



United States
Department of
Agriculture

Forest
Service

Monongahela National Forest

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File Code: 1900; 2700
Date: April 6, 2017

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First St., N.E., Room 1A
Washington, DC 20426

Dear Ms. Bose:

Subject: Forest Service's Comments on the Draft Environmental Impact Statement for the Proposed Atlantic Coast Pipeline Project
OEP/DG2E/Gas 4
Atlantic Coast Pipeline, LLC
Docket No. CP15-554-000 and CP15-554-001

The Forest Service submits comments on the Draft Environmental Impact Statement (EIS) for the Atlantic Coast Pipeline Project (ACP Project) proposed by Atlantic Coast Pipeline, LLC (ACP). The proposed ACP Project would affect National Forest System (NFS) lands on the Monongahela National Forest and the George Washington National Forest.

As a cooperating agency, the Forest Service provides comments on the Draft EIS to assist the Federal Energy Regulatory Commission (FERC) with the development of the Final EIS and to assist ACP in identifying information necessary to assess potential effects of the ACP Project on NFS lands. The comments are detailed in the attached table. We appreciate FERC coordinating the EIS and we look forward to continued consultation with ACP regarding the ACP Project.

For questions or additional information, please contact Jennifer Adams, Special Project Coordinator, by phone at (540) 265-5114 or by email at jenniferpadams@fs.fed.us.

Sincerely,


CLYDE THOMPSON
Forest Supervisor

cc: Atlantic Coast Pipeline, LLC



**FOREST SERVICE COMMENTS
DRAFT ENVIRONMENTAL IMPACT STATEMENT
ATLANTIC COAST PIPELINE PROJECT**

Page #	Section #	Comment
Access Road Improvement Maps		In Rev 11 b on the east slope of Tower Hill and southwest of Browns Pond, the centerline has been rerouted several thousand feet to the northeast. Confirm if this section been surveyed for TESLR species.
General	General	Engineering will need to review site specific plans and project specifications for any road work, including maintenance, reconstruction, and construction.
General	All sections pertaining to soil or geology	<p>There is a lack in detailed discussion on actual data collected on NFS lands within the DEIS. NFS lands should be discussed separately from other project lands.</p> <p>Please create a paragraph in the introduction describing surveys for data collection or reference them to a cited appendix. Suggested text:</p> <p>An Order 1 Soil Survey was completed for the ACP in the MNF and GWNF. The soil survey activities were conducted to be compliant with the requirements outlined in special use permit #GBR205003, dated April 22, 2015 for surveys in the MNF, and special use permit #GWP433201T, dated March 31, 2015 for surveys in the GWNF, both of which were issued by the U.S. Forest Service. These two permits were renewed as #MAR205001 dated April 11, 2016 and #GWP433202T dated April 11, 2016, as well as amendment #1 to SUP GWP433202T dated May 20, 2016. The survey resulted in the production of an Order 1 Soil Survey report (COM Plan Attachment G) with delineated soil map units determined through the use of the ACP Soil Mapping Key. A total of 360 test pits were completed during the investigation, including 85 test pits in the MNF and 275 test pits in the GWNF. A total of 511 soil samples were collected in duplicate by horizon in 111 test pits. Forty-one (41) of those test pits, including 190 horizons, were selected for particle size analysis, nutrient analysis, and total and organic carbon contents. Soil test pit logs, transect logs, and laboratory test results for soil samples collected in the field are provided as with the report. The data gathered for the Survey was utilized for environmental impact studies, geohazard studies, and for assessing Best Management Practices (BMPs) for post construction restoration within the pipeline study corridor.</p>
ES-3	Karst Terrain and Steep Slope	<p>The karst section, when referring to steep slopes, should clearly illustrate the difference between working on steep slopes in general and those steep slopes that are located over karst terrain.</p> <p>In addition, given that steep slopes are a major issue for this pipeline analysis through the mountainous regions (Allegheny Mountains and the Ridge and Valley), a separate section highlighting steep slopes in general and then in detail also needs to be included.</p>
ES-3	Karst Terrain and Steep Slope	Combining the discussions of karst terrain and steep slopes in the same section is confusing. These two major issues should be discussed in separate sections.
ES-3	Project Impacts and Mitigation	Paragraph #4., “sleep slopes” should be “steep slopes.”
ES-4	Karst Terrain and Steep Slope	<i>“Prior to construction, Atlantic would perform electrical resistivity investigation surveys to detect subsurface solution features along all portions of the route with the potential for karst development; these results would be correlated with boring logs to ensure the analysis reflects the field conditions.”</i>

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		These data should be collected prior to the project decision and should be used in this effects analysis to determine any effects from the construction and installation of the pipeline. Site specific mitigation and designs should be incorporated into the Construction, Operation, and Maintenance Plan. Electrical resistivity investigation survey data must be provided to the Forest Service prior to construction start and the Forest Service must be consulted prior to such actions on National Forest System Lands.
ES-4	Karst Terrain and Steep Slope	<p><i>“Atlantic and DTI developed a Geohazard Analysis Program and is also developing a Best in Class Steep Slope Management Program to address issues of landslide potential and susceptibility.”</i></p> <p>Atlantic will need to provide details on how they plan to abide by LRMP standards and guidelines. In general, SW07 in the MNF plan specifically limits or prohibits use of wheeled and tracked equipment on slopes over 40%. The document needs to include language and an analysis that reflects how ACP plans to meet LRMP direction. The site specific details and application of the analysis need to be reflected in the various parts of the Construction, Operation, and Maintenance Plan.</p>
ES-5	Karst Terrain and Steep Slope	<p><i>“Based on our review of Atlantic’s and DTI’s proposed construction methods, its implementation of impact avoidance and minimization measures, and our consultations with state agencies and other resource managers, along with our recommendations, we conclude that the potential for ACP and SHP to initiate or be affected by damaging karst conditions would be adequately minimized.”</i></p> <p>This statement would appear to be premature given the acknowledgement previously in this section of incomplete information presumed necessary to arrive at a conclusion (reference ES-4 and ES-5).</p> <ul style="list-style-type: none"> • ES-4: <i>“Because analysis, field surveys, and final measures related to slope hazards have not yet been completed for ACP and SHP, we recommend that Atlantic and DTI file the results of its geotechnical studies and geohazard analysis field reconnaissance, and identify mitigation that would be implemented in slope hazard areas during construction and operation of the projects.”</i> • ES-5: <i>“On the MNF and GWNF, Atlantic has not provided the information requested by the FS to assess potential project-induced landslide hazards and risk to public safety, resources, and infrastructure and also the effectiveness of proposed mitigation measures for restoration of steep slopes.”</i> <p>The Forest Service cannot concur with this conclusion for National Forest land until all erosion control, steep slope procedures, etc. are available for review and a FS decision on NFS lands has been made.</p>
ES-5	Karst Terrain and Steep Slopes	In the 1 st paragraph, “on the MNF and GWNF,” is the first use of these entities in the ES. We suggest spelling out both completely with the acronym in parentheses.
ES-5	Public Land and Recreational Impacts.	Last paragraph. Timber Removal Plan. Please clarify if this is the same or different than the Timber Extraction Plans referenced later in the paragraph on the following page.
ES-6	Public Land and Recreational Impacts.	2 nd paragraph. WBWF and WOF are non-profit organizations, not land-managing agencies.
ES-6	Public Land and Recreational Impacts.	3 rd paragraph, “West Virginia and western Virginia” is preferred.

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ES-6&7	Executive Summary	<p>“...that construction and operation of ACP and SHP may affect and are likely to adversely affect five federally listed species (Indiana bat, Northern long-eared bat, Roanoke logperch, running buffalo clover, and Madison Cave isopod), and would not likely adversely affect or have no effect on the remaining species identified by the FWS and NOAA Fisheries.”</p> <p>This is inconsistent with the determination made on page 182 in the BA for the clubshell mussel where: “the proposed ACP and SHP Projects may affect, and is likely to adversely affect the clubshell.”</p>
ES-6&7	Executive Summary	<p>“...based on these consultations and Atlantic’s and DTI’s field surveys, and assuming implementation of our recommendations, we determined that construction and operation of ACP and SHP may affect and are likely to adversely affect five federally listed species (Indiana bat, Northern long-eared bat, Roanoke logperch, running buffalo clover, and Madison Cave isopod), and would not likely adversely affect or have no effect on the remaining species identified by the FWS and NOAA Fisheries. In compliance with Section 7, we are submitting this draft EIS as our Biological Assessment and requesting formal consultation with the FWS.</p> <p>This is inconsistent with the determination made on page 240 in the BA for the small-whorled pogonia where: “the ACP project may affect...and is likely to adversely affect the small-whorled pogonia.”</p>
ES-7	Sensitive Species	<p>Based comments from the FS, and inadequate or inconsistent information, we have several recommendations for outstanding information.</p> <p>This statement acknowledges deficiencies in information needed to conduct an appropriate effects analysis for at least some sensitive species. Given this, the FS has serious reservations about the conclusions of the analyses up to this point because those conclusions have been reached prior to acquiring the necessary information to substantiate what must otherwise be presumed to represent judgements based on incomplete information.</p>
ES-7	Executive Summary	<p>“...a revised Biological Assessment to avoid and minimize impacts on the population of running buffalo clover and small whorled pogonia in the MNF.”</p> <p>Small whorled pogonia also occurs on the GWNF and may be impacted by the proposed project. The Biological Assessment also needs to address avoidance and minimization of impacts to small whorled pogonia on the GWNF.</p>
ES-9	Executive Summary	<p>There is not a discussion in the Executive Summary on Fisheries or Aquatic Resources under either the Water Resources or Wildlife sections.</p>
ES-10	ES	<p>“The regrowth of trees in the temporary workspaces would take years and possibly decades...”</p> <p>Please clarify differences in recovery time for various successional stages. Re-establishment of young trees would take years, and re-establishment of a young reproducing forest would likely take decades. Recovery time for a closed canopy of mature forest trees, and the habitat values that currently exist within such areas, would approach a century or more.</p>
ES-10	ES	<p>“Vegetation types, such as grassland/herbaceous, barren, and emergent wetlands, would return to preconstruction conditions during operation of ACP...facilities.”</p> <p>These habitat types may regain a superficially similar appearance, but without assistance, it is highly unlikely that soil quality, native plant communities, hydrological conditions, etc. would return to preconstruction conditions equivalent in ecological function and value to what was disturbed. With intentional restoration, long term-monitoring, and adaptive management, it is possible that those habitats and their ecosystem services can be restored close to what existed before, but even that is not guaranteed. Please revise for clarity.</p>

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ES-10	ES	<p><i>“[construction] could also impact wildlife...These impacts would be temporary...or short term...lasting no more than a few years until the preconstruction habitat and vegetation type is reestablished.”</i></p> <p>Impacts to certain species of wildlife in the 4208 acres likely to be permanently impacted will, likewise, likely be long-term and functionally permanent, lasting beyond the existence of the pipeline until mature forest cover is restored to those acres. Please revise for accuracy.</p>
ES-13	Alts Evaluated	Typo – “We also evaluated one route variation and reviewed the over 169 variations....”
ES-14	Major Conclusions	<p><i>“Atlantic and DTI would minimize impacts on the natural and human environments during construction and operation of its facilities by implementing the numerous measures described in their respective construction and restoration plans”</i></p> <p>This statement seems inconsistent with other statements in the Major Conclusions regarding adverse effects and permanent impacts on the environment.</p> <p>There will be irreversible impacts to the soil and vegetation resources from construction of the ACP pipeline on NFS lands. No matter how ACP plans to implement measures to reduce these impacts, there will still be an unavoidable irreversible dedication of the soil resource as defined by NEPA and the USFS FSH 2550.</p> <p>Topsoil mixing where stumps are removed, topsoil displacement in road construction, road reconstruction and skid roads for timber removal will all negatively impact soil productivity/quality on NF lands. The approximate effect is calculated in acres of soil disturbance to the soil resource of NFS land.</p> <p>The Construction, Operation, and Maintenance Plan is currently not complete, and substantial work remains to develop and refine measures to avoid, minimize, and mitigate impacts to a variety of resources on NFS lands, including steep slopes/sensitive soils; threatened, endangered, and sensitive species; and management indicator species. Until such measures have been established, accepted by the Forest Service, and incorporated into the Construction, Operation, and Maintenance Plan, the Forest Service cannot concur with the conclusion that impacts would be minimized.</p>
1-3	1.0	Thank you for portraying and correctly labelling the Appalachian National Scenic Trail on Figure 1-1 and elsewhere throughout the EIS and supporting documents.
1-7	1.2.2.1	4 th paragraph. “...and developed applicable portions of the EIS.” Change to “...and contributed to the development of applicable portions of the EIS.”
1-7	1.2.2.1	Last paragraph – <i>Note:</i> Atlantic submitted a revised SUP application to the FS dated on June 16, 2016.
1-8	1.2.2.1	Typos – change NSF to NFS in two locations under heading MNF and GWNF.
1-8	1.2.2.1	In the top paragraph, “...direction, and the Forest LRMPs.” Should be changed to “.....direction, the Forest LRMPs, and other applicable laws and regulations.”,
1-8	1.2.2.1	2 nd paragraph – There is a discrepancy in the DEIS description of a 53.5-foot-wide maintenance corridor (the long-term ROW grant) and ACP’s revised SF-299 Application submitted to the USFS dated 6/16/2016. In the SF-299, ACP requests a 75-foot wide permanent right-of-way across the MNF and GWNF. ACP will need to revise the SF-299 to reflect the most current proposed ROW width on NFS lands.
1-9	1.2.2.1	3 rd Paragraph - Regarding the discussion of NPS-acquired transfer lands: The National Park Service acquired lands (referred to as trail segments) and transferred management authority of certain trail segments to the Forest Service under authority of the NTSA through a Memorandum of Agreement (MOA). In the MOA, the NPS retained certain responsibilities over the transferred trail segments, including

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		any future authorization of oil or gas pipeline crossings. The NPS retains only those specific interests in the lands which were expressly reserved in the MOA. Otherwise, the trail segments transferred to the FS are subject exclusively to Forest Service regulations and management authority under the terms of the MOA and are in all respects NFS lands for the duration of the MOA. The ANST is a unit of the National Park system; however, the lands acquired and administered by the Forest Service for the ANST are NFS lands and subject exclusively to Forest Service regulations and management authority. <i>Note:</i> The currently proposed ACP route does not involve any NPS transferred trail segments.
1-8	1.2.2.1	5 th paragraph. Improper misuse of “NFS” – there are 3 uses of NSF and one use of NFS. All should be “NFS.”
1-9	1.2.2.1	2 nd paragraph. Add the following after “...with the non-profit Appalachian Trail Conservancy (ATC),” “ <i>local ATC-affiliated Trail Clubs,...</i> ”. The local ATC-affiliated Trail Clubs are full partners with NPS, ATC and the land managing agencies.
1-9	1.2.2.1	Change from “...ongoing management of the NPS-acquired parcels in this area” to “...ongoing management of some of the NPS-acquired parcels in this area...” There is a mixture of NPS-acquired/NPS-managed, NPS acquired/FS-managed, and FS-acquired/FS-managed ANST parcels in the area of the ANST near the proposed ACP crossing of the ANST and BRP.
1-11	1.2.2.6	3 rd paragraph says the MNF is cooperatively managed by the FS and WVDNR. This is misleading. Although the FS and WVDNR cooperate on the management of wildlife and fisheries, the FS is responsible for overall management of the National Forest.
1-23, 1-24	1.4	Bottom paragraph and Table 1.4-1. Table 1.4-1 should be revised to show the consultations of the applicant with NPS-APPA (Appalachian Trail Park Office) in addition to the listed consultation with NPS-BLR. No Permit or Clearance is needed from NPS-APPA, but consultation with them, as the designated lead federal agency for the entire ANST is important and should be done and documented here.
2-6	2.1.2	Thank you for adding text in each description of types of Aboveground Facilities specific to whether or not they will be located on NFS lands
2-9	2.1.2.6	Clarification is requested regarding the proposed communication towers (Bath County Power Station and Rocky Mountain MW Site) located on NFS lands. Additional information regarding the scope of the proposed improvements at these existing facilities is needed. Regulations found at Forest Service Handbook (FSH) 2709.11, Chapter 90, sec. 94.1(1) states that “the proponent does not need agency approval to co-locate the proposed use in or on an existing authorized facility when the proposed use is compatible with the communications site management plan and existing communications uses at the site. After securing permission from the facility owner or facility manager, the proponent may immediately locate equipment in or on the facility and proceed with operations.” Sec. 90.5 defines “co-location” as, “installation of telecommunications equipment in or on an existing communications facility or other structure.” The term “facility” is defined as, “a building, equipment shelter, or other structure designed to house communications equipment or a tower, mast, or other structure that supports a communications antenna.” Based on the brief description of ACP’s proposed communication uses at the two NFS land sites and in Table 2.1.2-6, it appears that ACP is proposing to “construct new megawatt antennas” at these sites. Please clarify that ACP intends to co-locate the new antennas in or on existing facilities as defined in the FSH.
2-15	2.2	Clarify if the acres of land disturbed on NFS lands includes new and/or improved access roads.
2-15	2.2	Bottom paragraph. “Following construction, 209.6 acres of new land” Please clarify the meaning of “new land.”
2-18	Table 2.2-2	Please add footnote to clarify that land requirement calculations for operation were based on a 53.5 foot-wide right-of-way on NFS lands.
2-25	2.2.5.1	The 3 rd paragraph states a total of 17 roads would be on FS and 15 will be used permanently. This does not match information on Table 4.8.9-3 on page 4-344 which shows 16 roads and states that one (36-014.AR3) will not be used.
2-25	2.2.5.1	“A total of 15 permanent roads would be required for operation of ACP on NFS lands.” Also, please express in terms of the number of miles and total acres of permanent roads impacted.
2-25	2.2.5.1	This section states that Atlantic “would improve unsuitable dirt and gravel roads through widening and/or grading, installing or replacing culverts, or clearing overhanging vegetation of tree limbs.” This also needs to include surfacing of roads to ensure that the traveled way is stabilized and sufficient to accommodate construction traffic.

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		This section indicates 17 access roads would be used during construction of ACP on National Forest lands. Table 4.8.9-3 lists 16 access roads.
2-27	2.3.3.1 Waterbody Crossings	<i>ATWS necessary for waterbody crossings would be located a minimum of 50 feet from the waterbody edge, except where adjacent upland consists of actively cultivated or rotated cropland or other disturbed land. The 50-foot setback would be maintained unless site-specific approval for a reduced setback is granted by the FERC and other jurisdictional agencies. Additional ATWS setbacks may be required on FS administered lands to comply with riparian setback standards, and would become conditioned as part of the SUP process. As stated above in section 2.3.1.1, we have determined that Atlantic's and DTI's request to locate certain ATWS within 50 feet of waterbodies is acceptable.</i> The MNF LRMP typically would require a 100 buffer between ATWS and any stream channel. See also our comment on section 4.3.2.9, page 4-114, regarding setback distance for ATWS
2-29	2.3.1.2	Table 2.3.1-2 seems out of place; please provide an introductory paragraph or other explanatory text.
2-32	2.3.2.2	<i>"Topsoil would follow such that spoil would be returned to its original horizon."</i> Please also specify that on NFS lands, topsoil with invasive species present would be isolated and/or treated as per the COM plan so as to prevent spread of invasives to new areas during construction, and to prevent re-establishment after construction.
2-32	2.3.2.2 Clearing and Grading	<i>"On NFS lands, the FS has indicated it would require segregation of all topsoil, regardless of depth or land use."</i> Note that the prescribed topsoil segregation is intended to meet direction contained in the MNF LRMP (guideline SW15).
2-33	2.3.2.3	<i>"...to provide a minimum of 3 feet of cover over the top of the pipe after backfilling."</i> There are inconsistencies throughout the document regarding the minimum cover depth. On page 2-37, it says 2 ft minimum.
2-34	2.3.2.5 Pipe Stringing, Bending, Welding, and Coating	<i>"Once the welds are made, a coating crew would coat the area around the weld with additional epoxy or other coating before the pipeline is lowered into the trench. Prior to application, the coating crew would thoroughly clean the bare pipe with a power wire brush or sandblast machine to remove dirt, mill scale, and other debris. The crew would then apply the coating and allow it to dry."</i> All coating must be pre-applied to pipes prior to being brought on to NFS lands. Where welds need to be made, epoxy coating may be applied on site in the trench area. Epoxy coating being applied in the trench at weld sites is to be applied by hand, no epoxy application shall be sprayed or splattered onto surrounding environment. Any mixing of materials would need to be done in a specialized area where any spill or potential contamination can be contained and not have contact with the soil.
2-34	2.3.2.6	<i>"Topsoil would not be used as padding."</i> Ensure this statement is consistent with COM plan, which specifies that some topsoil will be buried to prevent re-infestation by existing invasive plants.
2-34	2.3.2.6 Lowering-In and Backfilling	<i>"In rocky areas or where the trench contains bedrock, padding material such as sand, approved foam, or other protective materials would be placed in the bottom of the trench to protect the pipeline."</i> On NFS lands, foam will not be permitted.
2-34	2.3.2.6 Lowering-In and Backfilling	<i>"Where sufficient padding material is not available on site, or when the native material that was excavated from the trench is rocky or otherwise not suitable for backfill material, the acquisition of backfill from other sources may be necessary."</i> All off-site sources for backfill to be used on NFS lands must be free from contaminants and invasive species and must pre-approved by FS personnel.
2-34	2.3.2.6	<i>"Trench breakers (stacked sand bags or polyurethane foam) would then be installed in the trench on slopes at specified intervals to prevent subsurface water movement along the pipeline."</i>

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	Lowering-In and Backfilling	<p>As a means to meet applicable Forest Plan direction regarding slope stability, the FS will require further direction in the COM plan regarding trench breakers on National Forest land.</p> <p>Foam will not be permitted on National Forest land. Bags of concrete mix may be used no more frequently than every other plug; sand bags or other semi-permeable, FS-approved material shall be used for all other trench plugs.</p> <p>Trench plug spacing in the FERC Upland Erosion Control Revegetation and Maintenance Plan (May 2013 version) is acceptable to the Forest Service, although closer trench plug spacing will be allowed where ACP determines a need due to slope steepness.</p> <p>On slopes greater than 30 percent, bleeder drains shall be spaced no farther apart than every other trench plug. Closer spacing may be used where ACP determines a need due to slope steepness, discharge volume, or other factors.</p> <p>Bleeder drains may be needed on slopes less than 30 percent if subsurface flow or seeps are encountered during trench excavation. The Forest Service representative and ACP's environmental inspector will consult to determine the need for bleeder drains on slopes less than 30 percent.</p> <p>Protect bleeder drain outlets using rip-rap or other FS-approved material. The FS may specify alternate materials in certain locations if necessary for protection of resources.</p> <p>The FS will require post-construction water quality testing at selected bleeder drain outlets. Locations will be selected by the FS based on nearby sensitive resources, and the FS will provide the chemical parameters to be included in the testing.</p>
2-34	2.3.2.6 Lowering-In and Backfilling	<p>As a means to meet applicable Forest Plan direction regarding slope stability, the FS will require further direction in the COM plan regarding handling and storage of excavated material.</p> <ol style="list-style-type: none"> a. Describe methods for preventing erosion of stockpiled material. The FS will require temporary seeding or other FS-approved technique for any material left exposed for more than seven days. b. Describe methods for preventing saturation of stockpiled material, which could lead to slippage of backfilled material. Techniques may include temporary seeding and mulching, use of tarps, implementing an accelerated backfilling schedule, or other methods proposed by ACP and approved by the FS.
2-34	2.3.2.6 Lowering-In and Backfilling	<p>As a means to meet applicable Forest Plan direction regarding slope stability, the FS will require further direction in the COM plan regarding backfilling of excavated material.</p> <ol style="list-style-type: none"> 1. Describe techniques for ensuring moisture levels in backfilled material do not present an elevated risk of slippage. <ol style="list-style-type: none"> a. Topsoil and spoil material shall be replaced only when moisture levels in those reserved materials are at appropriate levels. Appropriate levels shall be determined using Time Domain Reflectometry (TDR) measurements taken at 5 or more locations in each pile between 1 and 2 ft below the pile surface. This requirement applies to all topsoil and subsoil piles that are not exclusively composed of coarse fragments on National Forest land, except as noted otherwise below. <ol style="list-style-type: none"> i. In jurisdictional wetland areas, ACP is not required to conduct soil moisture testing. The flat topography of the wetlands being crossed by the project is not likely to lead to slope failures. ii. In areas that (1) are not jurisdictional wetlands, and (2) were identified by the Order 1 soil survey as having wet or poorly drained soil, testing is required regardless of the timing of excavation and backfill, and regardless of any precipitation that may or may not have occurred between initial excavation and completion of backfilling.

