed to decompose in place, in areas that have not already been subject to ground disturbing activities. If the respective landowners are agreeable to this option, DCR supports this course of action to minimize impacts to natural heritage resources including karst resources, consistent with the no tree removal action that will occur on the USFS lands and allowing the forest to regenerate naturally. Due to the legal status of the rusty patched bumble bee, DCR recommends coordination with USFWS to ensure compliance with protected species legislation.

Access Roads

According to the information in our files, Back Draft at Rt 641 and Port Lock Run Conservation Sites are documented within the access road areas and have been given a biodiversity significance ranking of B3, which represents a site of high biodiversity significance. The natural heritage resource of concern at these sites is:

<i>Bombus affinis</i>	rusty patched bumble bee	G1/S1/LE/NL
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Due to the legal status of the rusty patched bumble bee, DCR recommends coordination with USFWS to ensure compliance with protected species legislation. DCR recommends the use of existing access roads for restoration activities where possible. If access roads need to be upgraded, DCR recommends this be done in the most environmentally sound way possible to limit unnecessary soil disturbance and impacts to karst resources. DCR recommends appropriate erosion and sediment control devices (ESC) that meet or exceed the applicable permit requirements be in place before the commencement of these activities. Throughout the duration of the project, maintenance and inspection, cleaning and/or replacement of these ESC devices is critical to their proper

performance. DCR also recommends that the three greenfield access roads (identified in Appendix J) be restored to original habitat following the restoration activities. DCR recommends that previously unforested areas of the rusty patched bumble bee High Potential and Dispersal Zone be reseeded with native pollinator habitat as part of the conservation measures in Appendix H-T & E conservation measures.

In Appendix H-“*All tree felling Time of Year Restrictions for all bat species, Bombus affinis (Rusty Patched Bumble Bee), and migratory bird species should be strictly adhered to.*” DCR supports adherence to time-of-year restrictions as proposed by regulatory agencies.

Overall Karst Recommendations

Atlantic Coast Pipeline, LLC (ACP) or its member entities Dominion Atlantic Coast Pipeline, LLC, Duke Energy ACP, LLC and Piedmont ACP Company, LLC or any other entity that these become or are held by must comply with the terms of all state and federal Permits existing/reissued and /or modified that apply to activities performed on this project and to the obligations that they have with landowners both private and public. DCR recommends ACP comply with the maintenance provisions and timelines in the Upland Erosion Control, Revegetation & Maintenance Plan and Wetland and Waterbody Construction and Mitigation Procedures Plans and Procedures that require monitoring and maintenance following construction activities (any action requiring soil disturbance) as they currently exist or if they are amended to reduce impacts. DCR also supports ACP compliance with all existing procedures that are designed to protect cave and karst resources. If any cave or karst related issues or concerns arise from the restoration projects, it is strongly recommended that the Virginia DCR, Division of Natural Heritage Karst Protection Coordinator, Wil Orndorff, (540-230-5960, Wil.Orndorff@dcr.virginia.gov) be contacted to seek professional guidance on how to proceed. DCR recommends if any incident occurs that could impact cave and karst resources, the DCR-Karst Program be contacted as soon as possible to help reduce potential impacts.

In Appendix H -T&E Conservation Measures of the Atlantic Coast Restoration Plan under line for "*Species = MCI. Agency = FERC. Commitment/Conservation Measures = The 300-foot buffer around karst features in all work areas will be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete. Source Documents = Karst Plan, SPCC. Implementation Status = Complete. Comments = Signage installation should have already been completed by EI.*"

DCR strongly suggests that the flagging of karst features in the field task not be considered completed for the project but is on-going project task. While the signs and flagging may have been initially installed identifying karst features, it is equally as important to maintain this signage, refresh flagging and replace signs in areas that may have been destroyed by construction activities, damaged by weather or simply obscured by vegetation growth. DCR recommends this be a task throughout the entire duration of the project near karst features and that this flagging only be removed or considered finished after the completion of any work in project restoration zones that may impact karst features.

During every phase of the project, DCR recommends the prioritization of soil stabilization around the work zones in areas with cave and karst resources. Minimizing surface disturbance; strict use of Erosion and Sediment Control Devices appropriate for the location; as well as maintenance and upkeep of these devices and adherence to best management practices appropriate for karst will help to reduce impacts to the karst, groundwater and surface water resources as well as any associated fauna and flora.

Sinkholes are present in and around sections of the project. Typically, additional, smaller unmapped sinkholes can also be present in the vicinity. Sinkholes are areas where surface material has collapsed into the subsurface and into underground watercourses. Sinkhole areas are places where surface water directly affects groundwater quality and flow. What goes into sinkholes comes out in wells and springs, and can degrade drinking water, springs and spring-fed surface waters, and the habitat of subterranean creatures. Discharge of untreated stormwater runoff to sinkholes is discouraged, and sinkholes to which stormwater is diverted or which have been modified to accept stormwater are required by law to be registered as Class 5 Injection Wells with the US Environmental Protection

Agency. Filling or alteration of natural (pre-existing) sinkholes is discouraged, and designation of natural buffers and the protection of these buffers around sinkholes is recommended.