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		<p>In all other areas, testing is not required if (1) excavation and backfilling occur on the same day, or (2) no precipitation occurs between initial excavation and completion of backfilling.</p> <ul style="list-style-type: none"> b. All individual moisture values from each pile (not the average of all measurements) must be less than 25 percent volumetric water content for replacement of material into the trench (spoil material) or onto the surface of the trench (topsoil). Twenty-five percent volumetric water content is approximately field capacity (field capacity is the approximate soil moisture resulting from 2 to 3 days of drainage following saturation). c. ACP shall employ qualified and trained inspectors who will be responsible for taking TDR measurements and evaluating whether the results meet allowable soil moisture requirements for backfilling. The number of inspectors will be adjusted (increased or decreased) based on the schedule of activities and the needs of the project. The TDR unit (brand and model) must be agreed to as suitable by the Forest Service. d. ACP's inspector shall keep records of the measured moisture levels for each pile at or just before the time of replacement into or onto the trench. The location (i.e., GPS locations along with the nearest milepost) of each pile shall be noted along with those moisture levels. e. TDR measurements shall be taken during the construction phase of the Project during trench backfilling (both subsoil and topsoil) on National Forest lands. Measurement results shall be provided to the Forest Service weekly, except for weeks when no backfilling occurs on National Forest land. The Forest Service will be notified that no backfilling occurred via ACP's weekly status report, which is filed on the FERC docket. f. If moisture levels are found to be unsuitable for replacement (i.e., they exceed allowable moisture requirements), topsoil or spoil material may be mechanically mixed, or Forest Service-approved materials (e.g. lime, etc.) may be physically mixed in, to allow evaporation to achieve allowable moisture levels.
2-35	2.3.2.6 Lowering-In and Backfilling	<p><i>"The soil would be inspected for compaction and scarified, as necessary"</i></p> <p>As a means to meet applicable Forest Plan direction, the FS will require further direction in the COM plan regarding remediation of compaction on National Forest land.</p> <p>Employ timber mats or trench spoil to protect underlying soil where possible.</p> <p>Limit the use of heavy equipment on steep slopes to the minimum amount necessary.</p> <p>Use a cone penetrometer to measure compaction on the construction ROW prior to and following completion of construction activities. Post-construction compaction that exceeds pre-construction compaction indicates the need for compaction remediation.</p> <p>On ROW slopes <20% where compaction remediation is needed, use de-compaction techniques such as a ripper, harrow disk, backhoe bucket teeth, chisel plow, or other FS-approved techniques to de-compact travel lanes and any other compacted areas.</p> <p>On ≥20% slopes where compaction remediation is needed and can be accomplished safely and effectively without causing further resource damage, use backhoe bucket teeth, or another safe, FS-approved method, to break up compacted soils. .</p>
2-37	2.3.3.1	<p><i>"ATWS necessary for waterbody crossings would be located a minimum of 50 feet from the waterbody edge"</i></p> <p>On GWNF lands, a minimum of a 100-foot buffer is required for perennial waterbodies and increases with slope. A 50-foot minimum buffer is only allowable for intermittent streams.</p>

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2-37	2.3.3.1	For Wet Open-cut Construction Method and all other methods discussed in this section, please discuss any FERC time constraints involved with these methods.
2-39	2.3.3.2	Table 2.3.3-1 lists Augusta County VA as location of the HDD for Blue Ridge Parkway/Appalachian National Scenic Trail. Please also add Nelson County VA.
2-39	2.3.3.2	<p><i>"...there must be a fault or pathway extending vertically to the surface"</i></p> <p>Appalachian geology is complex with more than just faults as conduits. The migration of fluids could also occur horizontally, especially in folded or fractured formations or in proximity to shallow groundwater such as perched aquifers/seeps/springs, etc.</p>
2-40	2.3.3.2	Pits or containment structures – No pits will be authorized on NFS lands, only closed loop systems with containment tanks will be considered.
2-41	2.3.3.3	<p><i>"...a minimum of 50 feet from the wetland edge"</i></p> <p>As indicated in previous comments, on GWNF lands, a minimum of 100-foot set back is required and increases with slope.</p>
2-41	2.3.3.3	<p><i>"...ATWS within 50 feet of wetlands and the request for expanded workspace within certain wetlands is acceptable."</i></p> <p>On GWNF lands, it is not acceptable to include ATWS within the minimum of 100-foot set back.</p>
2-42	2.3.3.5 Steep Slopes	<p><i>"During construction, temporary slope and trench breakers consisting of compacted earth, sandbags, or other materials would be installed to reduce runoff velocity and divert water off of the construction right-of-way."</i></p> <p>See previous comment on trench breakers for additional direction that must be followed on National Forest land.</p>
2-42	2.3.3.5 Steep Slopes	<p><i>"Upon installation of the pipeline, permanent trench breakers and plugs consisting of sandbags, gravel, foam, cement, or cement-filled sacks would be installed over and around the pipeline, and permanent slope breakers generally consisting of compacted earth and rock would be installed across the right-of-way during restoration."</i></p> <p>As a means to meet applicable Forest Plan direction regarding slope stability, the FS will require further direction in the COM plan regarding trench breakers on National Forest land.</p> <p>Foam will not be permitted on National Forest land. Bags of concrete mix may be used no more frequently than every other plug; sand bags or other semi-permeable, FS-approved material shall be used for all other trench plugs.</p> <p>Trench plug spacing in the FERC Upland Erosion Control Revegetation and Maintenance Plan (May 2013 version) is acceptable to the Forest Service, although closer trench plug spacing will be allowed where ACP determines a need due to slope steepness.</p> <p>On slopes greater than 30 percent, bleeder drains shall be spaced no farther apart than every other trench plug. Closer spacing may be used where ACP determines a need due slope steepness, discharge volume, or other factors.</p> <p>Bleeder drains may be needed on slopes less than 30 percent if subsurface flow or seeps are encountered during trench excavation. The Forest Service representative and ACP's environmental inspector will consult to determine the need for bleeder drains on slopes less than 30 percent.</p> <p>Protect bleeder drain outlets using rip-rap or other FS-approved material. The FS may specify alternate materials in certain locations if necessary for protection of resources.</p>

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		The FS will require post-construction water quality testing at selected bleeder drain outlets. Locations will be selected by the FS based on nearby sensitive resources, and the FS will provide the chemical parameters to be included in the testing.
2-44	2.3.3.8	This section refers to Appendix M for list of road and trail crossings. However, App M is titled Road and Railroad Crossings and Trails are included as a type of road. Please include Trails in the name of Appendix M and change the third column title to Road, Railroad or Trail Type. Also, on page M-3, Change “FS Trial 718” to “FS Trail 718.”
2-50	2.5.4 Forest Service Compliance Monitoring	<i>Conversely, some COM Plan requirements or mitigation projects may have less certain outcomes or may be associated with thresholds such as water temperature.</i> This statement of recognition, along with other statements that speak about minimizing effects (as opposed to eliminating them), are key considerations for conclusions of analyses that must fully incorporate potential direct, indirect, and cumulative project effects. This comprehensive level of consideration seems to currently be lacking in the documented accounts for the various aquatic resources analyses and conclusions.
2-52	2.5.6	<i>“...or until wetland revegetation restoration is successful.”</i> Wetlands are not just about revegetation, but form and function of hydrology and soils is critical. Add sentence acknowledging these aspects of successful restoration of a wetland.
3-4	3.2.1	<i>“These pipelines currently do not have the available capacity to transport the required volumes of natural gas to the delivery points proposed for ACP and SHP, nor do these existing facilities have the necessary infrastructure to transport gas to the required delivery points. Even if additional pipelines were constructed to connect any of these pipeline systems to the supply and delivery areas for ACP, there still is not sufficient capacity on any of the existing pipeline systems to transport 1.44 Bcf/d of natural gas.”</i> Documentation should be provided to support these statements.
3-5	3.2.2.1	<i>“The environmental 3-5 Alternatives impacts associated with these upgrades and new pipeline construction for the Transco system (a combined total of 640 to 680 miles of new pipeline) would likely be similar to the impacts of ACP and SHP, and we have not identified or received any information that suggests the alternative would provide a significant environmental advantage over ACP and SHP.”</i> Documentation should be provided to support this statement. Miles of line do not necessarily equate to severity of the environmental impact. The nature of the resources to be impacted needs to be considered. The Forest Service has previously requested that such comparative information on impacts be obtained and considered for alternatives to the proposed action.
3-5	3.2.2.1	<i>“For this reason, and the fact that the existing system does not meet ACP’s project purpose, modifications to the existing Transco system are not considered a viable system alternative.”</i> The purpose and need is stated in terms of providing gas to end users. Nothing in the subject section indicates that modification of the Transco system could not meet this need. Therefore, the statement should be deleted, or documentation should be provided to support it.
3-5	3.2.2.2	Statement in reference to the existing Columbia system alternative: <i>“The environmental impacts associated with construction of these facilities would likely be similar to or greater than those of ACP, and we have not identified or received any information that suggests the alternative would provide a significant environmental advantage over ACP and SHP.”</i>

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		Documentation should be provided to support this statement. Miles of line do not necessarily equate to severity of the environmental impact. The nature of the resources to be impacted needs to be considered. The Forest Service has previously requested that such comparative information on impacts be obtained and considered for alternatives to the proposed action.
3-5	3.2.2.2	<p><i>“For this reason, and the fact that the current system does not meet ACP’s purpose and need, modification of the Columbia pipeline system is not considered a viable alternative to ACP and SHP.”</i></p> <p>The purpose and need is stated in terms of providing gas to end users. Nothing in the subject section indicates that modification of the Columbia system could not meet this need. Therefore, the statement should be deleted, or documentation should be provided to support it.</p>
3-5	3.2.2.3	<p>Statement in reference to the existing East Tennessee Natural Gas system: <i>“The environmental impacts associated with the system upgrades and new pipeline construction (a minimum of between 550 and 620 miles of new pipeline) would likely be similar to or greater than those of ACP, and we have not identified or received any information that suggests the alternative would provide a significant environmental advantage over ACP and SHP.”</i></p> <p>Documentation should be provided to support this statement. Miles of line do not necessarily equate to severity of the environmental impact. The nature of the resources to be impacted needs to be considered. The Forest Service has previously requested that such comparative information on impacts be obtained and considered for alternatives to the proposed action.</p>
3-5	3.2.2.3	<p><i>“For this reason, and the fact that the current system does not meet ACP’s purpose and need, modification of the existing East Tennessee system is not considered a viable alternative to ACP and SHP.”</i></p> <p>The purpose and need is stated in terms of providing gas to end users. Nothing in the subject section indicates that modification of the East Tennessee system could not meet this need. Therefore, the statement should be deleted, or documentation should be provided to support it.</p>
3-9	3.2.3.2	<p><i>“In conclusion, construction and operation of merged system alternative may hold an environmental advantage when compared to construction and operation of both ACP/SHP and MVP/EEP separately. However, pursuing this alternative would require significant time for the planning and design, result in a significant delay to the delivery of the 3.44 Bcf/d of natural gas to the proposed customers of both ACP and MVP, and would limit the ability to provide additional gas to the projects’ customers. When the environmental factors, technical feasibility, and ability to meet the purpose and need of the projects are cumulatively considered, we do not find that the merged system alternative holds a significant advantage over the proposed actions and have eliminated it from further consideration.”</i></p> <p>This statement is not supported by the information presented. If the merged system is potentially environmentally advantageous, then it is possible that the merged system is preferable to the proposed actions. The technical issues mentioned earlier in this section for the 48 inch pipe do not seem to render that option infeasible, and there is nothing presented in this section that would indicate that the merged system would not meet the purpose and need (the purpose and need section does not address required timing of project completion). A detailed comparison of feasibility and environmental impacts is needed before the MVP Merged Systems Alternative can be eliminated from consideration.</p>

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3-10	3.3.1	<p>Regarding the ACP and MVP Collocation Alternative: <i>“Based on our review of data, aerial photography, and topography, we conclude that there is insufficient space along the majority 3-11 Alternatives of ridgelines in West Virginia to accommodate two parallel 42-inch-diameter pipelines. Therefore, the advantages of collocating the two projects are reduced.”</i></p> <p>This statement should be supported by specific information that allows some estimation of the extent to which collocation benefits would be reduced.</p>
3-11	3.3.1	<p>Regarding the ACP and MVP Collocation Alternative: <i>“Additionally, implementation of this alternative would require significant planning and design, which would significantly delay the delivery of gas to Atlantic’s customers. When the environmental factors, technical feasibility, and ability to meet the purpose and need of the projects are cumulatively considered, we do not find that the collocation alternative offers a significant advantage and do not recommend its adoption.”</i></p> <p>This section does not present any information that would allow comparison of environmental impacts or technical feasibility, nor does the section present any information to indicate that the alternative would not meet the purpose and need (the purpose and need section does not address required timing of project completion). Such information should be provided, or the alternative should be carried forward for further consideration.</p>
3-13	3.3.2.1	<p>Regarding the Hastings to Dooms route alternative: <i>“Finally, the alternative route would cross an additional 2.2 miles of land owned by the GWNF, and it is likely that Atlantic would need to construct a new corridor through the GWNF due to the amount of side slope construction that would be required along the existing transmission corridor.”</i></p> <p>This statement is not correct. The subject alternative would cross a 2.2-mile segment of the GWNF that would not be crossed by the proposed action, but the crossing by the proposed action would not occur. The net result would be a large decrease in the total mileage across the GWNF.</p>
3-13	3.3.2.1	<p><i>“The Hastings to Dooms route alternative is 43.2 miles longer than the corresponding segment of the proposed route and would introduce new routing concerns. Atlantic would likely not be able to optimize collocation with the existing transmission lines in all cases, and some deviations from the transmission line corridors could be significant, further decreasing the benefit of collocation and adding additional mileage to the project. Although in many cases, steep slopes are not in themselves construction or routing constraints, this alternative appears to only increase the number of steep slopes crossed while increasing impacts to developed areas. Based on the factors analyzed above, we find that this route alternative would not provide a significant environmental advantage and do not recommend that it be incorporated as part of the project.”</i></p> <p>More presentation and comparison of environmental impacts is needed to support this statement. Although longer mileage and more steep slopes are concerning, the section currently does not present any data upon which to base this statement.</p>
3-14	3.3.2.4	<p><i>We conclude that the Hasting to Dooms, Dooms to Suffolk, Dooms to Bremo to Farmville, and Pleasant Shade to St Pauls segments, used alone or in any combination, do not confer a significant environmental or technical advantage when compared to the proposed route.</i></p>

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		No information on environmental impacts is presented to support the conclusion that multiple electric transmission line routes do not confer an environmental advantage. Therefore, the statement should be deleted, or information on environmental impacts should be provided to support it.
3-19	3.3.4.1	<p><i>Routing ACP to the south of the MNF and GWNF would increase the pipeline route by about 43 miles. Generally, as the length of a pipeline route is increased, the amount of environmental impacts on various resources are concurrently increased. However, we acknowledge that a shorter pipeline route could conceptually have significantly greater qualitative impacts to sensitive resources than a longer route, which could make the longer route preferable. In this instance, we have not identified or received any information that suggests the shorter pipeline route through the National Forests has significantly greater impacts to sensitive resources than the alternative, but acknowledge that ground resource surveys have not been conducted. Therefore, as currently analyzed, we do not recommend that an alternative south of the National Forests be incorporated as part of the project.</i></p> <p>No analysis of a National Forest Avoidance Alternative has been conducted, and environmental impacts of this alternative have not been considered or compared to the proposed action. Therefore, the Forest Service cannot support the recommendation that the National Forest Avoidance Alternative be dropped from consideration. In our scoping comments, we requested that all alternatives, including a National Forest Avoidance Alternative, be fully addressed in regard to their feasibility and environmental effects. We hereby reiterate that request.</p>
3-19	3.3.4.1	<p><i>Similar to routing south of the National Forests, we do not find that avoidance of the National Forests would provide a significant environmental advantage when compared to the shorter proposed pipeline route through the National Forests. We also acknowledge that although the route would avoid designated National Forest lands, many of the same forest habitats and waterbodies would be crossed by the alternative, along with similar mountainous terrain. Therefore, we do not recommend that it be incorporated as part of the project.</i></p> <p>No analysis of a National Forest Avoidance Alternative has been conducted, and environmental impacts of this alternative have not been considered or compared to the proposed action. Therefore, the Forest Service cannot support the recommendation that the National Forest Avoidance Alternative be dropped from consideration. In our scoping comments, we requested that all alternatives, including a National Forest Avoidance Alternative, be fully addressed in regard to their feasibility and environmental effects. We hereby reiterate that request.</p>
3-19	3.3.4.2	<p><i>Atlantic adopted the GWNF6 route after the FS stated it would not approve Atlantic's former route through the National Forests. Specifically, the FS issued a letter to Atlantic on January 19, 2016, stating Atlantic's route did not meet the minimum requirements of initial screening criteria found in 36 CFR 251.54(e)(1)(i) and (ii), and that Atlantic must develop and evaluate system and/or route alternatives that avoid the Cheat, Back Allegheny, and Shenandoah Mountains, and Cow Knob salamander habitat. When compared to Atlantic's originally proposed route, which included three HDD crossings that were designed to drill under sensitive species habitats, the GWNF6 route is generally 15 miles south of its former location through the National Forests (see figure 3.3.4-1).</i></p> <p>This passage should note that the reasons for rejection of the former route included inconsistencies with Forest Plan direction and emphasis related to threatened species (Cheat Mountain salamander), Regional Forester's Sensitive Species (West Virginia northern flying squirrel and Cow Knob salamander), and red spruce ecosystem restoration. The proposed HDD crossings may have reduced, but would not have eliminated, the impacts to Cow Knob salamander.</p>
3-21	3.3.4.2	<p><i>Because Atlantic adopted the GWNF6 route, we have received several comments suggesting Atlantic's former route through the National Forests is preferable to the currently proposed route. While Atlantic's current route is 31.8 miles longer than the former route, and may</i></p>

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		<p><i>inherently have more generalized environmental impacts than the former route (i.e., forest clearing, waterbody crossings, karst topography, steep slope construction, private landowners affected, and air emissions, among other factors), the FS' January 19, 2016 letter indicated that the FS could not approve the former route. Therefore, we find that Atlantic's originally proposed route through the National Forests would not meet the project objective (essentially resulting in the no-action alternative), and we do not recommend that it be incorporated as part of the project.</i></p> <p>This passage should note that the former route was rejected because of impacts to highly sensitive environmental resources, including threatened species, Regional Forester's Sensitive Species, and red spruce ecosystem restoration areas. Because of these impacts, the Forest Service determined that the former route could not be made consistent with the Forest Plans.</p>
3-21, 3-22	3.3.4.3	While the proposed BLR-ANST crossing would result in no surface impacts on NFS lands, or to the ANST, there would be aural/auditory impacts to ANST recreationalists and other recreation visitors to NFS lands in this area.
3-31	3.3.8.2	The references to Augusta County, West Virginia are incorrect. Please correct to Augusta County, Virginia.
3-31 to 3-33	3.3.8	It should be noted that pipelines are not compatible with designated Wilderness. For a pipeline proposal to include a portion of its route within Wilderness, a specific determination and authorization by the President of the United States is required. Therefore, the regulatory process that would be required to construct an alternative through Wilderness would be a significant factor in the decision.
3-33	3.3.8.2 and 3.3.8.3	The following sentence is incorrectly worded: "....the regulatory process that would be required to construct of the alternative across the ANST was not..."
4-1	4.0 Environmental Analysis	<p><i>"The conclusions in the EIS are based on our analysis of the environmental impact and the following assumptions: Atlantic and DTI would comply with all applicable laws and regulations;..."</i></p> <p>The analysis must also document compliance with LRMP direction for National Forest land.</p>
4-3	4.1.2.1 Surficial/ Bedrock Geology	<p><i>"Surficial geology has not been mapped in detail in the areas crossed by ACP and SHP. National scale mapping depicts unconsolidated surficial deposits near ACP as colluvium derived from the weathering and breakdown of the underlying bedrock, alluvium, and coastal plain sediments and in SHP as colluvium (Soller et al., 2009)."</i></p> <p>Some surficial geological features such as alluvium and colluvium were mapped during the Order 1 Soil Survey on NFS lands. This data is provided with the Order 1 Soil Survey data and should be discussed within this section of the EIS.</p>
4-4	4.1.2.2	<p><i>"In addition to bedrock removal, blasting of the bedrock could potentially damage nearby pipelines and other structures and could initiate landslides, karst activity, or ground subsidence over underground mines. Blasting of bedrock, particularly karst bedrock, could create fractures in the rock, temporarily affecting local groundwater flow patterns and groundwater yield of nearby wells and springs around the blast site, and affecting their water quality by a temporary increase in turbidity levels shortly after blasting."</i></p> <p>Effects to local groundwater flow patterns from blasting in bedrock are likely to be permanent.</p> <p>Identification of existing pipelines, underground mines, karst, and nearby wells should have been previously known from surveys. This description of effects is not specific enough for the activities proposed. Site specific information for the entire ROW is available for National Forest lands, and that discussion should occur in the analysis in the form of a table by mile marker.</p>
4-4	4.1.2.2	<i>"Areas with shallow bedrock classifications were identified using the Natural Resources Conservation Service's (NRCS) Soil Survey Geographic Database (SSURGO) (Soil Survey Staff, 2016)."</i>

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	Shallow Bedrock and Blasting	<p><i>“Based on SSURGO data and the mapped locations of shallow bedrock, blasting may be required along 152.7 miles (25 percent) of ACP and 34.0 miles (91 percent) of SHP. In addition, SSURGO data identifies that lithic (hard) bedrock is present on 73.9 miles (12 percent) of ACP and 22.1 miles (59 percent) of SHP, which may also require blasting or other special construction techniques. SSURGO shallow bedrock data along ACP and SHP is summarized in table 4.1.2-1.”</i></p> <p>The Order 1 Soil Survey on National Forest land was conducted, in part, to inform areas of the COM Plan (including the blasting plan) at a detailed, site-specific level. The Order 1 Soil Survey is the most site-specific and detailed level soil survey and should be used as it was intended to be, to inform decisions such as the aforementioned. ACP also used seismic refraction testing to determine depth to bedrock. Please include this information in this analysis and provide a separate table for that information. The FS has not yet been provided with these results.</p>
4-13	4.1.2.3 Karst Geology	Please separately identify and analyze impacts to any karst features on National Forest land.
4-17	4.1.2.3 Construction Impacts and Mitigation	<p>Require that the karst specialist(s) has the proper karst education, certification and experience.</p> <p>See Forest Service comments on the COM plan for more details on necessary protection and mitigation measures for any karst encountered on National Forest land.</p>
4-18	4.1.2.3 Construction Impacts and Mitigation	<p><i>“...one or more voids totaling 6 inches or more is encountered ...”</i></p> <p>Please define what constitutes a 6-inch void. A 6 inch diameter crack is too large to serve as a trigger for cessation of blasting. Use a 1 inch diameter.</p>
4-21	4.1.2.3 Construction Impacts and Mitigation	Certain proposed pipeline construction areas may require a check “Call Before You Dig” with active- inactive oil and gas wells and unknown transmission/gathering lines, www.call811.com .
4-24	4.1.4.2 Slope Stability	<p><i>“Ten sites, five on ACP and five on SHP, have been assigned a high potential slope instability hazard. Sixteen sites, eight on ACP and eight on SHP, have been assigned a moderate potential slope instability hazard. Seventeen sites, 14 on ACP and 3 on SHP, have been assigned a low potential slope instability hazard. Twelve sites on ACP were dismissed as having no potential slope instability based on the results of ground or aerial reconnaissance.”</i></p> <p>The high and medium hazard sites on National Forest land will require site specific “Best in Class” applications and will need to be outlined in the COM Plan. These site specific designs will need to show in an analysis that slope stability can be maintained. Documentation of the effectiveness of stabilization techniques must be provided.</p>
4-25	4.1.4.2 Landslides	<p><i>“In West Virginia, 73 percent of the AP-1 mainline route would cross areas with a high incidence of and high susceptibility to landslides”</i></p> <p><i>“Atlantic has not yet completed the Phase 2 analysis at all evaluation sites.”</i></p> <p>This information will be critical to inform the site-specific designs on MNF lands as well as the effects analysis of the FEIS. The Forest Service will need to review this data once it becomes available. The results will need to be incorporated into the Best in Class site specific designs.</p>

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4-26	4.1.4.2	In the Steep Slopes discussion, 40 percent is presented numerous times as a lower threshold to classify steep slopes. Per the GWJ Forest Plan, >35% slope is the break for steep slopes. The analysis presented is not in accordance with Forest Plan standards. Please include additional analysis that identifies those segments (between 35-40% slopes) that were not included.
4-27	4.1.4.2 Steep Slopes	This section should note that a determination of compliance with applicable Forest Plan direction is still outstanding. Standard SW07 in the MNF LRMP states that mechanized equipment should not be used on slopes over 40% unless the ability to maintain slope stability can be demonstrated. Similar direction applies to slopes over 35% on the GWNF. This issue needs to be discussed and resolved.
4-27	4.1.4.2 Steep Slopes	<i>“using alternative backfill;”</i> Alternative backfill material to be used on National Forest land is subject to prior approval by the Forest Service. Material must be free of contaminants and invasive species.
4-27	4.1.4.2 Steep Slopes	<i>“chemical stabilization of backfill”</i> Any chemical product to be used on National Forest land is subject to prior approval by the Forest Service.
4-29	4.1.4.2	<i>“storms that produce debris flows...is in the order of every 15 to 20 years”</i> Please add this sentence following the one listed above to provide greater significance description: <i>“There is a high probability that over the life of the project two or more storm events that produce debris flow may occur.”</i>
4-29	4.1.4.2 Steep Slopes	<i>“Pipeline installation techniques, including padding and use of rock-free backfill, effectively insulate the pipe from minor earth movements.”</i> According to meeting notes and discussion from a February 17 FS/ACP conference call and Go-To-Meeting, ACP stated that excavated material from the trench would be used to backfill after pipe placement. This from a discussion referring to steep slope site specific design and construction plans for ridgeline pipe placement on the MNF. The FS would like to know what the end point placement of this excavated material will be on National Forest lands. Rock free excavated material is certainly not the norm on steep slopes and ridges located on National Forest land and if the excavated trench material is not used for backfill then it is important know how this material will be stabilized on steep slopes. Please describe in this section where and when the use of rock-free backfill will be used.
4-32	4.1.4.4 Acid Producing Rock and Soils	<i>“backfill of the trench with acid-producing rock or soil first to a maximum of 12 inches below the surface;”</i> Acid producing material should not be placed in areas where it can be exposed to forms of water (i.e., drainage or subsurface water flow) which could result in acid runoff or drainage.
4-32	4.1.4.4 Acid Producing Rock and Soils	<i>“applying lime to the topsoil or replacing a minimum of 12 inches of acid-free topsoil.”</i> Natural segregated topsoil should be replaced.
4-34	4.1.6.1 Monongahela National Forest	<i>“Approximately 3.6 miles of the shallow bedrock is crossed within the MNF and could require blasting per SSURGO data.”</i> The data from the seismic refraction survey should ultimately be used to inform blasting on the MNF, along with the Order 1 Soil Survey data. This data needs to be displayed in the same manner as the Order 1 soil survey information and compared to the depth of the soil pits to ensure accuracy.
4-34	4.1.6.1	Add Appalachian Plateau to second sentence under MNF so it reads: <i>“The project across the MNF is within the Appalachian Plateau and Valley and Ridge Provinces and is underlain by Silurian, Devonian, and Mississippian sedimentary rock (such as sandstone, shale, siltstone, and limestone) and by Quaternary deposits (such as colluvium).”</i>

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4-34	4.1.6.1	<p>Add the following text to the last paragraph at bottom of page 4-34: “Potential natural landslides in the project area include a variety of mass movements such as debris slides, debris flows, rockslides, rockfalls, and slumps. Debris flows (also referred to as mudslides, mudflows, or debris avalanches) are the dominant type of rapid, catastrophic landslide (Wooten et al., 2015; Eaton et al., 2003; Sas and Eaton, 2008; Morgan et al., 1999; USGS, 1996; Jacobson et al., 1993; Clark, 1987; Hack and Goodlett, 1960). The ACP project (pipeline ROW construction and related facilities such as access roads) may result in some project-induced landslides such as cut slope failures and fill slope failures. Fill slope failures are a potential source of debris flows which can extend far downslope from the pipeline corridor ROW or access road (Collins 2008; Wooten et al. 2009; Latham et al. 2009; Wooten et al. 2014; Wooten et al., 2015).”</p>
4-36	4.1.6.1	<p>Add the following paragraphs before the paragraph that begins “Mitigation measures for landslides hazards...” in the middle of page 4-36: “The project-induced landslide hazard of most concern is the potential for project-induced debris flows because debris flows can travel hundreds or thousands of feet downslope and pose a risk to public safety, resources, and infrastructure on NFS lands and non-NFS lands. Three project-induced debris flow hazards are: 1.- During pipeline construction, the temporary spoils (excavated material) stored in the temporary ROW or in the Additional Temporary Work Space (ATWS) would be a short term hazard for slope failures that could result in debris flows. 2.- A long-term debris flow hazard would be the spoils placed as fill to restore the original ground contour. The restoration fill slopes would have potential to fail down along the ROW corridor as well as at an angle or perpendicular to the ROW corridor. The restoration fill would be placed on cut slopes that in some circumstances may be a potential slip surface for failure of the fill slope and a resulting debris flow. The restored pipeline corridor would contain long fill slopes extending hundreds of feet downslope within the ROW corridor and would have a potential for fill slope failures triggered by rainstorms during the decades of pipeline operation and beyond. Some fill slope failures may result in debris flows with destructive paths down the ROW corridor as well as off the corridor and down hundreds or thousands of feet of NFS lands, and in some cases, to non-NFS lands downslope. 3.- Another long-term debris flow hazard would be the change of the surface and subsurface drainage in the areas of construction and in adjacent natural slopes along the corridor ROW that may create or contribute to a debris flow failure of the natural ground downslope from the ROW corridor.</p> <p>The source area for these three types of slope failures is generally on cross-slopes of 40% or steeper. The potential number of project-induced debris flows paths or occurrences would be greater on lands within one-half mile from 40% or steeper cross-slopes on the corridor ROW on NFS lands. Some potential debris flow paths may be longer than one-half mile.</p> <p>The values at risk on NFS lands for project-induced debris flows are public safety and infrastructure and the wide range of resource values for which National Forests are managed. The values at risk on non-NFS lands downslope from 40% or steeper cross-slopes on the corridor ROW on NFS lands include public safety, resources, roads, utilities and other infrastructure.</p> <p>Natural landslides (including debris flows) are part of the natural disturbance regime on NFS lands and non-NFS lands downslope. The natural landslide hazards (including debris flow hazards) and risks to public safety, resources, and infrastructure on NFS lands and non-NFS lands are inherent in the steep mountainous geologic setting. The ACP pipeline project would add an increment of human-induced landslide hazards and risks to the natural landslide hazards and risks in the area.”</p>
4-38	4.1.6.2	<p>Add the following text to the end of the paragraph that ends “...Hack and Goodlett, 1960).” near bottom of page 4-38: “The ACP project (pipeline ROW construction and related facilities such as access roads) may result in some project-induced landslides such as cut slope failures and fill slope failures. Fill slope failures are a potential source of debris flows which can extend far downslope from the pipeline corridor ROW or access road (Collins 2008; Wooten et al. 2009; Latham et al. 2009; Wooten et al. 2014; Wooten et al., 2015).”</p>

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4-38	4.1.6.2 GWNF	<p><i>“Depth to bedrock may be 5 feet or less over most of the ACP route through the GWNF as determined from SSURGO data.”</i></p> <p>The Order 1 soil survey and site specific seismic data collected on FS lands should be used by ACP to determine the depth to bedrock and possible blasting needs and not the broader scale and more general soil survey information found in SSURGO. Areas where blasting will be required are important knowledge for the FS to have to determine effects from pipeline construction.</p>
4-38	4.1.6.2 GWNF	<p><i>“The ridgetops can provide a more stable foundation for the pipeline than side slopes.”</i></p> <p>Ridgetops may be more stable for the pipe, but potential collateral impacts need to be considered. Depending on the width of the ridges, there will be locations that require excavation to provide a more level working space for equipment. Excavated material will be stockpiled at the edges of the workspace or in an ATWS. Many times these stockpiles will be near the tops of some very steep side slopes. This loose, unconsolidated material could become mobile if wetting and slippage occurs. The FS will require construction narratives on steep slope construction plans to account for the placement and end point of all excavated material to minimize unstable slopes and project-induced debris flows/landslides.</p>
4-40	4.1.6.2	<p>Add the following paragraphs before the paragraph that begins “Mitigation measures for landslides hazards...” in the upper part of page 4-40:</p> <p>“The project-induced landslide hazard of most concern is the potential for project-induced debris flows because debris flows can travel hundreds or thousands of feet downslope and pose a risk to public safety, resources, and infrastructure on NFS lands and non-NFS lands. Three project-induced debris flow hazards are:</p> <ol style="list-style-type: none"> 1.- During pipeline construction, the temporary spoils (excavated material) stored in the temporary ROW or in the Additional Temporary Work Space (ATWS) would be a short term hazard for slope failures that could result in debris flows. 2.- A long-term debris flow hazard would be the spoils placed as fill to restore the original ground contour. The restoration fill slopes would have potential to fail down along the ROW corridor as well as at an angle or perpendicular to the ROW corridor. The restoration fill would be placed on cut slopes that in some circumstances may be a potential slip surface for failure of the fill slope and a resulting debris flow. The restored pipeline corridor would contain long fill slopes extending hundreds of feet downslope within the ROW corridor and would have a potential for fill slope failures triggered by rainstorms during the decades of pipeline operation and beyond. Some fill slope failures may result in debris flows with destructive paths down the ROW corridor as well as off the corridor and down hundreds or thousands of feet of NFS lands, and in some cases, to non-NFS lands downslope. 3.- Another long-term debris flow hazard would be the change of the surface and subsurface drainage in the areas of construction and in adjacent natural slopes along the corridor ROW that may create or contribute to a debris flow failure of the natural ground downslope from the ROW corridor. <p>The source area for these three types of slope failures is generally on cross-slopes of 40% or steeper. The potential number of project-induced debris flows paths or occurrences would be greater on lands within one-half mile from 40% or steeper cross-slopes on the corridor ROW on NFS lands. Some potential debris flow paths may be longer than one-half mile.</p> <p>The values at risk on NFS lands for project-induced debris flows are public safety and infrastructure and the wide range of resource values for which National Forests are managed. The values at risk on non-NFS lands downslope from 40% or steeper cross-slopes on the corridor ROW on NFS lands include public safety, resources, roads, utilities and other infrastructure.</p> <p>Natural landslides (including debris flows) are part of the natural disturbance regime on NFS lands and non-NFS lands downslope. The natural landslide hazards (including debris flow hazards) and risks to public safety, resources, and infrastructure on NFS lands and non-</p>

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		NFS lands are inherent in the steep mountainous geologic setting. The ACP pipeline project would add an increment of human-induced landslide hazards and risks to the natural landslide hazards and risks in the area.”
4-41	4.1.6.1 Monongahela National Forest	<p>“However, Atlantic and DTI would comply with DOT regulations, specifically 49 CFR 192.317(a), which require pipeline operators to protect transmission pipelines from hazards, including landslides. Regulations at 49 CFR 192 also specify pipeline design requirements to ensure safe pipeline operation and include pipe stress requirements/testing and requires consideration of external loads in pipeline design. Adherence to DOT’s pipeline safety regulations would minimize the risk of landslides in the project area.”</p> <p>The DOT requires compliance to keep the pipeline protected, but the risk that landslides pose to the surrounding environment also need to be considered. The paragraphs leading up to the conclusions on landslide hazards present substantial risks associated with construction in these areas.</p>
4-41	Soil Section	<p>To be compliant with Forest Service directives for National Forest land, include a section referencing FSH 2550 in regards to FSH 2551.3 (Standards and Guidelines for Soil Quality) outlined below.</p> <p>Include 1) a statement whether this project complies with FSH 2550; 2) the commitment of irretrievable and irreversible resources for the soil resource; 3) determination of consistency with the Forest Plans; and 4) a statement on the unavoidable adverse impacts to the soil resource.</p> <p>Outlined in FSM 2550 http://www.fs.fed.us/biology/resources/pubs/soils/wo_fsm2550.pdf FSH 2551.3 – Standards and Guidelines for Soil Quality</p> <p>New approaches to the National and Regional Soil Quality Standards (SQS) incorporate adaptive management to adjust SQS for each management situation. The process is outlined in the following nine steps:</p> <p>These 9 steps outline the application of SQS methodology from the beginning of the project to the point that the project is implemented:</p> <ol style="list-style-type: none"> 1. Review identified Desired Conditions for the project area (Reference or Forest Plan Desired Conditions). 2. Conduct an Interdisciplinary Landscape Assessment to identify departure from Desired Conditions and any cultural or resource issues and concerns (used to design a management action and to evaluate the risks associated with implementing the action). Preliminary soil disturbance monitoring can also be done to document existing soil quality conditions on the landscape (Page-Dumroese et.al. 2009) 3. Interdisciplinary team designs management actions to move the landscape toward the desired condition and address issues and concerns. <ol style="list-style-type: none"> a. According to the Monongahela National Forest (MNF) ‘Land and Management Resource Plan (2006),’ the desired conditions for soil resources are that soil protective cover, soil organic matter, and coarse woody material are at levels that maintain the natural infiltration capacity, moisture regime, and productivity of the soil. Also, soils must have adequate physical, biological, and chemical properties to support the desired vegetative growth. Exposed mineral soil and soil compaction from human activity may be present but are dispersed and do not impair the productivity and fertility of the soil. 4. Identify potential soil property changes due to a proposed action. 5. Estimate the likelihood of each potential soil property change due to the proposed action.

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		<ol style="list-style-type: none"> 6. Identify ecosystem components, functions, or services at risk (departing from reference conditions or moving away from desired conditions) from changes in soil properties that result from implementing the planned action. 7. Estimate ecological risk as having a low, moderate or high likelihood of a negative change in an ecosystem component, function, or service due to a minor, moderate or extreme change in a soil property. 8. Modify management activities to mitigate changes in soil properties that have a moderate or high ecological risk (this step is where SQS are followed, or if SQS do not exist they are inferred from literature and expert opinion). 9. Monitor results for detrimental disturbance and adjust SQS (Page-Dumroese, 2009).
4-41	4.1.7 Conclusion	<p><i>Considering the historic and recent landslide incidences in the immediate project area, along with the factors above, we conclude that constructing the pipelines in steep terrain or high landslide incidence areas could increase the potential for landslides to occur.</i></p> <p>This conclusion needs to be fully considered in the analysis and conclusions of potential effects on aquatic resources.</p>
4-47	4.2.2.3 Compaction-prone Soils	<p><i>“Surface texture characteristics were used as an indicator of overall soil compaction potential; however, as outlined in the FERC Plan, during the restoration phase of construction compaction of topsoil and subsoil layers would be tested at regular intervals in agricultural and residential areas using penetrometers or other appropriate equipment.”</i></p> <p>Cone penetrometers should be used instead of pocket penetrometers for greater accuracy and consistency following the ASTM standards. Rutting is limited to 5% of the active ROW across the permit area within National Forest Lands at any given time no matter the number of spreads operating at a given time. This testing will be done on all National Forest lands.</p>
4-47	4.2.2.3 Compaction-prone Soils	<p>As a means to meet applicable Forest Plan direction, the FS will require further direction in the COM plan regarding remediation of compaction on National Forest land.</p> <p>Employ timber mats or trench spoil to protect underlying soil where possible. Limit the use of heavy equipment on steep slopes to the minimum amount necessary.</p> <p>Use a cone penetrometer to measure compaction on the construction ROW prior to and following completion of construction activities. Post-construction compaction that exceeds pre-construction compaction indicates the need for compaction remediation. On ROW slopes <20% where compaction remediation is needed, use de-compaction techniques such as a ripper, harrow disk, backhoe bucket teeth, chisel plow, or other FS-approved techniques to de-compact travel lanes and any other compacted areas.</p> <p>On ≥20% slopes where compaction remediation is needed and can be accomplished safely and effectively without causing further resource damage, use backhoe bucket teeth, or another safe, FS-approved method, to break up compacted soils.</p>
4-55	4.2.7	<p>There is no mention of the RUSLE2 sediment analysis (Appendix L) throughout the entire section. The sediment analysis is supposed to quantify erosion rates and loads and potential transport to receiving streams. Please update section with data results from analysis and conclusions on soil loss from the project.</p>
4-55	4.2.7 Soil Impacts for Federal Lands	<p><i>“Atlantic filed soil reports upon completion of the Order 1 Soil Surveys, which are currently under review by the FS. For this EIS, SSURGO data was used to analyze potential soil impacts on Federal Lands. Additional analysis of soil characteristics on National Forest land is forthcoming based on the results of the Order 1 soil survey.”</i></p> <p><i>“TABLE 4.2.7-1”</i></p> <p>The soil section of this DEIS needs to provide soil data collected from the Order 1 Soil Survey on NFS Lands. Include a discussion on the data obtained from the Order 1 Soil Survey within this section.</p>

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		<p>SSURGO data will not be accepted for analysis in the DEIS when referencing NFS Lands.</p> <p>Include sections such as 4.2.1, 4.2.2, 4.2.2.2, 4.2.2.3, 4.2.2.4, 4.2.2.5, 4.2.2.6, 4.2.2.7, 4.2.2.9, 4.2.2.10, 4.2.2.11, 4.2.3, 4.2.4, 4.2.5, 4.2.6 that use Order 1 Soil Survey data for discussion.</p>
4-62	4.2.7.1 Forest Service Soil Standards	<p><i>“All topsoil must be segregated on all areas of NFS land. Where topsoil segregation is performed on the MNF and GWNF, the O and A horizons would be segregated from the transition soil horizons AB/BA. O horizon soils are defined as a soil layer containing a high percentage of organic matter. A horizon soils are defined as the dark subsoil below the O horizon. AB/BA horizon soils are defined as light colored subsoils located below the O and A horizons. Because of the increased need for additional right-of-way width and loss of additional forestland, and the need to remove stumps, which would increase topsoil mixing with subsoil and the increase the potential for erosion, topsoil segregation is generally not conducted in forested areas.”</i></p> <p>Topsoil segregation is required along the entire ROW on NFS lands. But, in the last statement, it is said that topsoil will not be segregated in forested areas. The FS understands that topsoil segregation will be difficult on steep slopes, and there is potential to use an amendment to mitigate this effect. However, the statement that topsoil generally is not segregated in forested areas does not apply to National Forest land. Segregating topsoil in forested areas is required by the MNF LRMP SW15.</p>
4-63	4.2.8 Conclusion	<p><i>“Construction-related impacts on soils would be temporary and localized to the construction workspace, except where erosion, sedimentation, landslides, and other forms of soil movement affect adjacent areas. Analyses are ongoing to determine whether impacts would be minimized through the use of the construction and restoration plans summarized above and discussed throughout this EIS.”</i></p> <p>The short paragraph in 4.2.8 is inconsistent with statements made in the Major conclusions on ES-14 where the document indicates temporary and permanent impacts on the environment. The subject paragraph needs to be reworded to include permanent impacts to the soil resource.</p> <p>On NFS lands, the dedication of the soil resource for housing a pipeline will result in an irreversible commitment of resources and degradation of soil quality as defined in FSH 2550. This commitment would exist the life of the pipeline and beyond if no ecological and soil restoration occurs post decommissioning any part of the pipeline.</p> <p>Analysis and conclusions of potential direct, indirect, and cumulative effects to aquatic resources cannot be considered complete and valid until deficiencies in the analysis of soil resources have been corrected and deemed acceptable.</p>
4-67	4.3.1.5	<p>According to VDH-ODW, Zone 1 for well protection is 1,000ft radius and is a priority zone for managing potential sources of contamination.</p> <p>Please discuss regulations that were followed that allow for identification of wells and springs, karst in proximity of 0.25 mile, 500 ft or 150 ft. Ensure procedures used are in accordance with state best management practices.</p> <p>Zone 2 is a 5,280-foot radius (one mile) which represents an estimate of the total recharge zone for the well.</p> <p>Please complete tables with those additional wells and springs that could be affected for both Zones 1 and 2.</p>
4-68	Table 4.3.1-1	<p>This table should include an additional column called “Surface Drainage Direction of Spring from Project” such as up/side/down gradient. This additional information would clearly disclose those locations with higher potential impact than others.</p>
4-82	4.3.1.7	<p>The Groundwater Impacts and Mitigation section is too general and does not describe actual site-specific impacts.</p>

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4-86	4.3.1.8	Four springs were identified within the GWNF – Please reference where the data is further described and update with January 2017 Wetland and Waterbody Survey Report for the GWNF. Nine seep points were identified. Please also include a summary that characterizes these water sources, such as water quality, water volume, etc. This section should fully describe the existing condition, potential impacts and mitigation measures. Further describe the existing condition/summary information from the field surveys. Explain whether or not these sources meet State standards based on data collected during field survey.
4-92	Access Roads	<p><i>Access roads for ACP would cross 490 waterbodies (some waterbodies are crossed more than once), including 2 major, 102 intermediate, and 377 minor waterbodies, and 9 open ponds.</i></p> <p>Potential direct, indirect, and cumulative effects to aquatic resources from access roads are not isolated to streams crossings; they can potentially emanate from any and all locations along roads. The various effects of roads need to be considered as part of the documented analysis and conclusions for aquatic resources.</p>
4-94	West Virginia Surface Water Classifications	<p><i>ACP and SHP pipeline facilities do not cross Tier 3 streams in West Virginia; however, a proposed access road crosses the upper reaches of Slaty Fork, a Tier 3 stream.</i></p> <p>ACP crosses an unnamed tributary of Shock Run (Reach Code = 05050003002200) that is on the MNF but currently it is not identified as a Tier 3 stream. However, there is more than a reasonable chance that this tributary is utilized by a component of the wild brook trout population known to inhabit the Shock Run watershed. If so, this tributary would in fact be a Tier 3 stream by definition even though it is not currently identified as such. Conducting a fish population survey in this tributary could determine the validity of this professional conjecture.</p>
4-100	4.3.2.6	<p>DEIS states impacts on water bodies could result from “<i>construction activities in stream channels and adjacent banks</i>”. Impacts to waterbodies are not confined to activities in the immediate vicinity of the waterbody or the immediate time of the construction activity. Impacts may result from construction activities upslope of the stream channels and that may be a considerable distance from the channel. Additionally, depending upon how well and how fast revegetation occurs, impacts could occur at some time well after the construction occurred. Erosion and sedimentation control measures are expected to be implemented, but a significant storm event, either during construction or for an indefinite period afterward until adequate vegetation becomes established, could easily overwhelm these measures. Additionally, the DEIS states that the impacts “would be limited to the period of in-stream construction and would return to normal shortly after stream restoration activities are completed”. In reality, fine sediment that has entered the waterbody and settled on the bed can continue to impact the environment of aquatic organisms for a considerable time.</p> <p>Sources of potential effects other than crossings must be considered along with cumulative effects as part of the analysis and conclusions. Some sections in the DEIS seem to do a better job than others in acknowledging this through words. However, there is little confidence that the potential effects which are mentioned somewhere in the DEIS have been adequately considered in drawing analysis conclusions for aquatic resources.</p>
4-111	4.3.2.7 Hydrostatic Testing and Dust Control Procedures	<p><i>Water sources for dust control are still being evaluated by Atlantic and DTI.</i></p> <p><i>Prior to construction, Atlantic and DTI should file with the Secretary, for the review and written approval of the Director of OEP, proposed or potential sources of water used for dust control, anticipated quantities of water to be appropriated from each source, and the measures that would be implemented to ensure water sources and aquatic biota are not adversely affected by the appropriation activity.</i></p> <p>DEIS page 4-114 states that, “<i>No water would be appropriated from sources within the MNF or GWNF, and no hydrostatic test water discharges would occur on NFS lands.</i>” However, it is possible that water withdrawals and discharges off NFS lands may affect aquatic</p>

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		habitats and biota on NFS lands (for example, withdrawal from Big Spring Fork in West Virginia could impact the Elk River where it flows across NFS lands). Therefore, such potential impacts need to be considered and disclosed in the analysis. The FS will coordinate with the appropriate state and federal regulatory agencies to ensure that the effects of off-Forest withdrawals and discharges on Forest aquatic resources are appropriately avoided, minimized, and mitigated.
4-113	4.3.2.8 Extra Workspaces within 50 Feet of Waterbodies	<p><i>Atlantic's and DTI's construction and restoration plans, along with the FERC Procedures, specify that extra workspace should not be within 50 feet of waterbody boundaries except where an alternative distance has been justified and deemed acceptable by FERC.</i></p> <p>The MNF LRMP typically would require a 100 buffer between ATWS and any stream channel. See also comments for page 2-27 (2.3.3.1 Waterbody Crossings)</p>
4-114	4.3.2.9 Waterbodies on Federal Lands	<p><i>To meet the requirement of the Forest Plan for the MNF (FS, 2011), ATWS would be required to be set back a minimum of 100 feet for perennial and intermittent streams with a drainage area of at least 50 acres, a minimum of 50 feet for intermittent streams with a drainage area of less than 50 acres, and a minimum of 25 feet for ephemeral streams.</i></p> <p>The Forest Plan for the MNF calls for landings for timber harvest to be located a minimum of 100 feet from perennial, intermittent, and ephemeral streams. Impacts from ATWS are expected to be comparable to those from timber harvest landings, thus the ATWS should also be required to be located a minimum of 100 feet from perennial, intermittent, and ephemeral streams. The DEIS states that the Forest Plan for the MNF states the distance from the ATWS to the streams differs depending upon whether the stream is perennial (100 feet), large intermittent (100 feet), small intermittent 50 feet), or ephemeral (25 feet). These buffers are for the cutting and removing of timber, an activity which is much less intensive and thus not comparable to ATWS activities, thus the buffer for the landings, 100 feet for perennial, intermittent and ephemeral streams, is the appropriate buffer for ATWS. See also comments for page 2-27 (2.3.3.1 Waterbody Crossings)</p>
4-114	4.3.2.9 Waterbodies on Federal Lands	<p>The DEIS states <i>"Some extreme and unpredictable impacts from seasonal precipitation events could cause slope instability, flash flooding, and debris flow hazards. These events could lead to additional water resources impacts."</i> This paragraph is rather general and vague, especially considering that it pertains to extreme and unpredictable impacts. The additional water resources impacts mentioned in the above should be explained in greater detail. Additionally, more information should be given about the seasonal precipitation events which can cause the impacts, for example, what type of event would represent a 1-2 year event, 10-year event, etc.</p> <p>These impacts should be considered and discussed as part of the documented analysis and conclusions for aquatic resources.</p>
4-113	4.3.2.9	<p>This section on waterbody crossings indicates that, <i>"about 18 crossed by access roads"</i> on the GWNF.</p> <p>Please specify exactly how many water bodies on the GWNF will be crossed.</p>
4-113	4.3.2.9	<p>In the second paragraph under the table, please replace "FS district" with "Forest." Consultation is occurring with each Forest (the MNF and the GWNF) at the Forest level. Each Forest is composed of multiple Districts, but consultation is not occurring at the District level.</p>
4-113	4.3.2.9	<p>The water quality section does not mention the RUSLE2 sediment analysis (Appendix L). The sediment analysis is supposed to quantify erosion rates/loads and potential transport to receiving streams and watersheds compared to baseline - thus, allowing for a meaningful impact analysis on surface water quality. Please update this section with data results from RUSLE2 analysis and conclusions on water quality impacts.</p>
4-116	4.3.3.1	<p>The document indicates that wetland surveys have been conducted along 92 percent of the proposed ACP route and 93 percent of the SHP route and the majority of other areas with proposed infrastructure.</p>

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		Wetlands surveys should have been conducted along 100 percent of both routes and all areas of proposed infrastructure. Please explain rationale behind only conducting partial surveys.
4-125	4.3.3.9	<p>The section indicates that, <i>"less than 0.1 acre...impacted on federal lands."</i></p> <p>The Jan 2017 Wetland and Waterbody Survey Report indicates that nine wetlands and nine seep points on the GWJNF would be impacted but no acreages are provided. Please update the survey report and this section of the DEIS to indicate acres of each wetland/seep point impacted.</p>
4-125	4.3.3.10	<p><i>"...would not significantly impact wetlands."</i></p> <p>Please include a discussion on mitigation measures expected. There are over 700 acres of construction impacts to wetlands. Federal regulations require no net loss to wetlands.</p>
4 -134	4.4.2	<p>The DEIS says: "The Big Cedar Shale Barren is crossed by workspace and an access road."</p> <p>The maps that have been provided by ACP to the Forest Service do not show any access roads, work areas, etc. that impact the Big Cedar Shale Barren. Please clarify whether or not there may be potential impacts to the Big Cedar Shale Barren that the Forest Service is unaware of.</p>
4-137	4.4.3	<p><i>"Trees that are not physiologically adapted to edge conditions would become more vulnerable to windthrow at lower wind speeds than interior forest"</i></p> <p>The wording of this sentence is unclear. Better wording might be "the newly exposed trees would not be physiologically adapted to edge conditions, which would make them vulnerable to windthrow."</p> <p>While there is an acknowledgement of a potential to impact trees adjacent to the cleared areas, these potential impacts go much farther than the simple mechanical effect of windthrow. Much of the NFS lands impacted are overmature oak forests on moderate to low site-indexes. These forests are a moderate to high risk for oak decline. It is likely that the added stress of construction on adjacent trees would trigger an oak decline event that would affect more than just the adjacent tree(s). While this impact may not be quantifiable in terms of acres, the potential impact and scope of that impact (e.g. not just the adjacent tree(s)) should be acknowledged for appropriate disclosure of impacts to comply with NEPA. Please see <i>Incidence and Impact of Oak Decline in Western Virginia, 1986</i>, Steven W. Oak, Cindy M. Huber, and Raymond M Sheffield, Resource Bulletin SE-123.</p>
4-138	4.4.3	<p><i>"Impacts are considered short term if, after three growing seasons, the revegetated disturbed areas resemble adjacent undisturbed lands."</i></p> <p>Please clarify by which metric resemblance is being measured, e.g., vegetative species composition, soil structure, water quality, wildlife populations, etc. Short term impacts are those which only temporarily impair ecosystem services, and from which the ecosystem can recover and return to previous levels of functionality. Visual appearance alone does not indicate restoration.</p> <p><i>"...and in some cases, restore native flora."</i></p> <p>See comment above. Any area for which no plans exist for a reasonable effort to restore native flora should be considered to be impacted long-term.</p>