If karst features such as additional undocumented sinkholes, caves, disappearing streams, and large springs are encountered during the project, please coordinate with Wil Orndorff, (540-230-5960, Wil.Orndorff@dcr.virginia.gov), the Virginia DCR, Division of Natural Heritage Karst Protection Coordinator, to document and minimize adverse impacts. Activities such as discharge of runoff to sinkholes or sinking streams, filling of sinkholes, and alteration of cave entrances can lead to environmental impacts including surface collapse, flooding, erosion and sedimentation, contamination of groundwater and springs, and degradation of subterranean habitat for natural heritage resources (e.g. cave adapted invertebrates, bats). These potential impacts are not necessarily limited to the immediate project area, as karst systems can transport water and associated contaminants rapidly over relatively long distances, depending on the nature of the local karst system. If the project involves filling or “improvement” of sinkholes or cave openings, DCR requests detailed location information and copies of the design specifications. In cases where sinkhole improvement is for storm water discharge, copies of VDOT Form EQ-120 will suffice.

Ecological Cores

Ecological Cores are areas of unfragmented natural cover with at least 100 acres of interior that provide habitat for a wide range of species, from interior-dependent forest species to habitat generalists, as well as species that utilize marsh, dune, and beach habitats. Cores also provide benefits in terms of open space, recreation, water quality (including drinking water protection and erosion prevention), and air quality (including carbon sequestration and oxygen production), along with the many associated economic benefits of these functions. The cores are ranked from C1 to C5 (C5 being the least ecologically relevant) using many prioritization criteria, such as the proportions of sensitive habitats of natural heritage resources they contain.

Fragmentation occurs when a large, contiguous block of natural cover is dissected by development, and other forms of permanent conversion, into one or more smaller patches. Habitat fragmentation results in biogeographic changes that disrupt species interactions and ecosystem processes, reducing biodiversity and habitat quality due to limited recolonization, increased predation and egg parasitism, and increased invasion by weedy species.

To minimize further impact to ecological cores as identified in the Virginia Natural Landscape Assessment (<https://www.dcr.virginia.gov/natural-heritage/vaconvisvnl>), DCR recommends allowing natural revegetation of impacted forested areas in the restoration areas. Based on landowner consent, DCR also supports the planting of native tree species to increase forest cover in previously non-forested areas to provide benefits to adjacent ecological cores.

Invasive Species

DCR recommends the development and implementation of an invasive species plan to be included as part of the Atlantic Pipeline Restoration Plan as referenced on page 8 in (Appendix H) T & E Conservation Measures. The invasive species plan should include an invasive species inventory for the project area based on the current DCR Invasive Species List (<http://www.dcr.virginia.gov/natural-heritage/document/nh-invasive-plant-list-2014.pdf>) and methods for treating the invasive species. DCR also recommends the restoration and maintenance practices planned include appropriate revegetation using native species in a mix of grasses and forbs for soil stabilization, robust monitoring and an adaptive management plan to provide guidance if initial revegetation efforts are unsuccessful or if invasive species introductions occur. Guidance on native plant species can be found here: <https://www.dcr.virginia.gov/natural-heritage/native-plants-finder>.

There are no State Natural Area Preserves under DCR’s jurisdiction in the project vicinity.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-

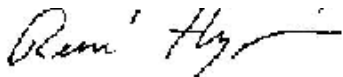
listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

New and updated information is continually added to Biotics. Please re-submit project information and map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

The VDWR maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from <http://vafwis.org/fwis/> or contact Ernie Aschenbach at 804-367-2733 or Ernie.Aschenbach@dwr.virginia.gov. According to our files, the Cut Trees and Trees to Remain on the Ground and Access Road areas, there is potential for the little brown bat (*Myotis lucifugus*) and /or the tri-colored bat (*Perimyotis subflavus*) to occur within the project area. Therefore, DCR recommends coordination with the VDWR, Virginia's regulatory authority for the management and protection of these species to ensure compliance with the Virginia Endangered Species Act (VA ST §§ 29.1-563 – 570).

Should you have any questions or concerns, feel free to contact René Hypes at 804-371-2708. Thank you for the opportunity to comment on this project.

Sincerely,



S. René Hypes
Natural Heritage Project Review Coordinator

Cc: Amy Ewing, VDWR
Troy Andersen, USFWS
Wil Orndorff, DCR-Karst
Jason Ericson, Dominion Energy