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4-143	4.4.4	Throughout this document and in Appendix G, section 11.4.2.1 the use of herbicides to treat non-native invasive species is identified. In order to comply with NEPA, the impact of that herbicide use on the human environment must be disclosed before any herbicide may be applied. Herbicide use may be interpreted as a connected action to the construction and maintenance of the pipeline. Thus, the disclosure of the impacts related to herbicide use must be included in this document. A word search for “herbicide,” “risk assessment,” and “human risk assessment” revealed no such discussion. Please include disclosure of the impacts of herbicide use on humans, plants, and animals. We strongly suggest that Atlantic adhere to herbicides and application rates for which risk assessments have already been completed (http://www.fs.fed.us/foresthealth/pesticide/risk.shtml).
4-145	4.4.6.1	<p><i>“As discussed in section 4.4.1, ACP crosses red spruce forests in West Virginia. Red spruce grows in association with hemlock, red and sugar maple, yellow birch, pin cherry, beech, and black cherry, but it may grow in almost pure stands. On the MNF, ACP would construct two new access roads across Management Prescription 4.1 (Spruce and Spruce-Hardwood Ecosystem Management) between AP-1 MPs 71.6 and 72.0 near Gibson Knob. This area contains much of the lands that have the potential natural vegetation capable of supporting red spruce or spruce-hardwood communities. Management emphasis in this prescription area is placed on restoration and management of disjunct red spruce and spruce-hardwood communities. This management prescription area was surveyed in 2016 and categorized as Hemlock Forest and Existing FS Roads (see table 4.4.7-1). ACP would affect 0.9 acre of Hemlock Forest within the construction right-of-way and ATWS, and 3.8 acres of FS Roads for a permanent access road. Although Atlantic has minimized impacts on red spruce forests through adopting reroutes on NFS lands, specific measures to restore this community have not been identified.”</i></p> <p>Revise this passage as follows: As discussed in section 4.4.1, ACP would cross a small area of mixed northern hardwood-red spruce forest on the MNF in West Virginia. In general, red spruce grows in association with hemlock, red and sugar maple, yellow birch, pin cherry, beech, and black cherry, but it may grow in almost pure stands. The subject stand that would be impacted is largely dominated by hardwoods, with scattered red spruce and hemlock present. On the MNF, ACP would construct two new access roads across a small segment of Management Prescription 4.1 (Spruce and Spruce-Hardwood Ecosystem Management) between AP-1 MPs 71.6 and 72.0 near Gibson Knob. Management emphasis in this prescription area is placed on restoration and management of disjunct red spruce and spruce-hardwood communities. The section of this management prescription area to be crossed was surveyed in 2016 and categorized as Hemlock Forest and Existing FS Roads (see table 4.4.7-1). ACP would affect 0.9 acre of Hemlock Forest within the construction right-of-way and ATWS, and 3.8 acres of FS Roads for a permanent access road. Although Atlantic has minimized impacts on red spruce forests through adopting reroutes on NFS lands, specific measures to restore this community have not been identified.</p>
4-146	4.4.6.2	We are gratified to see that FERC is recommending that ACP “ <i>describes vegetation communities and construction and operation impacts according to the protocols and classification systems requested by the George Washington National Forest (GWNF), and based on vegetation data collected during surveys</i> ”. We have been requesting these surveys and disclosure of impacts since first providing our comments on the initial resource reports. Please disclose those impacts in similar format as Table 4.4.6-1. However, instead of Vegetation Community Type, these impacts should be classified by Ecological System Group as defined in the GWNF Forest Plan on page 2-11 and 12. The impact should be further classified by Structural Class within each ESG pursuant to the definitions on page 2-14 of the GWNF Forest Plan.
4-146 & 147	4.4.7	<p>The DEIS says: <i>“We received comments regarding potential impacts of the ACP route crossing five designated Special Biological Areas (SBAs) in the GWNF, including Browns Pond SBA, Ratcliff Hill SBA, Big Cedar Shale Barren SBA, Reubens Draft Shale Barren, and Big Levels Macrosite SBA.”</i></p> <p>Please clarify if these 5 Special Biological Areas will or will not be affected by the proposed project.</p>
4-147	4.4.7	The DEIS says: <i>“The proposed ACP crosses Browns Pond SBA between AP-1 MPs 96.0 and 97.0 on the GWNF, and permanently impacts 2.2 acres of oak-pine vegetation for construction related to an access road.”</i>

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		It is unclear to the Forest Service what the impacts to the road through the Brown's Pond Special Biological Area will be. The DEIS says 2.2 acres of habitat will be impacted. Please describe where this impact will occur and what the impact will be.
4-147	4.4.8	<p><i>"Following construction, lands outside of the permanent right-of-way and the ATWS, staging areas, pipe/contractor yards, and temporary access roads would be allowed to revegetate naturally."</i></p> <p>These areas may still need erosion control, stabilization, invasive weed control, and restoration seeding to achieve full restoration. Stabilization and restoration plantings will be required on National Forest land, along with invasive weed control where needed.</p>
4-147	4.4.8	<p><i>"Short-term impacts on federal lands include areas dominated by grass and shrubs."</i></p> <p>It is not clear whether this sentence means short-term impacts will occur primarily in areas that are currently dominated by grass and shrubs, or if dominance by grass and shrubs will be the result of the impact. Please clarify.</p>
4-147	4.4.8	<p><i>"On areas outside of the permanent right-of-way and ATWS, staging areas, pipe/contractor yards, and temporary access roads, non-native invasive plant species such as those identified below in section 4.4.9 would likely increase."</i></p> <p>MNF LRMP Goal VE13 states, "For management actions that have been identified by the Forest as likely to cause a negative effect on RFSS populations, negative effects shall be avoided or minimized to the maximum extent practical while still accomplishing the purpose of the project or action. Unavoidable negative effects shall be mitigated to the extent practical and consistent with the project purpose."</p> <p>MNF LRMP Goal VE19 a) states "Work to prevent new infestations of NNIS, with emphasis on areas where species have a high probability for establishment and spread."</p> <p>As stated in this document in section 4.4.9, "federal agencies shall not authorize, fund, or carry out actions likely to cause or promote the spread of invasive species... [unless the benefits outweigh the potential harm] and that all feasible and prudent measures... will be taken to minimize the risk of harm."</p> <p>The 64 rare plant species on the MNF, including both known and undiscovered populations along the project corridor, will not receive benefit from the proposed project; therefore it is important that risk of harm be minimized to the maximum extent possible. Please demonstrate that all areas on the MNF affected by this project will be covered by plans to control NNIS.</p>
4-148	4.4.8	<p><i>"The incorporation and development of native flowering plants on the operational right-of-way for the pipeline would create, where conditions and land management practices are suitable, substantial acreages of pollinator habitat where this type of habitat is either non-existent or was previously degraded."</i></p> <p>Please either remove or provide support for the statement that pollinator habitat in some areas is "either non-existent or...degraded." Many native trees and shrubs provide excellent pollinator habitat. Replacing them with native forbs may provide habitat for different pollinators, but it is still a disruption to the current existing ecological community, and not necessarily an improvement to what is already there.</p>
4-149	4.4.8	The DEIS states <i>"The timber cruise would identify mature and old growth trees. Results of the timber cruises would be used to develop a Timber Extraction Plan, which would identify areas of old growth impacted by construction activities."</i> The purpose of timber cruising is not to identify old growth. Old growth must be identified on the GWNF pursuant to the Guidance for Conserving and Restoring Old-Growth Forest Communities on National Forests in the Southern Region. We strongly recommend utilizing the current Old Growth Survey protocol for the GWNF and that these surveys be performed simultaneously with the forest stand examination surveys described immediately above. The acres of impact on old growth forest must be disclosed in the EIS for proper effects disclosure and NEPA compliance.

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4-151	4.5.1	The first sentence should specify that the "project area provides suitable habitat for a wide variety of terrestrial wildlife species....", because aquatic wildlife is addressed in a different section. Delete the second sentence, because some species are dependent not so much on vegetation cover types, but on such attributes as rocky substrate, elevation, proximity to water sources, juxtaposition to other habitat types, etc....
4-152	4.5.1.1	<i>"Generally, bat species are able to move away from disturbance; however, construction activities can contribute to the loss of roosting and foraging habitat, cause noise and vibration disturbance to hibernating bats, and nighttime lighting can also disturb foraging bats (WVDNR, 2015a)."</i> Recommended re-wording: Generally, <u>adult</u> bat species are able to move away from disturbance; however, construction activities can <u>cause mortality of young bats, cause and/or</u> contribute to the loss of roosting, <u>maternity colony</u> and foraging habitat, cause noise and vibration disturbance to hibernating bats, and nighttime lighting can also disturb foraging bats (WVDNR, 2015a).
4-152	4.5.1.1	The first sentence of the second paragraph is unclear; it seems to imply that the Allegheny wood rat is a parasite of the eastern small-footed bat. Also, habitat degradation will affect any species whose habitat is degraded. Clearer and more accurate wording to address the two species dependent on rocky habitat would be the following: "Species such as the eastern small-footed bat and the Allegheny woodrat are associated with rocky habitats (talus, boulder fields, cliffs), which are restricted to certain geologic formations and are concentrated in certain areas of Virginia and West Virginia. The Allegheny woodrat is greatly affected by habitat fragmentation, and eastern small-footed bat maternity colonies are highly susceptible to disturbance and habitat degradation during the maternity season."
4-152	4.5.1.1	<i>"Open habitat types are limited in West Virginia and Virginia, and are threatened by conversion to agriculture or other developments. Species that use these habitats include least shrew, southern bog lemming, and meadow jumping mouse (WVDNR, 2015a)."</i> Please clarify if this refers to open habitat types in general or if you are specifically referring to high elevation open habitat types.
4-152	4.5.1.1	<i>"Most mammal species are able to move away from disturbance, and many species avoid noise and vibrations; however, mortality from increased use of access roads, and from construction equipment on the right-of-way would be possible."</i> Adult small mammals, especially mice, shrews, moles, and voles have a harder time moving away from this kind of disturbance given their small size, nocturnal nature, underground roosting and nesting habitat, and small home ranges. The young of all of these species could be destroyed by construction activities, due to their limited ability to move from underground nests. This sentence needs to be changed to reflect this reality. In addition, blasting happens at a rate of speed that doesn't allow for movement of small mammals either above or below ground, and therefore would result in direct injury and death. The effects of blasting are not evaluated here and need to be.
4-153	4.5.1.3	The first sentence is not accurate. Frog and toad habitat varies by species, but as far as water resources, habitat is any still body of water, including ponds, roadside ditches, marshes, and other wetlands. These may occur in the vicinity of floodplains, but many more occur outside of floodplains at varying elevations.
4-160	4.5.3.5	<i>"If Atlantic identifies additional bald eagle nests or occupied bald or golden eagle winter roosting habitat prior to or during construction, Atlantic and DTI would follow the National Bald Eagle Management Guidelines"</i> One of the threats to wintering golden eagles is direct disturbance due to construction and blasting activities. The National Bald Eagle Management Guidelines will not address wintering golden eagle habitat or wintering behavior. Please outline specific mitigation measures to avoid direct disturbance to wintering golden eagles in this section, as you have in section 5.0 of the Migratory Bird Plan.
4-160	4.5.3.5	<i>"The FERC Plan and Procedures (see table 2.3.1-1) require that maintenance of the permanent right-of-way during operations occur outside of the migratory nesting season (April 15-August 1), which Atlantic and DTI have committed to adhere to. Atlantic and DTI currently plan to avoid clearing vegetation during the nesting season, based on the revised construction schedule (see section 2.4). However, Atlantic has indicated that construction during the migratory bird season may be necessary in some areas along ACP."</i>

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		<p><i>Therefore, to ensure impacts on migratory birds would be minimized during construction of ACP, we recommend that: Prior to construction, Atlantic should file with the Secretary, and provide to the FWS for approval, a revised Migratory Bird Plan, and provide to the FS for approval, a revised COM Plan, that identify areas where Atlantic would construct during the migratory bird season, and identify the additional conservation measures developed in coordination with the FWS, and/or FS, and other appropriate agencies, that would be implemented to minimize impacts on nesting migratory birds in areas where construction during the active season cannot be avoided.”</i></p> <p>Waiting until after the Decision is made to identify the areas that ACP would be clearing vegetation during the nesting season does not allow the EIS to fully disclose and analyze the effects of the proposed actions on migratory birds. Nor does this allow for a full development of conservation and mitigation measures to address impacts of the proposed actions on migratory birds. In addition, the seasonal restrictions identified for both migratory birds and bats for tree and other vegetation removal is in direct conflict with several Forest Plan standards to avoid steep slope stability, soil movement, and winter road use concerns, as well as seasonal restrictions on T&E aquatic species and other sensitive species. These conflicting recommendations by FWS and Forest Service regulations need to be addressed and resolved before the FEIS is completed.</p>
4-161	4.5.3.5	<p><i>“Based on Atlantic’s and DTI’s current construction schedule, there are nine rookeries within the 0.5-mile disturbance buffer, and one located within the 500-foot vegetation buffer. Three additional rookeries were identified within the 0.5-mile buffer during the review of CCB and NHI data, but were not observed as being active during surveys (see table 3.1.1-1 of the Migratory Bird Plan [see table 2.3.1-1]).</i></p> <p><i>Atlantic’s Migratory Bird Plan does not include commitments to avoid disturbance of rookeries during construction. Therefore, we recommend that: Prior to construction, Atlantic and DTI should file with the Secretary a revised Migratory Bird Plan that includes appropriate conservation measures developed in coordination with the FWS and the appropriate state/commonwealth agencies for the following active rookeries with disturbance buffers that overlap the ACP workspace: ROOK-ACT-02 (VA), ROOK-01 (WV), WBC 01 (NC), WBC 02 (NC), WBC 04 (NC), WBC 05 (NC), WBC 07 (NC), WBC 12 (NC), and WBC 15 (NC). Atlantic should also coordinate with VDGIF, WVDNR, and NCWRC to verify that no additional conservation measures would be required for the NHI and CCB rookeries, and file with the Secretary copies of agency correspondence related to these discussions.”</i></p> <p>Waiting until after the Decision is made to identify appropriate conservation measures for active rookeries, does not allow the EIS to fully disclose and analyze the effects of the proposed actions on migratory birds. Nor does this allow for a full development of conservation and mitigation measures to address impacts of the proposed actions on migratory birds in the Habitat Equivalency Analysis (HEA).</p>
4-162	4.5.5	<p>No scientific evidence is presented to support the claim that wetlands would revert back to pre-construction hydrology, native species, etc. in one to two years. Recovery is likely to take far longer, on the order of decades, particularly in forested wetlands.</p>
4-164	4.5.6	<p><i>“Fragmentation and a loss of habitat connectivity could also impact wildlife. The removal of interior forest in order to create the necessary rights-of-way would result in the conversion of forest to herbaceous and/or scrub-shrub vegetation and would remove habitat for interior species. Edge effects could include a change in available habitat for some species due to an increase in light and temperature levels on the forest floor and the subsequent reduction in soil moisture; such changes may result in habitat that would no longer be suitable for species that require these specific habitat conditions, such as salamanders and many types of plants. An alteration of habitat could affect the fitness of some species and increase competition both within and between species, possibly resulting in an overall change to the structure of the forest community”</i></p> <p>Edge habitat also provides travel corridors for predators, thus increasing the opportunity and likelihood of predation on species in adjacent patches of habitat. More supporting documentation of effects statements in this section is needed from the scientific literature. Fragmentation is a well-studied issue.</p>

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		Use of the words “could” and “possibly” suggest a higher level of uncertainty than is warranted for such well-established impacts of forest fragmentation. Substitute “would” for “could,” and delete “possibly.”
4-164	4.5.6	<p>Please explain the rationale for using a minimum interior forest patch size of 35 acres for the fragmentation analysis. This number does not appear in the cited reference (Robbins et al. 1989). The minimum isolated forest tract sizes given for detection of various species are not useful for assessing the impacts of fragmentation. Scattered detection points in suboptimal patches do not necessarily signify occupation or successful breeding, which is what is important to the species. Robbins et al. 1989 considers their next metric up (50% of the maximum acreage; 700 hectares for cerulean warblers) to be the minimum area required for breeding, and Hamel 2000 states that this minimum varies regionally. Thirty-five acres is too small to use as a minimum interior patch size, and more recent research exists for determining a more meaningful figure.</p> <p>The fragmentation analysis needs to include a discussion of impacts on species populations (especially interior species and those with metapopulation dynamics).</p> <p>Please explain the rationale for the definition of edge habitat (300 feet).</p> <p>The definition of edge (part c) is confusing. Please clarify whether it means 300 feet into the interior of the forest starting at the end of the disturbance, or something else.</p>
4-170	4.6.1 Existing Aquatic Resources	<p><i>There are cross 1,787 waterbody crossings on ACP (some waterbodies are crossed more than once) ...</i></p> <p>Consider revising to:</p> <p><i>“There are 1,787 waterbody crossings on ACP (some waterbodies are crossed more than once) ...”</i></p>
4-170	4.6.1 Existing Aquatic Resources	<p><i>A number of these crossing locations have the potential to provide habitat for fish, including both warmwater and coldwater fish species. Fish found in the southeastern region of the U.S. make up 62 percent of the fauna in the U.S., and nearly 50 percent of North American fauna (NCWRC, 2005).</i></p> <p>Consider adding the sentence inserted below and ensure that the analysis of potential effects for aquatic resources incorporates this relevant information.</p> <p><i>“A number of these crossing locations have the potential to provide habitat for fish, including both warmwater and coldwater fish species. Although other proposed crossing sites may be located upstream of known or suspected habitat for fish species, these sites are hydrologically and ecologically connected fish bearing stream networks and therefore influence conditions in downstream fisheries. Fish found in the southeastern region of the U.S. make up 62 percent of the fauna in the U.S., and nearly 50 percent of North American fauna (NCWRC, 2005).”</i></p>
4-174	4.6.1.2	<i>“Appendix K identifies 24 wild brook streams and/or stockable trout streams crossing locations, and the proposed crossing method(s).”</i>

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		Appendix K does not specifically identify trout streams. TOYR are listed, but with no indication what the TOYR is for. In addition, according to the trout TOYR in appendix K there are more than 24 wild brook trout and/or stockable trout streams that are being crossed in VA. Table R-3 lists 26 trout streams or potential trout streams being crossed within GWNF alone.
4-176	Brook Trout	<p><i>The WVDNR is specifically concerned with the withdrawal of 2.6 million gallons from the Big Spring Fork and considering the existing water quality concerns, and 4-177 Fisheries and Aquatic Resources has recommended further restricting, or utilizing a different water source to support hydrostatic testing. Therefore, we recommend that:</i></p> <ul style="list-style-type: none"> • <i>Prior to construction, Atlantic should file with the Secretary and the WVDNR an evaluation of the potential impacts of the proposed construction activities at Big Spring Fork. In coordination with the WVDNR, Atlantic should develop the appropriate conservation measures to avoid further degradation of aquatic resource habitat at these locations, for review and written approval by the Director of OEP.</i> <p>Although the withdrawal point would be located off of National Forest land, the withdrawal could impact aquatic habitat and biota in downstream portions of the Elk River that cross National Forest land. Such impacts need to be considered and disclosed. The Forest Service will work with WVDNR and other regulatory agencies to ensure that these potential impacts are considered and are avoided, minimized, and mitigated to the maximum extent practical.</p>
4-188	4.6.4 Sediment and Turbidity	Discussion on Sediment and Turbidity should include results of Sediment analysis and downstream effects on biota.
4-189	Sediment and Turbidity	<p><i>Atlantic would attempt to minimize downstream sedimentation and turbidity, and subsequent impacts on aquatic biota in these waterbodies, by conducting the dry-cut crossings during low-flow periods within the applicable time-of-year work windows for protection of fisheries of special concern, and following the FERC Plan and Procedures (see section 2.3.1-1) relative to construction on the streambanks. However, the potential for erosion and sedimentation from landslides and slope failures on steep slopes over the long term must be recognized (see sections 4.1 and 4.2). Long-term impacts related to slope instability adjacent to streams has the potential to severely impact water quality and stream channel geometry.</i></p> <p>Minimize is a relative term which suggests that “attempts to minimize effects” would still likely result in effects. In addition, the statement acknowledges the potential for long-term and possibly severe effects associated with increased risks for slope instability. Potential effects to erosion and stream sedimentation from other proposed actions (such as access roads, ATWS, and releases of drilling mud) seem to be dismissed in this discussion or perhaps altogether in the DEIS. All of these potential effects must be considered additive to other current and anticipated future effects as part of the required cumulative effects analysis and resulting conclusions for aquatic resources.</p>
4-189	Loss of Streambank Cover	<p><i>... by adhering to Forest Plan standards by locating ATWS at least 100 feet from perennial waterbody banks and 50 feet from intermittent waterbody banks on NFS lands.</i></p> <p>See our comments for page 2-27 (2.3.3.1 Waterbody Crossings)</p>
4-191	4.6.4 Dry Crossing Method	<i>“Atlantic and DTI would also implement the erosion and sedimentation control measures described in the FERC Plan and Procedures (see table 2.3.1-1) to contain materials within the construction work areas and minimize impacts on fisheries due to changes in water quality”</i>

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		FERC Plan & Procedure documents included in table 2.3.1-1 do not specifically reference minimizing impacts during dry crossing methods, specifically a maximum timeframe for the crossing.
4-191	4.6.4 Dry Crossing Method	<p><i>“This potential impact would be minimized by screening the intakes of the pumping system, as described in the FERC Plan and Procedures (see table 2.3.1 1).”</i></p> <p>FERC Plan & Procedure documents included in table 2.3.1-1 do not specifically describe screening intakes to minimize impacts to aquatic organisms.</p>
4-192	4.6.4 Dry Crossing method	<p><i>“Furthermore, operation and routine maintenance of the pipeline rights-of-way would not have a significant impact on fishery resources in ACP or SHP project areas.”</i></p> <p>This statement is incongruent with the more likely and correct statement on page 4-189 that <i>“Long-term impacts related to slope instability adjacent to streams has the potential to severely impact water quality and stream channel geometry.”</i></p>
4-193	4.6.4 Blasting	<p><i>“Atlantic has committed to coordinating with the FWS to identify the appropriate rock removal method (blasting or mechanical), which is least impactful to federally listed species on a site-specific basis. Results of those discussions would be provided once available.”</i></p> <p>Section 2.2.4 in the Biological assessment has a more thorough and descriptive discussion on blasting that should be brought in here.</p>
4-194	Water Appropriation and Discharge	<p><i>In addition, the FWS has expressed concern with regard to sediment-laden discharge water, or sedimentation from nearby access roads, that could drain into waterbodies occupied by the federally listed or under review species. We have recommended that Atlantic complete an analysis of these potential impacts for all federally protected aquatic species in section 4.7.1.</i></p> <p>Potential effects from sediment-laden discharge water would also be of concern for aquatic biota other than species that are currently federally listed or under review. It is understood that the discharge of such waters would not occur on NFS lands. However, the impacts of discharge of such waters at locations off NFS lands but within a reasonable zone of potential influence for aquatic habitats and aquatic biota on NFS lands needs to be disclosed, and any potential impacts need to be avoided, minimized, and mitigated.</p>
4-194	4.6.4 Spill Prevention	This section should recognize the potential for periodic leaks during the life of the pipeline (not just leaks or spills during construction) and discuss effects.
4-194	4.6.5 Aquatic resources on federal lands	<i>“Atlantic is completing a sedimentation model to assess the extent of sedimentation that could occur within these priority subwatersheds during construction. This analysis is in development and would be provided when available to further assess potential impacts to aquatic biota on NFS lands”</i>

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		Effects cannot be analyzed without the completed sediment analysis. The sediment analysis was provided late in the public comment period, and needs to be incorporated into the analysis for the FEIS. The conclusions reached by the current analysis represent judgments that are based on incomplete information.
4-195	Monongahela National Forest	<p><i>The MNF requested that Atlantic complete aquatic species surveys at waterbodies crossed by proposed ACP on the MNF to document potential RFSS and suitable habitat, including candy darter (Etheostoma osburni), New River shiner (Notropis scabriceps), Appalachia darter (Percina gymnocephala), and Kanawha minnow (Phenacobius teretulus), in addition to the elktoe mussel (Alasmidonta marginata) and green floater mussel (Lasmigona subviridis).</i></p> <p>Although there would be some benefit to conducting fish population surveys in the vicinity of proposed waterbody crossings on the MNF, the MNF did not require these surveys to be conducted for project planning purposes if Atlantic and DTI wanted, instead, to presume presence for the specific RFSS that have previously been documented within the watershed context of those streams. This was the approach that Atlantic and DTI adopted. Therefore, the MNF is not requiring fish population surveys for purposes of project planning. Surveys may be required for project monitoring purposes should there be a decision to implement all or parts of this proposal.</p> <p>Surveys for elktoe and green floater mussels were conducted in accordance with the standard West Virginia Mussel Survey Protocol provided by WVDNR.</p>
4-196	4.6.5 Aquatic resources on federal lands	<p><i>“Atlantic has committed to eliminate the access road along Laurel Run”.</i></p> <p>The elimination of access road along Laurel Run is appreciated and appropriate. Appendix K (waterbody crossings) still lists 7 access road crossings of Laurel Run, as does table 4.8.9-3 (DEIS page 4-344), table E-1 in Appendix E (Access roads), shapefile ACP_Rev11b_CIF_without_corridor_20170210, and discussed in detail in Appendix G on page 23 and in table 2.1.1-1. It is confusing and unclear exactly what is proposed. These crossings seem to be included in the counts discussed earlier in this document. Analysis cannot be completed without consistent and accurate information.</p>
4-199	4.7.1	<p><i>“The FWS identified 30 federally listed threatened or endangered species, 2 designated critical habitats, 1 proposed species, 5 proposed critical habitats, and 6 species that are currently under review for federal listing that are known to occur in ACP and SHP project areas. Table 4.7.1-1 lists all potentially affected federally listed, proposed, and under review species, and designated and proposed critical habitat, indicates the state(s) where they may occur, and provides our determination of effect. While Atlantic and DTI conducted surveys for several federally listed species or species under review, survey access was not available in all cases (see table 4.7.1-1). In addition, as noted throughout this section and in our recommendations, Atlantic and DTI have not provided conservation measures to address potential impacts to these species in all cases. FERC and FWS will re-evaluate the determinations provided for these species upon receipt of pending survey results and proposed conservation measures. Therefore, we recommend that: Atlantic and DTI should not begin construction of the proposed facilities until: a. all outstanding biological surveys are completed; b. the FERC staff complete any necessary Section 7 consultation with the FWS; and c. Atlantic and DTI have received written notification from the Director of OEP that construction and/or use of mitigation (including implementation of conservation measures) may begin.”</i></p>

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		Table 4.7.1-1 lists a number of T&E species in counties with FS land with outstanding survey needs. The text above gives the impression that FERC will be issuing a decision with all of this outstanding T&E work undone and an unfinished Section 7 consultation with the FWS. Note that the FS cannot issue its decision as a cooperating agency without a completed Biological Assessment and Biological Opinion from the FWS.
4-201 & 202	4.7.1	The DEIS says: "Small whorled pogonia a,b (<i>Isotria medeoloides</i>), b Has the potential to occur within the GWNF." Small whorled pogonia does occur on the GWNF and there is an occurrence near the proposed project that may be affected by the proposed action. Please revise to indicate this known occurrence.
4-205	4.7.1.2	"The only county crossed by ACP where the gray bat is known to occur is Bath County, Virginia. The species is not known to occur in counties associated with the proposed SHP. Species occurrence is based on a desktop review using the FWS IPaC website and on consultations with the FWS and VDGIF." Based on information supplied by VDGIF the only counties in Virginia where the gray bat is found is Washington, Scott, & Lee Counties in far SW Virginia. There are no known documented occurrences in Bath County, Virginia. See: https://www.dgif.virginia.gov/wildlife/information/gray-bat/
4-208	4.7.1.3	Table 4.7.1-3: The tree clearing restriction for WV is November 16-March 31.
4-208	4.7.3.4	Table 4.7.3-1: This table needs to be expanded to include all surveys along access roads where improvements are planned, and all surveys adjacent to route variations where land not previously surveyed may be affected directly or indirectly by construction activities or edge effects.
4-210	4.7.1.3	"Conservation measures will be further refined upon FWS review of 2016 4-211 <i>Special Status Species</i> survey results....". The Forest Service also needs to be consulted, and MNF Forest Plan standards will need to be met. In addition to roost tree direction, the Forest Plan requires retention of all shagbark hickory trees of 5 inches DBH or greater. There may be a small, exceptional area of primary roost trees/shagbark hickories (follow-up survey outstanding) that requires a slight realignment or new mitigation measures to compensate for the taking of these primary roosting trees.
4-211	4.7.1.3	"To minimize impacts on drinking water and bat prey species, ATWS would be located in upland areas at a minimum of 50 feet from the wetland edge....", "...equipment refueling and lubricating would typically occur in upland areas 100 feet or more from the edge of the waterbody and adjacent wetlands to reduce potential impacts on bat drinking water sources." Please explain the rationale behind these distances, and provide citations indicating how they were determined to be safe distances for protection from contamination. Physical barriers should also be used, which should be included in the spill plan and referenced here.
4-212	4.7.1.3	Please provide supporting citations for the statement, "Once presumed to be exceptionally sensitive to disturbance, there are now numerous examples of roosts used by Indiana bat maternity colonies and roosts used by males, as well as documented occurrences of foraging Indiana bats in areas that are subject to airborne sound and near human activities."
4-214	4.7.1.4	"Based on 2016 surveys, there are 16 potential hibernacula within 0.5 mile of the route that could serve as habitat for the Indiana bat located within the ACP project area (see table 4.7.1-6). Northern long-eared bats were captured at one site, and may be present at another site." These areas should be treated as occupied if they are not confirmed.
4-217	4.7.1.4	"...two potential portals were identified during preliminary surveys and are currently being investigated..." Please clarify the extent of investigation. All caves on the Monongahela NF are closed to entry. Coordination with the MNF is required for special entry permission. It is unclear whether portals are being investigated or future entry is being planned, but no portals should be entered without written permission from the MNF.

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		“Nine secondary roost trees for northern long-eared bats were identified.” Note that the area is being resurveyed. Many primary and possibly a few secondary roost trees will probably be added in a particular area, which would lead to either a slight alignment adjustment in one particular area of primary roost tree concentration or new mitigation measures.
4-232	4.7.1.13 Freshwater Mussels	“ <i>Surveys for federally listed mussels are still needed on approximately 17 waterbodies in Virginia, and 7 waterbodies in North Carolina. No additional mussel surveys are currently proposed in West Virginia. Atlantic plans to complete these surveys by June 2017.</i> ” Because many of these determinations are being made ‘pending surveys’ it should be clearly noted these determination statements are currently unsupported.
4-237	4.7.1.13 Freshwater Mussels	DEIS only mentions access road crossings of Mill Creek in VA, with relation to T&E mussels. However, Appendix K-1 table of waterbody crossings along the Atlantic Coast Project lists 2 crossings of the Cowpasture River by access roads. This river is known to support T&E mussels.
4-238	4.7.1.13 Freshwater Mussels	“ <i>At waterbodies where federally listed or under review mussels may occur and where Atlantic proposes water withdrawals (Nottoway River, Roanoke River, Tar River, Neuse River, and Cape Fear River crossings), intake pumps may entrain or impinge mussel larvae. Water withdrawals may also reduce water flow volumes and velocities, increase sedimentation, alter dissolved oxygen levels, and expose mussels to the air and desiccation.</i> ” According to Table 4.3.2-8, water withdrawals are also proposed for the Cowpasture River, known to support T&E mussels.
4-238	4.7.1.13 Freshwater Mussels	“ <i>If Atlantic and DTI document federally listed mussels in the waterbody, avoid using the access road if in-stream activities cannot be avoided.</i> ” This sentence is not clear. Crossing a waterbody with an access road necessitates in-stream activity, unless there is an existing bridge.
4-238	4.7.1.13 Freshwater Mussels	The DEIS states a determination of <i>may affect, but is not likely to adversely affect</i> for the clubshell, Dwarf wedgemussel, James spiny mussel, and tar river spiny mussel, but the BA (page 182) has a different determination for the clubshell. There is inconsistency between the documents.
4-238	4.7.1.13 Freshwater Mussels	“ <i>ACP may affect the dwarf wedgemussel, James spiny mussel, and Tar River spiny mussel, but ACP is not likely to adversely affect these species. FERC and FWS will re-evaluate this determination upon receipt of pending survey results and proposed conservation measures.</i> ” There is no rationale for this determination, and since these determinations are being made ‘pending surveys’ it should be clearly noted these determination statements are currently unsupported.
4-239	4.7.1.13 Freshwater Mussels	<i>Impacts to mussels located downstream of waterbody crossing activities or access roads include temporary increases in sedimentation and turbidity, and degraded quality.</i> Effects cannot be analyzed without completed surveys, or assumed presence. Sediment analysis has not been incorporated which would inform on downstream effects.
4-239	National Forest Systems Lands	<i>No waterbodies were identified within the survey corridor in the MNF that could provide suitable habitat for the clubshell mussel; therefore, no impacts on this species on the MNF are anticipated.</i> It is unclear why this section contains this statement that is specific to only clubshell mussel.
4-239	4.7.1.14	The effective date for the Final ruling on the rusty patched bumble bee (<i>Bombus affinis</i>) is now March 21, 2017; this species until then is considered Proposed Endangered https://www.fws.gov/midwest/endangered/insects/rpbb/ This section needs to be updated to include the Final Ruling as published by the FWS. It currently contains dated listing information.

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4-240	4.7.1.14	<p><i>“Construction of ACP and SHP has the potential to impact individual rusty-patched bumble bees. Hibernating queens and colonies may be located in ACP and SHP project areas, but the potential is low and discountable. In addition, noise or presence of humans and equipment involved in construction activities may cause foraging rusty-patched bumble bee to divert from the area. The resulting response would be temporary disturbance that would not have a measurable or detectable effect on an individual’s survivorship or reproductive capacity. As such, the potential impact would be insignificant and would not result in harassment or an adverse impact.”</i></p> <p>This section needs to be updated to include the latest information in the Biological Assessment.</p>
4-246	4.7.1.15	<p>“Atlantic would indirectly affect the suitable habitat of federally listed plants adjacent to or in the vicinity of the ACP project area if the sun exposure, hydrology, or soil composition and moisture are changed due to vegetation clearing and contouring.”</p> <p>Please add the introduction and spread of invasive species to the list of potential indirect impacts to listed plants.</p>
4-246	4.7.1.15	<p>“Atlantic has the potential to impact about 25 percent of the running buffalo clover in the area during construction.”</p> <p>The BA states that approximately 16% of known populations within the vicinity of the projects will be directly affected. Please revise the DEIS or the BA for accuracy and consistency.</p>
4-246	4.7.1.15	<p>“Atlantic is currently exploring avoidance and minimization measures for running buffalo clover including evaluating avoidance measures where they have documented dense populations of running buffalo clover.”</p> <p>Please revise to eliminate the circular reference to “exploring avoidance” by “evaluating avoidance measures.”</p>
4-246	4.7.1.15	<p>“three small whorled pogonia populations that are located occur downslope”</p> <p>Please revise bolded text for clarity.</p>
4-246	4.7.1.15	<p>“Atlantic is evaluating potential indirect impacts on three small whorled pogonia populations that are located occur downslope of project workspaces.”</p> <p>Please also conduct botanical surveys adjacent to any route adjustments where a sufficient surveyed buffer no longer exists and assess potential direct and indirect effects to any TE and RFSS plant species found.</p>
4-246	4.7.1.15	<p>“Atlantic does not expect the population in Seneca State Forest to be directly or indirectly impacted due to its location outside of the construction footprint and its occurrence upslope of construction activities.”</p> <p>This statement is not supported by the results of the microclimate analysis referenced below. Please revise this section to reflect the results of the analysis after the requested changes below are incorporated.</p>
4-247	4.7.1.15	<p>“Atlantic is conducting a microclimate analysis of the three small whorled pogonia populations in the MNF and GWNF...”</p> <ul style="list-style-type: none"> • The microclimate analysis (also referred to herein as the SWP Evaluation report) actually covers all four populations. Please update the text to reflect this. • Please also incorporate the results of the microclimate analysis into the BA and DEIS after addressing the following comments regarding the light analysis, impacts of invasive species, deer browsing, and monitoring: <p>Re: light: There is no quantified change in light regime provided, only a qualitative visual assessment of a modeled simulation. There is no description of any direct measurements taken on-site to ground-truth the model, nor a description of how baseline or “construction conditions” sunlight values were established, nor a quantitative assessment of how proposed mitigation would preserve the existing light</p>

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		<p>regime. The simulations also do not demonstrate the impact of the one route realignment on light regimes, though it does state later in the document that the realignment is likely to reduce the impact to the population.</p> <ul style="list-style-type: none"> • Please provide a quantified assessment of expected changes in light regime to each population. • Please re-run the simulation for the population adjacent to the realignment and provide a quantified assessment of the realignment’s effect on light regimes. • Please also provide information about how baseline and “construction conditions” light levels were established for the simulation, and any information about how those model values correspond to actual values on site. <p>Regarding invasive species: The microclimate report states that, “Atlantic will implement the Invasive Species Plan for the Project, which includes monitoring the right of way for infestation of invasive species that may have been created or exacerbated by its construction activities, and treating such infestations as described in the Invasive Species Plan for the Project.”</p> <ul style="list-style-type: none"> • Please clarify whether the “Invasive Species Plan for the Project” mentioned is the Upland Erosion Control, Revegetation, and Maintenance Plan, commonly referred to as simply “the Plan,” or Section 11.0 of the COM plan, which is the “Non-Native Invasive Plant Species Management Plan” (but which also references “the Plan,” and the Restoration and Rehabilitation Plan (Section 10.0 of the COM plan), regarding post-construction monitoring for invasives). <p>Taken together, the Non-Native Invasive Plant Species Management Plan (COM Plan Section 11), the Restoration and Rehabilitation Plan (COM Plan Section 10), and the Upland Erosion Control, Revegetation, and Maintenance Plan (“the Plan”) state the following plans for NNIS monitoring:</p> <ul style="list-style-type: none"> • post construction monitoring and treatment will continue until the density and cover of non-NNIS species is similar to nearby non-forested, undisturbed lands, and until NNIS and noxious weeds are absent unless they are abundant in adjacent undisturbed areas. (Non-Native Invasive Plant Species Management Plan) • “post-construction and post-disturbance monitoring should be conducted in perpetuity, for the life of the project on USFS lands”, “Qualitative monitoring will be conducted in years 1 to 5”, and quantitative monitoring (via random quadrat sampling in consultation with USFS) would be done in year 3. “Reports, including a summary of corrective actions proposed, will be submitted within three months of identifying these conditions. Areas where control applications for noxious weeds are needed will be reported.” (Restoration and Rehabilitation Plan) • “Conduct follow-up inspections of all disturbed areas, as necessary...at a minimum...after the first and second growing seasons.” (Upland Erosion Control, Revegetation, and Maintenance Plan) <p>The sum of the guidance provided by these documents is insufficient to effectively monitor and treat the invasive plant species found along the project route.</p> <ul style="list-style-type: none"> • Appendix J of the COM plan describes each NNIS species and its optimal treatment timeframe and method, with timeframes ranging from early spring to late fall. Please use this to develop a plan to conduct annual NNIS monitoring at appropriate times of the year for each species, and to develop a plan for treating NNIS discoveries in a timely fashion. • Please provide more details re: how often monitoring and reporting will be conducted for the remainder of the life of the project on USFS land, after year 5. • When a sufficiently detailed plan for monitoring and treatment is developed, please add those details to COM plan sections 10 and 11, the SWP Evaluation report, the BA, and the DEIS. These important details need to be accessible to the reader in order to follow the logic of the effects determinations. <p>Re: Deer browsing: “Deer browsing may increase...because additional sunlight on the forest floor may increase the understory vegetation.”</p>

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		<ul style="list-style-type: none"> • Please provide a reference to support this statement. • Mitigation measures are planned for this area with the stated purpose of preventing additional sunlight on the forest floor. If these measures are sufficient, then there should not be an increase in light or understory vegetation as a result. If these measures are not sufficient, then additional mitigation to prevent both increased sunlight and deer browse is called for. Please review the consistency of the analysis as a whole, and revise as appropriate. <p>Re: Monitoring, the microclimate report states, “A qualified botanist would document populations during the growing season the year before construction (2017), during construction, and the year following initial restoration activities near these sites.”</p> <p>This is not a sufficient length of follow up time to establish population survival and sustainability. According to research cited in Atlantic’s own microclimate analysis, individuals of this species can go dormant for as long as 4 years at a time, and viability of a population can only be assessed with three consecutive years of monitoring or more (US FWS, 2008).</p> <ul style="list-style-type: none"> • Please increase the monitoring timeframe such that it is sufficient to establish post-construction survival of these populations, and describe what that timeframe will be in the Restoration and Rehabilitation Plan, the BA, the DEIS, and the microclimate analysis report.
4-247	4.7.1.15	<p>“A qualified botanist would document populations during the growing season the year before construction (2017), during construction, and the year following initial restoration activities near these sites.”</p> <p>This is not a sufficient length of follow up time to establish population survival and sustainability. According to research cited in Atlantic’s own microclimate analysis, individuals of this species can go dormant for as long as 4 years at a time, and viability of a population can only be assessed with three consecutive years of monitoring or more (US FWS, 2008).</p> <p>Please increase the monitoring timeframe such that it is sufficient to establish post-construction survival of these populations, and describe what that timeframe will be in the Restoration and Rehabilitation Plan, the BA, the DEIS, and the microclimate analysis report.</p>
4-247	4.7.1.15	<p>“If an access road requires improvements such as vegetation clearing or ground disturbance where there is potentially suitable habitat for a federally listed plant species, Atlantic would conduct surveys prior to construction activities. If Atlantic documents individuals during surveys along access roads, Atlantic would either avoid or transplant these individuals (pending additional coordination and concurrence by the FWS and other agencies as needed). Atlantic’s avoidance efforts would consist of fencing off the plants or restricting use of the road near the federally listed plants.”</p> <p>Planned improvements to access roads, as shown in the PDF documents “Access_Road_Maps_2017_1_12” parts 1 and 2, will impact areas near known populations of running buffalo clover, and may impact other undiscovered populations of TES species.</p> <p>Please conduct surveys in summer 2017 to document any TE or RFSS species within the total area of impact, plus within a 150 foot buffer beyond the limits of total impact, and develop avoidance and minimization measures for any that are found.</p>
4-249	4.7.1.15	<p>The DEIS says: <i>“Although the occurrence of small whorled pogonia is not within the survey corridor, changes in light regimes, increased deer browsing, and access roads. Per comments filed by the GWNF on September 7, 2016, the GWNF recommends that Atlantic meet with the GWNF, FWS, and Virginia Division of Natural Heritage (VDNH) at the site of the occurrence to discuss potential impacts and mitigation. To address GWNF’s recommendations for the occurrence of small whorled pogonia, we recommend above that Atlantic provide the final avoidance and minimization measures for listed plant species to the FWS and appropriate agencies.”</i></p> <p>Comment: A field meeting did occur, but only the Forest Service was in attendance, FWS and VDNH were not there.</p>

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4-250-251	4.7.3.1	<p><i>“86 RFSS in the MNF, and 53 RFSS in the GWNF may be affected by ACP (pending additional review and consultation with the FS. Appendix R describes suitable habitat, presents results of desktop analysis and/or habitat assessments or individual surveys conducted within the ACP project area, provides preliminary effects determination (where available), and describes the conservation measures that Atlantic would implement to avoid or minimize impacts on RFSS. The information provided in appendix R is based upon survey reports and supplemental information received from Atlantic through November 23, 2016 and FS comments on the preliminary draft BE and survey reports, where available. Full species accounts, description of habitat preferences, and a more detailed discussion of the potential impacts and conservation measures for each of the affected species would be provided in the draft BE. The BE will also include the full list of species evaluated, including those that were determined to not be affected.”</i></p> <p>Not having a completed Regional Foresters Sensitive Species section in the DEIS prevents effective public comment on the full impacts of the proposed actions on the 139 species determined to be potentially impacted by the proposed actions on Forest Service lands. The Forest Service is required by FSM 2670 to ensure that proposed activities in NFS lands do not cause downward trend in populations that could result in ESA listing. Full disclosure of analysis of the significance of adverse effects on the populations and habitat for RFSS is required.</p>
4-253	4.7.3.4 U.S. Forest Service Managed Species Conclusions	<p><i>Based on our review and comments from the FS, the analysis provided in the preliminary draft BE submitted November 22, 2016 is incomplete, and the FS is currently unable to provide a determination of effects for RFSS. Therefore, we recommend that: ...</i></p> <p>This statement and the list that follows it in the DEIS acknowledge deficiencies in information needed to conduct an appropriate effects analysis for biological resources. Given this, the FS has reservations about the conclusions that have been documented in the DEIS for biological resources.</p>
4-254	4.7.3.4 U.S. Forest Service Managed Species Conclusions	<p><i>Prior to the close of the draft EIS comment period, Atlantic should file with the Secretary and FS a revised MIS Report that:</i></p> <p style="padding-left: 40px;"><i>a. provides a revised analysis of impacts on wild brook trout on the MNF and GWNF, with the pipeline reroutes to avoid Laurel Run and elimination of the proposed access road parallel to Laurel Run. This evaluation should also include the FS-requested sedimentation analysis on all potentially affected waterbodies and the watersheds crossed by ACP on NFS lands;</i></p> <p>This statement acknowledges deficiencies in information needed to conduct an appropriate effects analysis for brook trout. Given this, the FS has reservations about the conclusions that have been documented in the DEIS for brook trout.</p>
4-256	4.7.4.1	<p>Table 4.7.4-1’s current title, “Federally Listed Endangered, Threatened, or Review Species in West Virginia” implies that it is a full list of TE and Review species in WV, but it is not complete. In the text above, the table is referred to as, “The West Virginia SGCN listed in Table 4.7.4-1 are also federally listed...” and the opening statement of the paragraph mentions, “Species with the potential to occur in or near the ACP and SHP”.</p> <p>Perhaps this table represents plants that are WV SGCN because they are Federally listed or under review, and that have the potential to occur in or near the ACP and SHP?</p> <p>Please change either the name of the table, or the description of table in the text, so it is clear what this list represents.</p>
4-260	Table 4.7.4-2 4.7.4	<p>The DEIS does not appear to list the species in Virginia that the state has determined are threatened or endangered at the state level. For example, the eastern tiger salamander is a state listed species that the proposed project has the potential to affect.</p>
4-267	4.7.4.6	<p>“Due to pending survey results, pending conservation measures, and consultations with the appropriate federal and state agencies, in particular with regard to bat species and bat hibernacula, subterranean obligate species, and aquatic species, our determination regarding the overall impacts on state listed and sensitive species is pending. Therefore, we recommend that: Prior to the close of the draft EIS comment period, Atlantic should file with the Secretary an evaluation of the impacts and species-specific conservation measures,</p>

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		<p>developed in coordination with the applicable federal and state agencies (WVDNR; VDGIF and/or VDCR; and NCWRC and/or NCDEQ), for the species listed in table 4.7.4-4 where Atlantic has identified potential impacts, and/or where the appropriate agency has requested additional analysis or conservation measures. Where survey data is still pending, Atlantic should work with the appropriate agencies to identify the conservation measures that would be implemented if the species and/or suitable habitat are identified during preconstruction surveys, or where presence has been assumed.”</p> <p>Waiting until the FEIS to provide impacts on state-listed and sensitive species does not allow the Public to be able to comment on the full impacts of the proposed actions. Mitigation measures should also be included in the types of measures Atlantic should develop with the appropriate federal and state agencies. The Forest Service should be included in the list of federal agencies where these species occur on Forest Service lands.</p>
4-271	Table 4.8.1-1	This table needs to be revised to provide acreages by land type on GWNF, MNF and FS total or include a separate table to provide this information.
4-294	4.8.1.1 Pipeline Facilities: Timber Removal	<p>“<i>We conclude that implementation of the identified mitigation measures, including implementing Atlantic’s and DTI’s Timber Removal Plan, Open Burning Plan, and Fire Plan, would minimize the impacts of the project on harvested forests on state land to the extent practicable and would not be significant or adverse.</i>”</p> <p>Timber harvesting on steep slopes (40% or greater) would need to be done in a manner that ensures slope stability and complies with MNF LRMP standard SW07 from the time the timber is harvested until pipeline construction begins. Winter logging must meet LRMP SW09 as well as all other erosion control plans and LRMP standards.</p> <p>Options include helicopter logging, use of overland equipment that does not require skid road development, and other non-ground disturbing methods as approved by FS personnel.</p> <p>Sediment and erosion control features are to be employed on these slopes as outlined in the COMP. Short term erosion control measures are to be utilized as directed in the COMP prior to the start of disturbance for the construction of the pipeline replacement.</p> <p>All timber harvest roads are to be fully reclaimed and restored according to MNF LRMP standards (RF07, RF12, RF13, and RF15).</p>
4-307	4.8.5	It would be helpful if the first paragraph notes that information about Recreation and Special Interest Area, including Trails, on NFS lands, are discussed in section 4.8.9.
4-311	Table 4.8.5-1 Cont	Add ANST to “BRP” for the “name” of the recreation and special interest area at MP 158.2-158.3.
4-313	Table 4.8.5-1 Cont	In footnote “e” please change “GWNF-owned” to “GWNF-managed.” GWNF and FS do not own land, rather the GWNF and FS manage National Forest System lands for the public.
4-319	4.8.5.2	GWNF, first paragraph. Change “...10.5 million people live within counties that are 75 miles from the forest border.” Change TO: “...10.5 million people live in counties that are within 75 miles of the forest border.”
4-320	4.8.5.2	BRP, bottom of page. Add: “...Shenandoah National Park in <i>Virginia</i> with the Great Smoky Mountains National Park in <i>North Carolina</i> .”
4-343	4.8.9.1	Bottom paragraph. Change NSF to NFS. Please clarify how NFS lands are only 3 percent of all federal lands crossed by the ACP and at the same time are 99 percent. In the 3 rd paragraph on page 4-335 it is noted that federal land is only 4% of the project.
4-344	4.8.9.1	In the second paragraph it may be helpful to state that no aboveground facilities or contractor yards associated with ACP will occur on NFS lands.

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4-344	Land Use and Ownership	<p><i>In addition to the pipeline facilities, roads to access the pipeline right-of-way during construction and operation would be located NFS lands (see table 4.8.9-3).</i></p> <p>It appears that potential effects to aquatic resources from the development and/or use of these roads have not been fully considered in the DEIS.</p>
4-344	Table 4.8.9-3	<p>In general, information on roads proposed for use as access roads, both new and existing, is inconsistent throughout the document. This needs to be addressed. Some examples follow:</p> <p>Access road 36-014.AR3 is not shown in Attachment F.</p> <p>Attachment F shows 06-001-B001.AR7 as being partially on federal land. Please add this to table 4.8.9-3. Also, 06-001-B001.AR7 does not appear to be shown in Appendix E.</p> <p>06-001-B001.AR5 is missing from table 4.8.9-3. It is partially on federal land according to Appendix E.</p>
4-346	4.8.9.1	<p>Since construction will occur 24 hours/day, then the potential impacts on sights and sounds for both day and night should be disclosed. I included a comment about establishing a decibel limit on the ANST and monitoring the sound; and stopping operations if the decibel is exceeded until a solution is found to mitigate that impact. I think these are legitimate potential impacts to the visitors' recreational pursuits during the construction phase.</p>
4-349	4.8.9.1 Forest Service: Land Use and Ownership	<p><i>“On NFS lands, timber would be cruised, marked, and appraised to FS standards. Atlantic would pay for the timber land affected by the project and dispose of it per the discretion of the FS. The FS would prepare a Timber Cruise Plan to be followed by Atlantic and a qualified timber cruise contractor under contract to and at the direction of Atlantic. Each crew conducting a timber cruise would be accompanied by at least one FS-certified timber marker. Atlantic and the FS are also currently coordinating the development of a Timber Extraction Plan specific to the MNF and GWNF. As discussed in section 4.8.1.2, the Timber Extraction Plan would discuss the results of a timber cruise.”</i></p> <p>Timber harvesting on steep slopes (40% or greater) would need to be done in a manner that ensures slope stability and complies with MNF LRMP standard SW07 from the time the timber is harvested until pipeline construction begins. Winter logging must meet MNF LRMP SW09 as well as all other erosion control plans and FS LRMP standards.</p> <p>Options include helicopter logging, use of overland equipment that does not require skid road development, and other non-ground disturbing methods as approved by FS personnel.</p> <p>Sediment and erosion control features are to be employed on these slopes as outlined in the COMP. Short term erosion control measures are to be utilized as directed in the COMP prior to the start of disturbance for the construction of the pipeline replacement.</p> <p>All timber harvest roads are to be fully reclaimed and restored according to MNF LRMP standards (RF07, RF12, RF13, and RF15).</p>
4-357	Effects of Proposed Project-Specific Amendments	<p><i>The direct, indirect, and cumulative effects related to MNF Potential Amendment 1 cannot be determined until the COM Plan has been revised and effects analysis completed related to sedimentation, impacts on riparian areas, and other resources.</i></p> <p>This statement acknowledges deficiencies in information needed to conduct an appropriate effects analysis for aquatic resources. Given this, the FS has reservations about the conclusions that have been documented in the DEIS for aquatic resources.</p>

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4-360	4.8.9.1	Table 4-8-9-10, Proposed Amendment 3. Please show that the ACP would cross the ANST in Augusta County, VA by either HDD or DPI to clarify that the ACP would not cross overtop the ANST via open trench construction.
4-361	4.8.9.1	Bottom paragraph, change “recreational uses” to “recreational users.”
4-362	4.8.9.1	Public Access Plan: <i>Post appropriate signage to warn hikers to stay on the trail</i> – What is the authority to enforce, and who enforces? Add that Atlantic will consult with FS on wording for these signs. Need to consider all non-motorized trail users for trails open to mountain bicyclists and/or equestrians. If signs are needed on the ANST, ACP needs to consult with FS and ATC.
4-364	4.8.9.1	Recreation Opportunity Spectrum: The description of affects is insufficient. It should include whether or not the construction and operation of the pipeline would result in a change to the ROS inventory from SPM to RN (about 9 acres on MNF and about 44 acres on GWNF) based on the change in the setting, the fact that the corridor will not meet the 1986 ROS Book description of SPM, and it’s questionable whether or not it meets the MNF and GWNF LRMP standard for SPM (predominantly natural appearing or natural appearing).
4-365	4.8.9.1	Under GWNF sub-heading, 4 th sentence, poorly constructed. Change to “Approximately 10.5 million people live in the counties that are within 75 miles of the national forest.”
4-365	4.8.9.1	3rd paragraph, change to: “...people live <i>in</i> the counties that are <i>within</i> 75 miles OF the forest...”
4-366t	Table 4.8.9-12	Footnote “c” – change to “...avoiding direct <i>surface</i> impacts.”
4-366	4.8.9.1	At the beginning of the sub-section on Demand Species, refer back to the discussion on Demand Species on the MNF on page 4-364.
4-367	4.8.9	<p>“<i>Proposed access road 36-016.AR1 at AP-1 MP 96.3 would cross several waterbodies that support wild brook trout.</i>”</p> <p>The road in question regarding wild brook trout and incompatibility with LRMP direction is 36-14.AR3. In addition, there is more than 1 access road on FS that crosses wild brook trout streams.</p>
4-367	4.8.0	<p>“<i>Based on Atlantic’s mitigation measures discussed throughout sections 2.3, 4.4, 4.5, 4.6, 4.7, 4.8.1, and 4.8.1.1, implementation of its various construction, restoration, and operation plans, impacts on demand species would be minimized to the extent practicable and not be significant or adverse.</i>”</p> <p>The conclusion that impacts to demand species would not be significant or adverse is inaccurate and premature. Based on the previous paragraph in the DEIS, analysis for brook trout is incomplete. In addition, other places in the DEIS correctly conclude that “<i>Long-term impacts related to slope instability adjacent to streams has the potential to severely impact water quality and stream channel geometry.</i>”</p> <p>In addition, DEIS page 4-253 states: <i>Due to pending survey results, pending conservation measures, and consultations with the MNF, GWNF, and other appropriate federal and state agencies detailed above, our determination regarding the overall impacts on FS managed species is pending.</i></p>
4-367	4.8.9.1	Recreation and Special Interest Areas: This section covers roads and trails with an emphasis on NF access. Roads and trails should not be lumped; they should be described separately. While some FS roads are used by visitors engaging in non-motorized recreational activities, generally the use of roads and trails differ sufficiently to warrant separation. The impacts on the users’ experience differs significantly between motorized and non-motorized activities. Non-motorized users travel at a much slower rate so would be exposed to the altered setting longer; and non-motorized visitors on trails are engaging in their actual recreational pursuit so the effect on their experience would typically be greater. Motorized users on roads are traveling at a faster rate and therefore are typically exposed to the

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		changed setting for a shorter duration; and a large percentage of those passing by on a road may not be engaging at that moment in their recreational pursuit. The experience as influenced by the setting should be considered important for all national forest visitors, but there are potential differences in the extent to which these changed settings are perceived by visitors.
4-376	4.8.9.1	Visuals: 1 st paragraph on this page, 3 rd sentence, need to add “scale” to the list of landscape elements – “existing elements of form, line, color, texture, pattern or scale”.
4-376	4.8.9.1	Visuals: 4 th paragraph on this page, last sentence - contains a typo. “Atlantic would be required to ensure construction of the portion of ACP on the GWNF in a High SIO would be in -consistent with FS management of these areas.” Delete the word “in”.
4-376	4.8.9.1	Visuals: 5 th paragraph on this page, 1 st sentence – grammatical issue. Change to “In addition, Atlantic would conduct additional visual analyses and prepare photo simulations...”
Multiple	4.8.9.1	Visuals: In several locations in the DEIS, the SIO for the location of the observation point is given. This is an erroneous application of the FS Scenery Management System. SIOs apply to visible lands altered by the project as viewed from travelways and observation points. It is typically inappropriate to state the SIO for the site of the KOP. Explanation: The inventoried concern level from travelways and observation points is one of multiple data in the SMS inventory which is used to derive Scenic Classes which are then used to establish the SIOs (based on overall objectives for each management prescription area). The SMS inventory data for the KOP influences the establishment of the SIO(s) for the visible NF lands. Specific edits to correct this are provided in the comments that follow.
4-367	4.8.9.1	4 th paragraph. Change from: “This public road access includes...” to “Forest road public activities include...”
4-368	Table 4.8.9-13	Milepost 116.7 – Road 715 is a State Road (SR), not a Forest Road. Milepost 121.0 – Road 728 is a State Road (SR), not a Forest Road.
4-372	4.8.9.1	Top paragraph – Change “proposed” to “propose.”
4-377	4.8.9.1	Visuals: KOP 34 – Torry Ridge Trail 1 – The area of the ACP r-o-w visible from this KOP is approximately MP 157 which is not located on GWNF land. Potential impacts to scenery viewed from the GWNF trail should be described, but an SIO should not be cited for non-FS lands viewed. Delete the following sentence from the KOP 34 paragraph: Due to the visibility of the corridor running through an otherwise natural and intact appearing landscape, ACP would not be consistent with a Moderate SIO in this area.
4-377	4.8.9.1	Visuals: KOP 35 – Torry Ridge Trail 2 – The area of the ACP r-o-w visible from this KOP is approximately MP 155.5 which is just south of GWNF land ownership. Potential impacts to scenery viewed from this GWNF trail should be described, but an SIO should not be cited for non-FS lands viewed. Replace KOP 35 narrative with: Existing visual conditions at Torry Ridge Trail 2 include a mixed hardwood and pine forest with heavy undergrowth in the immediate foreground. A partial gap in the forest allows views of Back Creek valley in the middleground and the Blue Ridge mountains in the background. The AP-1 mainline right-of-way would be visible in the middleground at MP 155.5, about

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		0.5 mile south of where the pipeline crosses GWNF land in the valley. The visual contrast would result in similar impacts to scenery as described for Torry Ridge Trail 1.
4-378	4.8.9.1	<p>Visuals: KOP 38 – Blue Ridge Parkway at Raven’s Roost –</p> <p>One mile out of the four miles of ACP visible from the KOP is on GWNF (MP 154 to MP 155). This area is within management area 7E1 and has a SIO of Moderate. Reference to there not being a SIO for the NPS KOP should be deleted (per comment above about not specifying SIOs at the KOPs).</p> <p>Replace paragraph describing KOP 38 with: Existing landscape character viewed from KOP 38 includes expansive views of dense, mature, mixed oak forest on Torry Ridge which is the prominent feature in the middleground. The valley at the base of Torry Ridge in the near middleground is primarily natural appearing forest but also contains mixed land uses that include roads, residences, and some agricultural patches. The valley viewed from the KOP wraps around the north end of Torry Ridge where it broadens into expansive middleground and background views that include predominantly forested areas with large openings of agricultural and other land uses.</p> <p>From Raven’s Roost Overlook, ACP from MPs 152 to 156 would be visible in the middleground at approximately 0.75 mile distance to the northwest. Approximately one mile of this, from MP 154 to 155, is located on the GWNF with a SIO of Moderate. The appearance of the constructed ACP right-of-way located in the valley will borrow from the existing landscape character. In particular the ACP will appear similar to the linear, open corridor for Torry Ridge Road (SR 664). The ACP will be noticeable to casual observers at the KOP, but it will not begin to dominate the characteristic landscape. This meets the Moderate SIO.</p>
4-378	4.8.9.1	Visuals: KOP 39 – BRP at Three Ridges Overlook – Neither the KOP nor the area visible to the southeast is on the GWNF. Move this narrative to the NPS section 4.8.9.2.
4-378	4.8.9.1	<p>Visuals: KOP 40 – Change the sub-header title to Bee Mountain Near Three Ridges Wilderness (<i>not Overlook</i>).</p> <p>The FS commented on the ADEIS that the mountain, including some ability to see the texture of canopies, is visible in the photograph, and we questioned the inability for the simulated pipeline corridor to be visible in the photo. The DEIS did not address our concern about this photo simulation.</p>
4-378	4.8.9.1	Visuals: KOP 64 – Shenandoah Mountain Trail Southern Terminus – the first sentence is poorly constructed; I cannot tell what is intended. Is the existing transmission line visible from this location or not? One photo is provided in the Supplemental Information for SIA, but no simulation was created. Aerial photography was used. That is not sufficient to support a conclusion that views of the pipeline from the trail will be screened by vegetation everywhere except directly at the crossing. Potential impacts to scenery should be described for locations where vegetative screening is thin or lacking and places where there are gaps in the canopy that may afford views to the pipeline corridor.
4-378	4.8.9.1	Visual Resources: In the first sentence, add “scale” to the list of landscape elements – “existing elements of form, line, color, texture, pattern or scale”.
4-484	4.13 CUMULATIVE IMPACTS	<i>Projects and activities included in this analysis are generally those of comparable magnitude or nature of impact as ACP and SHP.</i>

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		This criterion (particularly the requirement for having a magnitude that is comparable to ACP) would seem to permit the omission of effects from past, present, and reasonably foreseeable influences that should be considered for the cumulative effects analysis.
4-485	4.13 CUMULATIVE IMPACTS	<p><i>Therefore, this cumulative impact analysis considers current and other reasonably foreseeable projects that may be constructed within the geographic scope (or "regions of influence") up through about mid-2019.</i></p> <p>Although certain potential effects associated with the proposed project may only be expected to last for the short-term, others would likely persist as chronic or permanent changes to the existing condition. For example, as noted in other comments, effects to forests could persist for a century or more, and sedimentation and slope stability impacts could persist well beyond the in-service date. Restricting the analysis period to mid-2019 seems unrealistically optimistic about the rate of environmental recovery from potential effects associated with proposed activities.</p>
4-485	4.13 CUMULATIVE IMPACTS	<p><i>Table 4.13-1 defines the potential geographic scope/region of influence for each resource analyzed in this section.</i></p> <p>The geographic scope of influence is identified as the HUC-10 watersheds for numerous resources. While this area is arguably a very appropriate scale for analyzing potential effects to aquatic resources from this proposal, it presents challenges for conducting an adequate analysis of cumulative effects because of its size and the multitude of activities that realistically contribute to cumulative effects.</p>
4-487	4.13 CUMULATIVE IMPACTS	<p><i>As described throughout this EIS, ACP and SHP would temporarily and permanently impact the environment.</i></p> <p>The paragraph that begins with this statement and the paragraph that follows it severely downplay the level of risk, the magnitude, and the duration of potential consequences associated with the proposed project, particularly for aquatic resources.</p>
4-489	4.13.2 Projects within the Geographic Scope of Analysis	<p><i>We identified eight types of projects that would potentially cause a cumulative impact when considered with the proposed projects. These are: ...</i></p> <p>Limiting the cumulative effects analysis to only considering projects that fit within the eight project types that are identified following the statement above would seem to be a fatal procedural flaw. Using this approach undermines the legitimacy of conclusions drawn from this cumulative effects analysis.</p>
4-485	4.13	Table 4.13-1 and throughout this section: While a watershed may be the logical/appropriate effects zone for aquatic resources, that logic does not extend to terrestrial wildlife. Recommend you consider overall range size for endemics/local populations and home range size for larger/very mobile species (e.g., those that require large expanses of unfragmented forest).
4-488	4.13.1	<p>The paragraph describing acres of various land resources that have been altered over the centuries is interesting, but would be much more useful for the purposes of determining cumulative effect if all metrics were presented for all states in table form, so that comparisons could be made across and within states.</p> <p>Please provide, by state, the number of acres of wetlands lost, forested lands converted to agriculture, and forested lands lost to urban use.</p>
4-495	4.13.3.1	<p>Add the following text to the end of the paragraph that ends "...and would avoid unstable areas." At top of page 4-495: "Natural landslides (including debris flows) are part of the natural disturbance regime on NFS lands and non-NFS lands downslope. The natural landslide hazards (including debris flow hazards) and risks to public safety, resources, and infrastructure on NFS lands and non-NFS lands are inherent in the steep mountainous geologic setting. The ACP pipeline project would add an increment of human-induced landslide hazards and risks to 1) other human-induced landslide hazards and risks in the area (such as roads, timber harvesting, land development), and 2) the natural landslide hazards and risks in the area."</p>
4-495	4.13.3.2 Soils and Sediments	<p><i>"To reduce impacts on soils, and curtail erosion, Atlantic and DTI would follow the measures outlined in the FERC Plan and Procedures and their construction and restoration plans (see table 2.3.1-1), which include installation of erosion control devices, topsoil, soil decompaction, and revegetation."</i></p>

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		Revise to read: "...which include installation of erosion control devices, topsoil segregation , soil decompaction, and revegetation. Specific details are outlined in the COMP."
4-495	4.13.3.2 Soils and Sediments	<p><i>"While the combined projects would result in an increase in erosion, given the erosion control BMPs and restoration on federal lands, we conclude that ACP and SHP, when added to other the projects within the geographic scope of influence, would not result in significant cumulative effects on soils."</i></p> <p>On NFS lands, the dedication of the soil resource for housing a pipeline will result in an irreversible commitment of resources. Soil quality would be detrimentally impaired within the ROW as defined by FSH2550. This commitment would exist the life of the pipeline and beyond if no ecological and soil restoration occurs after decommissioning any part of the pipeline.</p>
4-495	4.13.3.3 Cumulative Impacts Water Resources	<p><i>"Construction and operation of ACP and SHP would result in short-term impacts on water resources (see section 4.3). Direct and indirect impacts, such as increased sediment transport to waterbodies and turbidity, should return to baseline levels over a period of days or weeks following construction and when restoration efforts have been permanently established."</i></p> <p>This is incongruent with the more likely and correct statement on page 4-189 that <i>"Long-term impacts related to slope instability adjacent to streams has the potential to severely impact water quality and stream channel geometry."</i></p>
4-495	4.13.3.3 Water Resources	<p><i>Construction and operation of ACP and SHP would result in short-term impacts on water resources (see section 4.3). Direct and indirect impacts, such as increased sediment transport to waterbodies and Cumulative Impacts 4-496 turbidity, should return to baseline levels over a period of days or weeks following construction and when restoration efforts have been permanently established.</i></p> <p>Although certain potential effects associated with the proposed project may only be expected to last for the short-term, others would likely persist as chronic or permanent changes to the existing condition. Even in the absence of an accepted analysis of potential soil erosion and stream sedimentation that may further reveal persistent impacts, some longer lasting effects are already acknowledged in various sections of the DEIS but ignored here.</p>
4-497	4.13.3.3 Cumulative Impacts Water Resources	<p><i>"Section 4.3.1 describes the occurrence of water wells and springs in the vicinity of the projects. We were unable to quantitatively determine the number of these features on a HUC-10 watershed basis. However, it is apparent that ACP and SHP routes would cross near numerous wells and springs, some of which would be within 0.1 mile of ACP and SHP.... it is generally unlikely that pipeline activities would negatively affect groundwater supplies from wells, although springs may be more subject to disruption"</i></p> <p>It is unclear and unsubstantiated how an effects determination can be made if the number and location of wells and springs is unknown.</p>
4-497	Groundwater	<p><i>As is the case with ACP and SHP, most other types of other projects listed in table W-1 in appendix W would have a similar, limited ability to significantly affect groundwater resources,</i></p> <p>The limited ability of ACP to significantly affect groundwater is stated as fact here although information needed to help substantiate such a claim (soils analysis) has not been produced or accepted at the time of this review.</p>

Page #	Section #	Comment
4-497	Surface Waters	This section contains statements that are based on incomplete analyses (soils, erosion/sediment, and cumulative effects), that are contradictory, and erroneous in concluding that <i>“the cumulative effect on surface waterbody resources would be temporary and minor.”</i>
4-498	4.13.3.3 Cumulative Impacts Water Resources	<p><i>“Therefore, most of the impacts on waterbodies are expected to also be of short duration. Consequently, the cumulative effect on surface waterbody resources would be temporary and minor.”</i></p> <p>This is incongruent with more likely and correct statement on page 4-189 that <i>“Long-term impacts related to slope instability adjacent to streams has the potential to severely impact water quality and stream channel geometry.”</i></p>
4-499	4.13.3.4	<p><i>“We are not able to discern specific impacts on forested vegetation or any other vegetation category for all the other projects contributing cumulative impacts on vegetation.”</i></p> <p>This statement is not consistent with the analysis that precedes it. Page 4-487 states that ACP will cross 63 HUC-10 watersheds, and gives both acres and percent of the watersheds that will be affected by ACP and SHP? Page 4-487 also clearly states, <i>“...projected impacts on forested vegetation and habitat...due to the number of treed acres cleared, fragmentation of interior forests, and time required to recover this vegetation/habitat type, would be a significant impact.”</i> And <i>“In terms of other projects that were recently constructed, or may be constructed in the near future, we also considered permanent impacts on specific environmental resources (i.e., removal of forest).”</i> The entirety of section 4.13.2 is devoted to describing specific projects within the geographic scope of analysis that contribute to cumulative impacts, and Table 4.13.2-1 gives numbers of acres of temporary and permanent forested land impacts for all FERC related projects in that area.</p> <p>Please update this analysis, based on details available in preceding pages and the supporting documents that contributed to those sections.</p>
4-499	4.13.3.4	<p><i>“based on NLCD from the EP, there are about 4,334,392 acre of upland forest in the shared HUC-10 watershed within the geographic scope of influence.”</i></p> <p>The ACP and SHP pipelines cross 73 HUC-10 watersheds. Please clarify this apparent reference to a singular HUC 10 watershed.</p> <p>Also, given that this section is describing cumulative impacts, it is not sufficient to compare the impact today to what exists today. Please present the acreage of forested lands that exist now as a percentage of what used to exist prior to agricultural and urban clearing, and the acreage of what will be removed by ACP as a percentage of the forested land that remains.</p> <p><i>“While the vegetation impacts of these projects and ACP and SHP would not be inconsequential, the overall impact of these projects would be considered minor to moderate.”</i></p> <p>The above statement is in direct contradiction to the statement earlier in the document (p. 4-487) that says, <i>“...projected impacts on forested vegetation and habitat...due to the number of treed acres cleared, fragmentation of interior forests, and time required to recover this vegetation/habitat type, would be a significant impact.”</i></p> <p><i>“The potential for habitat fragmentation resulting from ACP and SHP would be further reduced because the majority of the disturbed areas would be allowed to return to pre-existing condition.”</i></p>

Page #	Section #	Comment
		<ul style="list-style-type: none"> • If the project is permitted, habitat fragmentation would be certain rather than potential. • Some of the disturbed areas would be re-vegetated, to some degree. Only already disturbed land would be “allowed to return to pre-existing condition” because wherever mature forest is being cleared, it is highly unlikely that ecosystem services of the same quality will be restored in our lifetimes. • The fact that some areas will be revegetated does not reduce the likelihood of fragmentation at all, because it is a linear fragmentation. There will still be a 600+ mile unbroken line of cleared land if this pipeline is installed. <p>Please revise for clarity and accuracy.</p>
4-499	Wetlands	<p><i>Given the relatively small total of wetland acres affected by the combination of ACP and SHP, as well as the other projects listed in table W-1 in appendix W, we conclude that cumulative impacts on wetlands within the HUC-10 watersheds, when considered with the projects identified in this analysis, would not be significant.</i></p> <p>This conclusion seems to relate mostly to a comparative assessment of the proportionate share of potential ACP contributions to cumulative wetland impacts rather than appropriately addressing potential consequences to wetlands from cumulative effects of past, present, and reasonably foreseeable future actions.</p>
4-500	4.13.3.4	<p><i>“Cumulative impacts on vegetation...are expected to be minor to moderate.”</i></p> <p>Page 4-487 states, “...projected impacts on forested vegetation and habitat...would be a significant impact.”</p> <p>Please revise the cumulative effects section for consistency.</p>
4-500	4.13.3.4	<p><i>“...the large amount of undisturbed vegetation...”</i></p> <p>Please define what is meant by undisturbed. Virtually all forested land in the geographic analysis area has been cut over at least once, and much of it several times, since the arrival of Europeans.</p>
4-500	4.13.3.5	<p><i>“However, there are over 8.2 million acres of land area, much of which provides habitat for wildlife....” and “In general, wildlife is expected to return to affected areas following construction of ACP and SHP and other projects in the area.”</i> As previously commented, these statements are extremely general and only address common species. There are many local populations that could be affected, which do not extend across the 8.2 million acres, and are quite specific in their habitat requirements (simple vegetative cover type is not a good proxy for many of these species, which require other specific biotic and abiotic habitat features). Cumulative effects/habitat disturbance history is the reason many of these species are now rare. Fragmentation and the species most affected need to be discussed, either here or in the fragmentation analysis, which contains no discussion. Somewhere in this document or the fragmentation analysis, fragmentation needs to be discussed (which species are most affected, how/why are they affected, how much does the proposed fragmentation reduce the interior or intact portions of the forests, etc...). There is a good general discussion on fragmentation in the <i>Migratory Bird Plan</i> that could be copied here or referenced, but species are not addressed and there is no analysis.</p>
4-501	4.13.3.5	<p><i>“Given the large amount of wildlife habitat that would remain undisturbed within the geographic scope of influence, the measures that Atlantic and DTI would use to minimize impacts associated with vegetation and habitat removal and re-establish the right-of-way, and the requirements for restoration for other projects, we conclude that ACP and SHP, combined with the other identified projects, would not have a significant cumulative impact on wildlife.”</i></p> <p>Given the incomplete survey information and analysis of impacts of the proposed actions on the most sensitive species in this area (migratory birds, Management Indicator Species), this statement is premature and needs to be substantially verified with currently unfinished sections of this EIS, reports and analysis.</p>

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4-501	4.13.3.6 Fisheries and Aquatic Resources	This section identifies various sources and potential consequences of impacts that would likely contribute to cumulative effects and correctly states that, <i>“Impacts on aquatic resources would be temporary to long-term.”</i> However, the statement that <i>“ensuing operations of the proposed ACP and SHP would not result in any cumulative impacts unless maintenance activities take place in or near streams at the same time/location as other (non-related) project work”</i> suggests a misconception of cumulative effects and undermines the credibility of resulting conclusions.
4-502	4.13.3.7	Please include a table of the specific effects that are expected for each species. Simply stating that the projects will affect a certain number of species in each jurisdiction does not give an indication of what species in particular will be affected, or how, or to what degree, and thus makes it impossible to assess the cumulative effects of this project on these species.
4-503	4.13.3.7 Special Status Species	<p><i>Consequently, we conclude that projects in the geographic scope of influence in combination with ACP and SHP would have minor cumulative effects to special status species.</i></p> <p>Given an acknowledgement of missing information needed to assess potential project-related effects, failure to fully recognize the implications of potential effects that have been identified, and the use of a questionable approach to conduct and interpret potential cumulative effects, this statement currently lacks credibility for aquatic species.</p>
4-504	4.13.3.7	<p><i>“The species discussed in section 4.7 of this EIS could potentially be affected by construction and operation of other projects within the same geographic scope of influence of ACP and SHP. Atlantic, DTI, and all other companies’ projects are required by law to coordinate with the FWS, which will take into account regional activity and changing baseline conditions when determining the extent of impacts on a federally listed or proposed species. Non-federal projects are also required to adhere to the ESA, although the FWS has a different mechanism for evaluation and minimizing impacts. Protection of threatened, endangered, and other special status species is part of the various state permitting processes or resource reviews. As such, cumulative impacts on such species would be specifically considered and reduced or eliminated through conservation and mitigation measures identified during those relevant processes and consultations. Consequently, we conclude that projects in the geographic scope of influence in combination with ACP and SHP would have minor cumulative effects to special status species.”</i></p> <p>Given the incomplete survey information and analysis of impacts of the proposed actions on these species (including Regional Forester’s Sensitive Species, locally rare species), this statement is premature and needs to be substantially verified with currently unfinished sections of this EIS, reports and analysis.</p>
4-513	4.13.3.14	<p><i>“With exception of the WB XPress Project and MVP, no FERC-jurisdictional projects evaluated for the cumulative impacts analysis are within NFS lands. It is anticipated that any adverse impacts on sensitive resources within the MNF and GWNF (and the Jefferson National Forest, which is proposed to be crossed by the MVP) resulting from any other types of projects considered in our analysis would be regulated through project design, BMPs, and NFS permitting. Therefore, we conclude that the cumulative impacts associated with ACP and SHP, when combined with other known or reasonably foreseeable projects in the geographic scope of influence, would not be cumulatively significant.”</i></p> <p>This statement is premature and not accurate for a number of reasons. This EIS has incomplete survey information and analysis of impacts of the proposed actions on sensitive species, as well as visuals and cultural resources. Preliminary determinations of “may adversely affect” for a number of federally listed species puts into question the above statement of ‘not cumulatively significant’ for this project alone. No information is presented from the other ongoing gas pipeline projects overseen by FERC to substantiate the statement that any adverse effects impacts on sensitive resources would be adequately mitigated, to come to a “not cumulatively significant” conclusion.</p> <p>There is no justification given in this section for this statement other than 1) how many acres the pipelines would affect, 2) whether or not the MNF and GWNF would need to amend their LRMPs or not, 3) that there are only two other FERC-jurisdictional projects evaluated in</p>

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		<p>NFS lands, and that 4) any other projects' effects would be mitigated by various means. There is no information about effects to vegetation, water, air quality, soils, wildlife, recreation, scenery, timber, or other resources for either of these two forests.</p> <p>Please justify the conclusion that impacts to these Forests would not be cumulatively significant by summarizing the impacts expected to each of these resources within each of these Forests in relation to the Forests' resources as a whole, including TES species, and deriving the cumulative impact per Forest as a summation of the individual impacts.</p>
4-513	4.13.3.14	<p>The DEIS states "<i>To address proposed impacts on the GWNF, the LRMP would be amended to make provisions for ACP</i>". Changing the LRMP to accommodate a project is not the same thing as addressing proposed impacts, as this statement implies. This statement should be changed to better reflect what it is intended to mean; that the ACP project cannot be made consistent with the GWNF LRMP and the LRMP will therefore be changed to accommodate the project.</p>
5-3	5.1.2 Soils	<p>There is no mention of soil carbon and the effects to soil carbon from soil disturbance within the soil section of this document.</p> <p>There needs to be a section incorporating data from the Order 1 Soil Survey on soil carbon.</p> <p>The U.S. Department of Agriculture adopted a National Forest System land management planning rule in 2012, commonly referred to as "the 2012 planning rule." This rule will guide the development, amendment, and revision of land management plans for all units of the National Forest System (https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5362536.pdf).</p> <p>Based on the 2012 Planning Rule, FS project planning will include the identification and evaluation of information relevant to understanding ecological conditions and trends and to forming a baseline assessment of carbon stocks. Plans will include components to maintain or restore ecological integrity, so that ecosystems can resist change, are resilient under changing conditions, and are able to recover from disturbance. From this planning rule, the FS is working towards establishing ways to incorporate carbon mitigation from large-scale soil disturbing projects. Based on the 2012 planning rule, the FS required ACP to include soil carbon within soil testing parameters obtained from the Order 1 Soil Survey.</p> <p>The soil carbon data obtained from sampling will be used to calculate soil carbon loss due to soil disturbance activities associated with the ACP pipeline construction. The carbon lost due to pipeline construction will be mitigated post-construction.</p>
5-12	5.1.6 Aquatic Resources	<p><i>The FS requested that Atlantic complete aquatic species surveys at waterbody crossings on the MNF to document potential RFSS and suitable habitat.</i></p> <p>See comment for page 4-195.</p> <p>Although the MNF did not require these surveys to be conducted for project planning purposes, it is recommended that an aquatic resource monitoring plan be developed and implemented if any proposed project activities that may be approved. Details of the aquatic resource monitoring plan should be jointly developed by the various interested parties to ensure monitoring design and information is germane to the monitoring issues and protocols are appropriate and acceptable.</p>
5-15	5.1.7 Special Status Species	<p><i>Due to inconsistencies between survey reports, incomplete incorporation of FS revisions and comments to reports, incorrect terrestrial and aquatic community classification data, incomplete quantification of habitat impacts (i.e., old growth, karst features), incomplete sedimentation analysis of watersheds, pending survey information (e.g., access roads), and lack of species-specific conservation measures, the FS is currently unable to provide determination of effects for the majority of RFSS. Therefore, we have recommended that Atlantic file a revised BE, MIS Report, and GWNF Locally Rare Species Report that addresses these issues.</i></p>

Page #	Section #	Comment
		This statement summarizes many of the short-comings associated with the various analyses related to aquatic resources and elucidates the rationale for reservations concerning concluding statements within the DEIS about potential project impacts.
5-18	5.1.8	Conclusion for Visual Resources – 2 nd paragraph on page, sentence 5 (about half way through the paragraph), change the wording of the sentence to: The Visual Impact Assessment analyzes the impacts to scenery viewed from identified key observation points on the MNF and GWNF to determine whether the project will meet SIOs established in the FLRMP.
5-18	5.1.8	PROCESS QUESTION: FERC recommends ACP provide documentation that the MNF, GWNF and ATC concur with the conclusions and determinations of the effects to scenery. When and how do we address that with ACP?
5-19	5.1.8	I do not agree with the concluding statement that overall impacts on land use, recreation, special interest areas, and visual resources will be adequately minimized since SIOs will not be met for views from several KOPs.
5-25 & 26	5.1.14	<p>Cumulative Impacts: This section states that 8 kinds of projects were considered with regards to cumulative impacts, but no cumulative impacts analysis is provided.</p> <p>With regards to scenery, while the landscape has been altered throughout history (as stated in the DEIS), FS ownership and management has restored the natural appearing landscape character. The proposed pipeline is a step back with regards to scenery. Long-term special use sites and permanent rights-of-way such as for pipelines, electric transmission lines, communication sites and cell phone towers continue to be constructed on the national forest with cumulative impacts to scenery that should be documented.</p>
B-30	App J, Page 30 of 174	This topo route map does not show the names of the proposed access roads. This topo route map includes the road up Laurel Run, shown elsewhere as 36-014.AR3. ACP agreed to not utilize or this build.
B-49	App J, Page 49 of 174	USFS ownership data is depicted inaccurately. It shows a rectangular private “inholding” east of the pipeline route between MP 154 and 155 which the “NATIONAL FOREST OWNERSHIP (USA)” GIS data layer clearly shows is now NFS lands.
F-6	2.0 Purpose	<p>“A more detailed description of seed mixes by region is presented in Appendix B.”</p> <p>The USFS developed NFS land-specific guidance for developing seed mixes that are specific to elevation, soil pH, precipitation, etc. This document needs to be referenced here and also attached. This document was filed with the FERC on December 16, 2016 (Docket # CP15-554-000, CP15-554-001).</p>
F-7	2.0 Purpose	<p>“These meetings and consultations provided information about the appropriate seeding rates and percentages of each type of seed within a specific seed mix, as well as the location each seed mix is to be used considering the various soil types, elevations, temperatures, and other growing conditions along the right-of-way.”</p> <p>On NFS lands, FS-approved seed mixes and seeding guides will be used. This seed mix should be provided within this document and cited as an appendix or in some formal manner.</p>
F-8	5.1 Erosion Control	“Slope Breakers – Temporary and permanent slope breakers will be installed, where required, to slow runoff velocity and direct water off the rights-of-way. Temporary slope breakers, such as hay bales (weed free), silt fence, or earthen berms, will be installed prior to the start of construction activities. Permanent slope breakers will be installed during final grading.”

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		<p>Spacing between temporary and permanent slope breakers will be defined by the slope and soil type and referenced in the COMP. Temporary Sediment Barriers will be maintained and cleaned frequently so as to function in a manner that is effective at providing protection during a storm event (high precipitation rates and in a short duration.)</p> <p>Silt fence shall not be used at locations of concentrated overland flow, whether the flow is natural or constructed. Compost filter socks or other controls designed to filter or chemically remove sediment from water shall be used in those locations, subject to FS approval.</p> <p>Silt fence may be used as perimeter control where concentrated flow does not exist, as well as where prescribed as a barrier to keep threatened, endangered, and sensitive (TES) species out of the work area, or spoil materials or sediments out of TES habitat.</p> <p>Where temporary slope breakers are deemed necessary during construction, as determined by consultation between ACP’s environmental inspector and the FS representative, install berms or other appropriate diversion structures on the ROW to intercept and divert water from the ROW. Install 12-inch diameter or larger compost filter socks at the outlet of the berms to control sediment transport.</p> <p>In areas where excessive run-on (i.e., onto the ROW or access roads) is expected or occurs, diversion channels or berms may be installed on the upslope side of the ROW. Run-on diversions or berms shall disperse the water into a well vegetated area, such that it does not result in concentrated discharge or rill erosion at or downslope of the outlet. One or more 12-inch or larger diameter compost filter socks shall be installed at each outlet to aid in reducing energy and removing sediment suspended in the discharged water.</p> <p>No hay bales to be used on NFS land, only weed free straw.</p>
F-8	5.1 Erosion Control	<p><i>“Temporary Sediment Barriers – Temporary sediment barriers, such as silt fences, staked hay or straw bales (weed free), or a combination of barriers, will be installed at the base of slopes adjacent to road, wetland, and waterbody crossings, and in other areas where required to prevent the transport of sediment off the construction rights-of-way.”</i></p> <p>No hay bales should be used on FS land, only weed free straw.</p>
F-9	5.1 Erosion Control	<p><i>“Permanent Trench Breakers – Sacks of subsoil or sand, polyurethane foam, or bentonite clay bags installed around the pipe will remain in the trench to prevent subsurface channeling of water along the trench.”</i></p> <p>Describe trench breaker/plug materials and construction. Foam will not be permitted on National Forest land. Bags of concrete mix may be used no more frequently than every other plug; sand bags or other semi-permeable, FS-approved material shall be used for all other trench plugs.</p> <p>Describe trench breaker/plug spacing. FERC spacing specifications are acceptable to the FS, although closer spacing may be employed where ACP determines a need due to slope steepness.</p>
F-9	5.1 Erosion Control	<p><i>“Mulch – Straw (weed free), hay (weed free), erosion-control fabric, or other equivalent material will be placed on the rights-of-way, where required, to protect the soil surface from water and wind erosion and to optimize the soil moisture regime necessary for successful revegetation, especially on dry, sandy sites.”</i></p> <p>The use of hay is prohibited on NFS lands.</p>

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		Erosion-control fabric shall not be used on NFS lands due to wildlife concerns. ACP shall use FS-approved soil conditioners, hydromulch, soil binders, etc. that will be non-harmful to wildlife and the environment.
F-9	5.1 Erosion Control	<p><i>“Where appropriate for local resource priorities, the role of the EI may be filled by agricultural or horticultural monitors”</i></p> <p>Dominion EI’s along with FS representatives will inspect on NFS lands.</p>
F-9	5.2 Soil Restoration	<p><i>“Successful revegetation is dependent on appropriate soil conditions and can be influenced by several factors, including soil texture, drainage class, salinity, and acidity. Soil characteristics along the pipeline routes and access roads and at contractor yards and aboveground facility sites are identified in Resource Report 7.”</i></p> <p>On NFS lands, the Order 1 Soil Survey will provide the nutrient requirements for successful revegetation along the ROW. The Order 1 Soil Survey will also advise the need for liming based on soil pH.</p> <p>There should be inclusion of data from the Order 1 Soil Survey and discussion of data results within this document.</p>
F-9	5.3 Soil Compaction	<p><i>“Atlantic and DTI will minimize impacts by implementing the mitigation measures for compaction and rutting as described in the Plan and Procedures.”</i></p> <p>The Order 1 Soil Survey provides data on soil characteristics that would identify areas along the ROW that are compaction-prone. This information should be provided within this document addressing NFS Lands and used to discuss compaction potential on NFS Lands.</p> <p>According to MNF LRMP SW06, rutting resulting from management activity shall be confined to less than 5% of an activity area. This LRMP needs to be stated when mention of rutting occurs within this document. The analysis needs to determine if this standard can be met on NFS lands.</p>
F-9	5.3 Soil Compaction	<p><i>“Atlantic and DTI will test for soil compaction:”</i></p> <p>Compaction testing is required on MNF lands in accordance with MNF LRMP SW03. All compacted areas must be decompact.</p> <p>Employ timber mats or trench spoil to protect underlying soil where possible.</p> <p>Limit the use of heavy equipment on steep slopes to the minimum amount necessary.</p> <p>Use a cone penetrometer to measure compaction on the construction ROW prior to and following completion of construction activities. Post-construction compaction that exceeds pre-construction compaction indicates the need for compaction remediation.</p> <p>On ROW slopes <20% where compaction remediation is needed, use de-compaction techniques such as a ripper, harrow disk, backhoe bucket teeth, chisel plow, or other FS-approved techniques to de-compact travel lanes and any other compacted areas.</p> <p>On ≥20% slopes where compaction remediation is needed and can be accomplished safely and effectively without causing further resource damage, use backhoe bucket teeth, or another safe, FS-approved method, to break up compacted soils. .</p>

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F-10	5.4 Topsoil Segregation, Replacement, and Soil Contamination	<p><i>“Topsoil segregation will generally not occur in forested areas.”</i></p> <p>Topsoil segregation will occur in forested areas on NFS lands in accordance with MNF LRMP SW15.</p> <p>At a minimum, the FS will require segregation over the trench area for the top 6 inches of material, or all actual topsoil as identified by the FS, whichever is deeper, throughout all areas of National Forest land.</p> <p>The FS will require temporary seeding or other FS-approved technique for any material left exposed for more than seven days.</p> <p>Describe methods for preventing saturation of stockpiled material, which could lead to slippage of backfilled material. Techniques may include temporary seeding and mulching, use of tarps, implementing an accelerated backfilling schedule, or other methods proposed by ACP and approved by the FS.</p>
F-11	5.6 Steep Slopes	<p><i>“Areas with steep slopes along the pipeline routes may make the establishment of vegetation more difficult due to the increased potential for stormwater runoff and erosion by water.”</i></p> <p>ACP must comply with MNF SW06, which states that rutting shall be confined to less than 5 percent of an activity area and also must meet the intent of the LRMP SW07, which is to maintain stabilization on slopes greater than 40%.</p> <p>There are effective erosion control measures that can be implemented on steep slopes to aid in revegetation. The use of soil stabilizers or conditioners in conjunction with hydroseed can be an effective complimentary measure for erosion control on steep slopes.</p>
F-11	5.6 Steep Slope Areas	<p><i>“Table 5.6-1 in Appendix A quantifies by county the major soil drainage and slope classes crossed by the Projects. Soil drainage classes were used to determine some of the grass seed types utilized in specific mixes (see Section 5.7.5).”</i></p> <p>On NFS lands, the Order 1 Soil Survey data should be incorporated into a table to display drainage classes and to be used to aid in revegetation discussions. The FS provided guidance for developing seed mixes that should also be cited here along with data from the Order 1 Soil Survey. The seed mix guidance was filed with the FERC on December 16, 2016 (Docket # CP15-554-000, CP15-554-001).</p>
F-12	5.6 Steep Slope Areas	<p><i>“Also as discussed in Resource Report 6, Atlantic and DTI will implement the Slip Avoidance, Identification, Prevention, and Remediation – Policy and Procedure, and are conducting geotechnical studies along the proposed pipeline routes in Pennsylvania, West Virginia, and western Virginia in steep terrain areas to assess the potential for landslides and landslips to occur during construction and operation of the Projects.”</i></p> <p>The data collected from geotechnical studies should be incorporated into the EIS.</p>
F-12	5.6 Steep Slope Areas	<p><i>“The following lists some of the special design and construction mitigation measures that will be implemented during construction in steep slope areas:</i></p> <ul style="list-style-type: none"> • <i>targeted management and diversion of surface water around landslide sites, including the use of ditches, berms, slope breakers, and/or grading;</i> • <i>mitigation of surface erosion by armoring or otherwise stabilizing surface soils using riprap, coir cloth, hydroseeding, mulching, and/or tracking;</i> • <i>targeted management of water sources along the trench, including the use of trench breakers and/or added drainage piping in the trench;</i>

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		<ul style="list-style-type: none"> • <i>targeted mitigation of seeps, springs, or other subsurface water encountered along the rights-of-way using subsurface drains or other special drainage measures;</i> • <i>engineering of the backfill around or within steep slope areas to dry the backfill, add compaction, improve backfill soil strength, and reduce saturation;</i> • <i>installation of targeted structures to stabilize backfill using engineered fill, retaining walls, sack-crete placements, key trenches, and/or shear trenches; and</i> • <i>reduction in surcharge on steep slope areas by reducing excess or saturated backfill.”</i> <p>Describe trench breaker/plug materials and construction. Foam will not be permitted on National Forest land. Bags of concrete mix may be used no more frequently than every other plug; sand bags or other semi-permeable, FS-approved material shall be used for all other trench plugs.</p> <p>Describe trench breaker/plug spacing. FERC spacing specifications are acceptable to the FS, although closer spacing may be employed where ACP determines a need due to slope steepness.</p> <p>On slopes greater than 30 percent, bleeder drains shall be spaced no farther apart than every other trench plug. Closer spacing may be used where ACP determines a need due to slope steepness, discharge volume, or other factors.</p> <p>Bleeder drains may be needed on slopes less than 30 percent if subsurface flow or seeps are encountered during trench excavation. The Forest Service representative and ACP’s environmental inspector will consult to determine the need for bleeder drains on slopes less than 30 percent.</p> <p>Protect bleeder drain outlets using rip-rap or other FS-approved material. The FS may specify alternate materials in certain locations if necessary for protection of resources.</p> <p>The FS will require post-construction water quality testing at selected bleeder drain outlets. Locations will be selected by the FS based on nearby sensitive resources, and the FS will provide the chemical parameters to be included in the testing.</p>
F-12	5.6 Steep Slope Areas	<p><i>“...engineering of the backfill around or within steep slope areas to dry the backfill, add compaction, improve backfill soil strength, and reduce saturation;...”</i></p> <p>The USFS understands the need for compaction of backfill material for stability purposes. However, the depth of backfill compaction and level of backfill compaction have not been discussed or agreed upon by ACP and USFS.</p> <p>On NFS Lands, no intentional compaction of near-surface soils used for revegetation will take place.</p>
F-12	5.7 Site Preparation and Seeding	<p><i>“In the event that these timeframes cannot be met or construction or restoration activities are interrupted for an extended period, mulch will be spread prior to seeding. In these cases, all slopes within 100 feet of wetlands or waterbodies will be mulched at a rate of 3 tons per acre.”</i></p> <p>MNF LRMP standard SW03 states that disturbed soils dedicated to growing vegetation shall be rehabilitated as soon as possible, but generally within 2 weeks after project completion.</p>

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		The USFS recommends mulch 1-3 tons/acre (1-3" depth) with an appropriate amount of nitrogen fertilization depending on the site characterizations and the Order 1 Soil Survey data.
F-13	5.7.1 Seedbed Preparation	<p><i>“Unless otherwise specified by land managing agencies or landowners, the seedbed will be prepared in disturbed areas to a depth of 3 to 4 inches using appropriate equipment (e.g., cultipacker roller) to provide a seedbed that is firm, yet rough. Atlantic and DTI will imprint exposed soils with a sheepsfoot, landfill compactor, tractor with studded tires, or land imprinter equipment. Soil imprinting, or tracking, leaves divots on the ground surface that trap moisture and seeds, creating catchments for native plant material to be spread across the seeded area (West Virginia Department of Environmental Protection, 2012). In addition, a seedbed with a rough surface is conducive to the capturing or lodging of seed when broadcasted or hydroseeded, and can reduce runoff and erosion potential. The rough seedbed surface will also retain soil moisture for seedling germination and promote faster establishment of vegetation.”</i></p> <p>A cultipacker roller shall not be used on NFS Lands. This equipment will likely create unintended compaction that will limit the revegetation potential, and sites ultimately may have to be decompacted and reseeded. Equipment and methods used to restore the ROW post-construction will require Forest Service approval. Restoration should include promoting infiltration, controlling erosion and maintaining stability, and creating a surface conducive to successful seed establishment.</p>
F-13	5.7.1 Seedbed Preparation	<p><i>“In compacted areas, additional measures such as chisel plowing or disking may be necessary to improve water infiltration and soil aeration necessary to prepare an adequate seedbed. When hydroseeding, Atlantic and DTI will scarify the soil surface prior to seeding to anchor the seed to the soil surface and encourage germination.”</i></p> <p>Include a section pertaining to seedbed preparation specifically on NFS lands.</p> <p>Compaction testing is required on MNF lands in accordance with MNF LRMP SW03. All compacted areas must be decompacted. Address the prevention of compaction during construction, and remediation of compaction after construction.</p> <p>Employ timber mats or trench spoil to protect underlying soil where possible.</p> <p>Limit the use of heavy equipment on steep slopes to the minimum amount necessary.</p> <p>Use a cone penetrometer to measure compaction on the construction ROW prior to and following completion of construction activities. Post-construction compaction that exceeds pre-construction compaction indicates the need for compaction remediation.</p> <p>On ROW slopes <20% where compaction remediation is needed, use de-compaction techniques such as a ripper, harrow disk, backhoe bucket teeth, chisel plow, or other FS-approved techniques to de-compact travel lanes and any other compacted areas.</p> <p>On ≥20% slopes where compaction remediation is needed and can be accomplished safely and effectively without causing further resource damage, use backhoe bucket teeth, or another safe, FS-approved method, to break up compacted soils.</p>
F-13	5.7.2 Seeding	<p><i>“On all other lands, Atlantic and DTI will perform seeding of permanent vegetation during the Fall of the year construction is completed, within the recommended seeding dates, and within six working days of final grading, weather and soil conditions permitting.”</i></p> <p>Include a NFS Land-specific seeding section within this section. The NFS lands have their own seed mix guidance document which will be used to develop seed mixes for NFS lands. This needs to be acknowledged within this section.</p>

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		Three years of site monitoring will be required to ensure that germination and establishment have occurred in accordance with the WV DEP Erosion and Sediment Control regulations requiring 70% vegetative cover to provide sufficient vegetation to control erosion and sedimentation.
F-14	5.7.3 Seeding Revegetation Units along the Pipeline Route	<p><i>“After consultations with Federal, State/Commonwealth, local resource and land managing agencies, and subject matter experts and in order to insure optimum seed germination and growth, the areas crossed by the Projects were divided into four Revegetation Units (RU).”</i></p> <p>On NFS lands, seeding shall be based on the NFS seeding document filed with the FERC on December 16, 2016 (Docket # CP15-554-000, CP15-554-001) and fertilizing and liming shall be based on Order 1 Soil Survey data. This information needs to be incorporated into a NFS Lands-specific section where Order 1 data is described and discussed.</p>
F-14	5.7.3.1 Steep to Very Steep Slope	<p><i>“Although the Steep to Very Steep Slope RU includes areas with greater than 15 percent slope located anywhere along the Projects, most of these areas are located within the mountainous areas of the western Piedmont Physiographic RU and the Mountain Physiographic RU (see Figure 5.7.3-1). To a much lesser extent, the Steep to Very Steep Slope RU may also be found in smaller, site-specific areas along the pipeline rights-of-way where the steepness of the local terrain increases the erosion potential. These areas in this RU require appropriate seed mix prescriptions, erosion control measures, and BMPs that are able to quickly stabilize the disturbed areas to minimize erosion and sedimentation.”</i></p> <p>There needs to be a separate section discussing slope percentages, elevation, etc. on NFS Land. Within this section there needs to be specific detail from Order 1 soil survey data along with discussion of the NFS Lands seeding document filed with the FERC on December 16, 2016 (Docket # CP15-554-000, CP15-554-001)</p>
F-18	5.7.3.2 Mountain Physiographic Region	<p><i>“The proposed Mountain Physiographic Region Seed Mix P-MUDW01 (Tables 5.7.5-1 and 5.7.5-2) was designed to be compatible with the Mountain Physiographic Region RU in areas with slopes of 15 percent or less. The mix is based on selected native grass and forb species suitable for the restoration of excessively to moderately well-drained mountainous areas in West Virginia.”</i></p> <p>The USFS has provided specific guidance for seed mix development on NFS Lands. This document, along with results from the Order 1 Soil Survey, will provide the appropriate detail for seeding in NFS Lands.</p>
F-18 to F-26		<p><i>“5.7.5.2 Mountain Physiographic Region Seed Mixes”</i></p> <p>On NFS Lands, Order 1 Soil Survey data needs to be used when addressing any soil physical, chemical, or characteristic properties. This section displays seed mixes based on steep slopes, drainage class, etc. on NFS Lands, the USFS is requiring that ACP use the Order 1 Soil Survey in conjunction with the USFS seeding document to accurately choose the appropriate seed mix, fertilizer and lime rate based on the parameters listed in this section.</p>
F-27	5.7.6 Seeding Methods	<p><i>“In rocky soils or where site conditions may limit the effectiveness of this equipment, other alternatives may be appropriate (e.g., use of a chain drag) to lightly cover seed after application, as approved by an EI. Broadcast or hydroseeding at double the recommended seeding rates may be used in lieu of drilling (see Appendix B for recommendations).”</i></p> <p>On NFS Lands, where there are steep slopes and rocky soils, hydroseeding and a soil conditioner will need to be used to accomplish successful seeding on steep slopes.</p>
F-27	5.7.6 Seeding Methods	<p><i>“Hydroseeding is the preferred method of seed dispersal on steep slopes greater than 60 percent, where site conditions require seed adherence to the disturbed soil. Prior to hydroseeding, Atlantic and DTI will scarify the seedbed to facilitate lodging and germination of seed. Tackifiers will be applied where necessary so that seed adheres to soil. Polymer binders, if selected, will be used in accordance with manufacturer’s specifications to ensure proper compatibility with fertilizers and to avoid foaming that might otherwise result from</i></p>

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		<p><i>excessive agitation. All chemical components will be mixed and administered in accordance with manufacturer and applicable agency guidelines.”</i></p> <p>All hydroseed mix components will need to be approved by USFS prior to application. Chemicals that are not biodegradable or not environmentally safe and could lead to contamination shall not be used on NFS Lands.</p>
F-14	5.7.3.2 Mountain Physiographic Region	<p><i>“The ACP Project area extends across the Mountain Physiographic Region RU in West Virginia and western Virginia (see Figure 5.7.3-1). In West Virginia, the RU encompasses the Western Allegheny Plateau, Central Appalachians, and Ridge and Valley ecoregions.</i></p> <p><i>The soils in the Mountain Region RU generally consist of shallow soils with a loamy surface and subsoil texture. Steep slopes with shallow, stony, droughty soils are common throughout the area, and many mountainous soils have been severely eroded due to steepness. In less steep areas, the soils are deep and stable (less erodible).”</i></p> <p>Data from the Order 1 needs to be incorporated into a NFS Lands-specific section within this section. These results will provide a more accurate representation of soil texture, moisture, and depth.</p>
F-27	5.8.1 Lime and Fertilizer Application	<p><i>“In upland areas without specific fertilization requirements, Atlantic and DTI will:</i></p> <ul style="list-style-type: none"> <i>• apply 150 pounds per acre of 10-20-20 (or similar) fertilizer;</i> <i>• apply phosphorus or potassium during the same installation, if required;</i> <i>• avoid fertilizer drift through restricted application times that exclude periods of high winds or heavy rains; and</i> <i>• store and mix all fertilizers in upland areas and away from karst features, where contamination of wetlands, waterbodies, or karst features will be avoided.”</i> <p>Liming and fertilization rates on NFS Lands will be based on Order 1 Soil Survey data. Include a NFS Land-specific section addressing Order 1 data and discussing appropriate rates based on these results.</p>
F-28	5.8.2 Mulching	<p><i>“Mulch materials will be anchored to the soil with stakes or liquid mulch tackifiers. No tackifiers will be used within 100 feet of wetlands and waterbodies or within 300 feet of karst features.”</i></p> <p>Mulch materials used on NFS lands must be pre-approved by the FS prior to application. The use of material that may result in contamination is prohibited on NFS Lands. On steep slopes, the use of soil conditioners or binders are necessary. ACP will provide to the FS the material composition of all mulch to be used on NFS lands.</p>
F-29	5.8.2 Mulching	<p><i>“Straw or hay that has been certified as weed-free will be used to preserve the soil base in areas where native salvaged material is not available.”</i></p> <p>The use of hay shall not be permitted on NFS Lands.</p>
F-31	5.10 Wetland Restoration	<p><i>“Seeding of wetlands is not anticipated as wetlands are expected to naturally revegetate.”</i></p> <p>Seeding of wetlands will occur on NFS lands. A list of recommended species for wetland seeding on NFS lands is located in the USFS seed mix document.</p>
F-31 to F-32	5.13 Upland Forest	<p>Timber harvesting on steep slopes (40% or greater) would need to be done in a manner that ensures slope stability and complies with MNF LRMP standard SW07 from the time the timber is harvested until pipeline construction begins. Winter logging must meet MNF LRMP standard SW09 as well as all other erosion control plans and LRMP standards.</p>

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		<p>Options include helicopter logging, use of overland equipment that does not require skid road development, and other non-ground disturbing methods as approved by FS personnel.</p> <p>Sediment and erosion control features are to be employed on these slopes as outlined in the COMP. Short term erosion control measures are to be utilized as directed in the COMP prior to the start of disturbance for the construction of the pipeline.</p> <p>All timber harvest roads are to be fully reclaimed and restored according to MNF LRMP standards (RF07, RF12, RF13, and RF15).</p>
F-33	8.1 Monitoring	<p><i>“Atlantic and DTI will inspect disturbed areas after the first and second growing seasons to determine the success of revegetation”</i></p> <p>On NFS lands, Atlantic and DTI will inspect and monitor disturbed areas after restoration for 3 years after construction. At this time the success of revegetation will be determined.</p>
F-34	9.1 Environmental Inspectors	<p><i>“EIs will have the authority to stop activities that violate environmental conditions of Federal or State/Commonwealth environmental permits and landowner agreements and to order appropriate corrective action.”</i></p> <p>On NFS lands, the Forest Service representative will promptly notify the EI of any situation that requires corrective action. Upon receipt of such notification, whether oral or written, the EI shall immediately stop work in the affected area until the situation has been corrected to the satisfaction of the Forest Service representative.</p>
F-35	9.2 Documentation	<p><i>“In accordance with the Plan, Atlantic and DTI will maintain post-construction records of activities performed and will submit quarterly activity reports to the FERC.”</i></p> <p>For NFS land, the USFS is requiring that Atlantic submit weekly reports that can be reviewed by USFS personnel.</p>
F-47	List of Attachments	<p><i>“Summary of Seed Mixes by County for the Atlantic Coast Pipeline and Supply Header Project”</i></p> <p>Seed mixes should not be dependent on county. A County line is an arbitrary boundary not based on climatic changes. This mix should be based on soil characteristics and on NFS lands, this mix should be based on Order 1 Soil Survey data in conjunction with the FS seed mix guidance document.</p>
F-48	2.1.1	<p><i>“Harrison, Lewis, Randolph, and Upshur Counties”</i></p> <p>The seed mixes listed in this document are not the seed mixes that will be applied on FS lands. The USFS has provided a guidance document for the development of seed mixes that are tailored to the unique environments the pipeline could cross on NFS lands. ACP will be required to use mixes that conform to this guidance on NFS lands.</p>
F-48	Table 2.1.1-1	<p><i>“Birdsfood Trefoil”</i></p> <p>This species is not included in the USFS seed mix guidance document and will not be allowed on NFS lands.</p>
F-49	Table 2.1.1-3	<p><i>“Fertilizer and Lime Application”</i></p> <p>Fertilizer and lime application rates on NFS Lands will be based on the Order 1 soil survey data. ACP will be required to provide the calculations used to determine the fertilizer and liming application rates.</p>
F-49	2.1.1 Planting Recommendations	<p><i>“For unprepared seedbeds or seeding outside the optimum timeframes:”</i></p> <p>To prepare for the possibility of winter construction, the Forest Service considers it prudent to develop contingency plans and erosion control procedures that do not depend upon immediate reseeding and revegetation. ACP should note that when construction is halted due</p>

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		<p>to weather or dangerous operating conditions during the winter, seeding at normal or increased rates alone will not meet Forest Service requirements for stabilization.</p> <p>Therefore:</p> <ul style="list-style-type: none"> -To the maximum extent practicable, ACP shall complete construction in areas identified as susceptible to slope instability or erosion (e.g., steep slopes) at a time in the construction cycle that maximizes the available growing season length for revegetation, while complying with other timing commitments related to TES species. ACP shall address this aspect of construction sequencing in the COM plan for National Forest land. - Soil conditioner applications shall be permitted year-round for pipeline restoration. West Virginia Department of Environmental Protection vegetative ground cover requirements (70 percent cover) shall be met in spring even if hydroseeding and soil conditioner applications are made during late fall or winter. If ground cover requirements are not met because the seed sowed during the dormant season became nonviable, additional seeding and soil amendments shall be applied. Reseeding and soil amendment application shall be required at the start of the spring. The timing for reseeding and other amendments shall be in accordance with manufacturer's recommendations for both the seed mix and the application for soil conditioners. ACP will coordinate with the Forest Service by March 15th to determine if reseeding or other amendments are necessary in areas that were seeded during late fall or winter and are on the schedule for early inspection in the spring. <p>Temporary erosion control for work stoppages during the winter shall be required where soil disturbance has occurred but pipeline construction or reclamation has not been completed.</p> <p>Temporary erosion control shall require treatment of soil materials and the soil surface to reduce the potential for soil movement, as well as installation of erosion control treatments to further ensure sediment transport is controlled. Rough surfacing shall be used to increase the potential for water infiltration and reduce the potential for sheet erosion.</p> <p>Soil protection shall be provided to rough surfaced areas to enhance temporary erosion control during the dormant season. Protection will be in the form of soil conditioners (e.g., polyacrylamides, polysaccharides, etc.) or weed-free mulch or similar soil cover determined to be suitable by the Forest Service. Weed-free mulch or similar soil cover may be used as a substitute for, or augmentation to, soil conditioners. These forms of soil protection may be applied with or without seed application.</p> <p>The soil conditioners that are used shall be identified by ACP and be suitable for the soil chemical conditions. The Forest Service must approve the selected conditioner(s) prior to application.</p> <p>Different soil conditioners may be needed at different locations along the pipeline route because soil chemistry varies along the route. The expected life of the soil conditioner shall be a consideration in the selection; if the expected effective life of the soil conditioner is less than the time until work resumes, additional applications of the soil conditioner shall be required.</p> <p>For mulches, at a minimum, the type of mulch and application method shall be capable of preventing erosion by raindrop impact and interrill and rill flow. The type, application rate, and application method must be approved by the Forest Service prior to application.</p>

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		<p>Tackifiers that are used for retention of mulch on the site must be approved by the Forest Service. Use of asphalt emulsion tackifiers shall not be permitted on National Forest land.</p> <p>Additional sediment control treatments, such as barriers, shall be used in addition to other winter-work stoppage temporary erosion controls in case the other erosion controls (e.g., soil conditioner, mulch, etc.) are not fully effective.</p>
F-50	Table 2.1.2-1	<p><i>“This table has a list of species proposed for replanting in Pocahontas County”</i></p> <p>Crown vetch will not be allowed on NFS Lands. ACP will utilize the USFS seed mix document.</p>
F-50	Table 2.1.2-2	<p><i>“This table discusses recommended lime and fertilizer rates”</i></p> <p>On NFS lands, ACP will be required to use the results of the Order 1 Soil Survey to inform lime and fertilizer rates.</p> <p>This table states that lime will be incorporated via disking. Include a NFS land-specific section that explains how disking will occur on steep slopes and forested areas on NFS lands.</p>
F-51	Chemical mulchers, soil binders, and tackifiers recommendation	<p><i>“Determine mulch type and appropriate rate”</i></p> <p>On NFS Lands, ACP will be required to provide the chemical composition of any material proposed for use on NFS lands prior to application for USFS approval. The USFS will require the use of microbially active soil amendments.</p>
Summary of Seed mixes by County	Attachment A	As previously stated, on all NFS lands, the USFS guidance document will be used to develop seed mixes.
Appendix F	Appendix A: Major Soil Drainage and Slope Classes Crossed by the Projects	For areas on NFS Lands, the results from the Order 1 Soil Survey should be included in this table.
G-16	Table 2.1.1-1	The access road along Laurel Run is still being listed as a permanent access road on National Forest, although DEIS page 4-196 states that <i>“Atlantic has committed to eliminate the access road along Laurel Run”</i> .
G-23	2.1.1.4	<p><i>New Access Road 36-014.AR3 would follow an un-numbered jeep trail for 1.2 miles on the GWNF between Highway 614 (Muddy Run Road) and the pipeline right-of-way near MP 94.1. The jeep trail, which runs along Laurel Run and crosses the creek several times, would require substantial new construction...”</i></p> <p>DEIS page 4-196 states that <i>“Atlantic has committed to eliminate the access road along Laurel Run”</i>.</p> <p>However, this road is still found in table 4.8.9-3 (DEIS page 4-344), table E-1 in Appendix E (Access roads), Appendix K (waterbody crossings), shapefile ACP_Rev11b_CIF_without_corridor_20170210, and discussed in detail in Appendix G on page 23 and in table 2.1.1-1. It is confusing and unclear exactly what is proposed.</p>

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G-78	7.3	Correct the document throughout to reflect the full name of the document: United States Department of Agriculture (USDA), Forest Service, Guidelines for Road Maintenance Levels. This document is a guideline only for maintenance standards. All traffic control and signage on NFS roads is subject to the Manual on Uniform Traffic Control Devices (MUTCD), and any FHWA approved state supplement (state supplement takes precedence).
G-80	7.5	Road closures should be coordinated well in advance to allow implementation of formal temporary road closure orders.
G-79	7.4	“Road maintenance will conform to the USDA Forest Service Guidelines of Road Maintenance Levels, add: any forest specific road maintenance standards or specifications, as well as any standard contained in the LRMPs of the MNF or the GWNF. Note: The GWJ routinely provides forest specific road maintenance specifications as an attachment to permits. Any widening or reconstruction, including culvert replacement or gravel resurfacing, should be performed in accordance applicable sections of FP-03, Standard Specifications For Construction Of Roads And Bridges On Federal Highway Projects .
G-86	8.3.3	“3 new roads are proposed to be constructed on NFS lands”. Section 2.1.1.4 and Table 4.8.9-3 indicates that 4 new roads are proposed. Page 2-25 indicates 5. Please clarify.
G-105	8.6	Access road maintenance through the construction sequence may include grading, insert: culvert and ditch cleaning, and the addition of gravel or stone when necessary.
H2-7	App H2	Figure 1 Plan View shows a non-existent strip of private land between the dark green NFS land containing the orange ANST and the purple NPS land containing the BRP. Also, “National Forest Service” in the legend is incorrect.
K-1	Appendix K-1	UNT to Warwick Run (Townsend Draft)--According to the USGS quads it is Townsend Draft. Please update for each listed incorrectly, MP 85-85.4
L-1	Appendix L	Appendix L does not reflect the same amount of wetlands reported in the Jan 2017 wetlands survey report for the GWJNF. There were nine wetlands and nine seep points documented. Please update table to reflect most current surveys.
P-1	Appendix P	The RUSLE2 equation is used to evaluate potential erosion rates at specific sites – specific sites that are important to the USFS are receiving streams and watersheds for impact analysis on water quality and sensitive aquatic biota. Please include an analysis. Please include comparisons of scenarios by load, such that % increases in sediment yield are accurately described.
P-1	Appendix P	Summary of RUSLE2 Computer Model Inputs and Outputs for Selected Soil Map Units in Bath County, VA. Please clarify why only two soil map units in Bath County were chosen and why the full sediment analysis is not complete. The critical data outputs should be loads and % increase over baseline for receiving waterbodies and watersheds, not just map unit calculations.
Appendix R	Appendix R	Many of the species determinations in these tables are still “pending” because of incomplete surveys or analysis. Effects determinations cannot be evaluated until these are complete.
R-2, R-24	Table R-2	Migrant Loggerhead Shrike is listed as a 3 on the OAR ranking, but it is documented in the Migratory Bird Plan, Appendix E, Table 3.1.4-1 on the GWNF in Augusta county by the plant survey crew. Please change the OAR ranking to 5 and evaluate effects of proposed actions on this species in the Biological Evaluation.
R-1, R-41	Attachment R-1	West Virginia Northern Flying Squirrel: During an on-site meeting with FS, Dominion, and ERM staff on November 4, 2016, a slight realignment of a proposed access road off of Forest Service road 1026 was agreed upon to minimize direct impacts on spruce trees, was flagged on the ground (including workspace area) by Dominion staff, and was GPS located by ERM. It was also agreed upon to relocate spruce saplings in the path of impact as well as some off of adjacent private property that will also otherwise be destroyed. This proposed reroute has only been depicted as an estimated (dashed) arc on a map (file “Access_Road_Maps_2017_01_12_Part01”, sheet 8) with the

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		original route still shown below it. These maps are not yet incorporated in the official files that are available for FS review. We need to see the actual access road realignment, the shapefile to overlay with our habitat layers, and the final conservation measures in the official files and in order to make a call on determination of effect. Also, during the same on-site meeting, the FS was assured that no road improvements were needed on this road, but road widening and other improvements are now being proposed. We need details of how the work is to be done and shapefiles showing the exact areas of the work in order to overlay with habitat layers. This issue needs to be addressed again to determine any effect on spruce habitat before a determination of effect can be made for the WVNFS.
R-2	Attachment R	Allegheny Woodrat: An on-site meeting was held on November 4, 2016 with FS, Dominion, and ERM staff because of FS concerns over road improvements near Allegheny woodrat habitat. During the meeting, we were assured by Dominion staff that no road improvements were needed, which alleviated our concerns. Mitigation measures were also decided upon for normal operations. Now, road widening and other improvements are being proposed for this access road (Forest Service road 1026), which reinitiates our concerns. We have been sent maps (“Access_Road_Maps_2017_01_12_Part01”), which are not in the official files, but we need shapefiles showing the exact areas of impact to overlay with our habitat layers before we can make a determination of effects. Also before we can make a determination, we need the details of the road work clarified, which may require another onsite visit with those proposing the road improvements and the conservation measures finalized in the official files.
R-2	Attachment R	All bat species: Before determinations of effects can be made, outstanding surveys need to be completed and avoidance, mitigation, and conservation measures need to be finalized.
R-2	Attachment R	All remaining MNF RFSS and MIS species: We are still unable to provide determinations of effects without a finalized BE and MIS report, completed analyses, and finalized conservation measures.
R-6	Amphibians	<i>Pending MNF review of sedimentation analysis and conservation measures.</i> The inconclusive nature of this Determination of Effects is indicative of the incomplete status of the analysis of potential effects on aquatic resources including eastern hellbender. This condition further elucidates the rationale for reservations concerning concluding statements within the DEIS about potential project impacts.
R-6	Fish	<i>Pending MNF review of sedimentation analysis and conservation measures.</i> The inconclusive nature of this Determination of Effects is indicative of the incomplete status of the analysis of potential effects on aquatic resources including candy darter, New River shiner, Appalachian darter, and Kanawha minnow. This condition further elucidates the rationale for reservations concerning concluding statements within the DEIS about potential project impacts.
R-7	Bivalves	<i>Pending MNF review of sedimentation analysis and conservation measures.</i> The inconclusive nature of this Determination of Effects is indicative of the incomplete status of the analysis of potential effects on aquatic resources including elktoe and green floater. This condition further elucidates the rationale for reservations concerning concluding statements within the DEIS about potential project impacts.
R-10	Insects (Dragonflies)	<i>Pending MNF review of sedimentation analysis and conservation measures.</i> The inconclusive nature of this Determination of Effects is indicative of the incomplete status of the analysis of potential effects on aquatic resources including rapids clubtail dragonfly, green-faced clubtail dragonfly, and brook snaketail dragonfly. This condition further elucidates the rationale for reservations concerning concluding statements within the DEIS about potential project impacts.
R-40	Table R-3	“Potential Impacts from ACP Construction and/or Operation” and “Conservation Measures and Conclusion” for wild brook trout appear to be exclusive to proposed activities within and immediately adjacent to brook trout streams while being dismissive of other proposed actions that have the potential to be equally or more damaging to brook trout ecosystems. This narrative seems to expose an oversimplification of potential effects to brook trout ecosystems from actions being proposed in the DEIS.

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T-7	1.1.2 Proposed Actions	<p><i>“The ACP would cross approximately 5.5 miles of USFS-owned land within the MNF, as well as 14.6 miles of USFS-owned land within the GWNF.”</i></p> <p>There are some inconsistencies with the approximate miles on MNF lands. In this document it states 5.5, in Volume I it states 5.1 miles on MNF lands. Please address and correct throughout all documents for consistency.</p>
T-7	1.1.2	<p>Proposed Action: This section should include a description of the proposed action. Since this appendix addresses scenery and the appearance of the project, it would be appropriate to provide a brief description here that includes the proposal for a 42” pipe, 125’ wide construction right-of-way, 53.5’ wide permanent right-of-way that will be converted from forest to herbaceous groundcover on the national forests.</p>
T-10	1.2.1	<p>SMS Distance Zones –</p> <p>Add the following sentence to the description of foreground zone: Details are important and individual forms are dominant.</p> <p>Add the following sentence to the end of the description of middleground zone: At this distance, people distinguish individual tree forms, large boulders, and small openings in the canopy. Form, color and texture remain dominant and pattern is important.</p> <p>Add the following to the end of the last sentence for the description of background zone: and landform, ridgelines and horizontal lines are the dominant visual characteristics.</p>
T-15	2.0	<p>SIA Methods: I recommend that the bullets describe the intent of each step in addition to the action, as follows:</p> <ul style="list-style-type: none"> • Identify potentially visible areas based on terrain only by preparing “seen area” analysis, and establish Key Observation Points (KOPs); • Conduct field surveys to determine extent to which existing natural and human-made features either do or do not block views from the KOPs to the ACP project; • Prepare simulation or other form of visual analysis to determine whether post-ACP visual condition will meet Scenic Integrity Objectives (SIOs); • Prepare SIA report, summarizing visual conditions and impacts.
T-5 & Supplemental Information filed January 10, 2017, p. 1	1.1.1	<p>Seen Area Analysis and KOPs: More detail is needed regarding how the analysis was conducted in such a way that ACP derived which mileposts on the centerline generated the portion of the “seen area” that covers individual KOPs (example the “seen area” is approximately MP 152-154). Was the “seen area” (viewshed) generated as a continuous line or were points created? If points, describe the distance intervals. If viewshed analysis was run from each KOP to determine the ACP mileposts that are potentially visible, insert that part of the process.</p>
T-7 & Supplemental Information filed January 10, 2017, pp. 1- 2	1.1.2	<p>Proposed Action: This section should include a description of the proposed action. Since this appendix addresses scenery and the appearance of the project, it would be appropriate to provide a brief description here that includes the proposal for a 42” pipe, 125’ wide construction right-of-way, 53.5’ wide permanent right-of-way that will be converted from forest to herbaceous groundcover on the national forests.</p>

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T-9 to T-11 & Supplemental Information filed January 10, 2017, pp. 2, 5	1.2 to 1.2.2	<p>The Scenery Management System – This section describes only the distance zone piece of the SMS inventory. It should also include a brief summary of the concern levels and scenic attractiveness. Add the following information about the SMS:</p> <p>Concern Levels are a measure of the degree of public importance placed on landscapes viewed from travelways and use areas. Concern levels are divided into three categories: 1, 2, and 3, with 1 being the highest level of concern for valued landscape scenery and 3 being the lowest. Protocols for assigning concern levels to travelways and use areas are provided in the SMS Handbook.</p> <p>Scenic Attractiveness is the primary indicator of the intrinsic scenic beauty of a landscape and of the positive responses it evokes in people. It helps determine landscapes that are important for scenic beauty based on commonly held perceptions of the beauty of landform, vegetation pattern, composition, surface water characteristics, land use patterns, and cultural features. The combination of these valued landscape elements are used in determining the measure of Scenic Attractiveness.</p> <p>Scenic Attractiveness classifications in the SMS inventory include Class A – Distinctive, Class B – Typical, and Class C – Indistinctive.</p>
T-10 And Supplemental Information filed January 10, 2017, p. 5	1.2.1	<p>SMS Distance Zones –</p> <p>Add the following sentence to the description of foreground zone: Details are important and individual forms are dominant.</p> <p>Add the following sentence to the end of the description of middleground zone: At this distance, people distinguish individual tree forms, large boulders, and small openings in the canopy. Form, color and texture remain dominant and pattern is important.</p> <p>Add the following to the end of the last sentence for the description of background zone: and landform, ridgelines and horizontal lines are the dominant visual characteristics.</p>
T-15 and Supplemental Information filed January 10, 2017, p. 11	2.0	<p>VIA Methods: I recommend that the bullets describe the intent of each step in addition to the action, as follows:</p> <ul style="list-style-type: none"> • Identify potentially visible areas based on terrain only by preparing “seen area” analysis, and establish Key Observation Points (KOPs); • Conduct field surveys to determine extent to which existing natural and human-made features either do or do not block views from the KOPs to the ACP project; • Prepare simulation or other form of visual analysis to determine whether post-ACP visual condition will meet Scenic Integrity Objectives (SIOs); <p>Prepare VIA report, summarizing visual conditions and impacts.</p>
T-15 & Supplemental Information filed January 10, 2017, p. 11-12	2.1	<p>VIA PROCESS - The process undertaken by ACP in consultation with the FS to identify viewpoints may not have found the “worst scenario” locations (on federal and private lands within five miles) where viewers might see the pipeline for a long distance or see multiple sections of the pipeline from one location. The “seen area” analysis did not include identifying where the viewsheds for multiple points along the pipeline overlap at single locations – a “times seen” analysis. If these locations with views to multiple sections of the pipeline include higher elevation roads, trails, or communities, there may be a view to multiple “notched” mountaintops and striped sideslopes stretching out for miles. The VIA process needs to determine if and where these types of viewpoints exist. Please provide this information so that FERC and the FS can include this information should be included in the FEIS.</p>
T-21-22 &	2.3.2	Full Visual Simulations –

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Supplemental Information filed January 10, 2017, p. 22		<p>It is essential that the FS (and the public) fully understands and trusts the accuracy of the methods used to prepare the photo simulations for assessing the impacts to scenery.</p> <ul style="list-style-type: none"> • Please provide additional details about how the terrain model is matched to the photograph using known surveyed locations within the field of view, and identify the source and sites of these known survey locations. • Please provide the contour interval, and/or other unit of measure, for the “detailed topographic mapping,” and include the locations where LIDAR data was available and used to generate photo simulations. <ul style="list-style-type: none"> ○ An example of where this level of data is important is the photo simulation for KOP 40 ANST Bee Mountain. The vegetation depicted in the photo doesn’t appear dense enough to completely screen from view the corridor located in a situation considered to be one of the most visible and toughest in which to incorporate a new feature without it beginning to dominate the landscape character– middleground view on a steep slope facing toward the viewer. For the view from the ANST on Bee Mountain toward Piney Mountain, did ACP use detailed topographic mapping that reveals the terrain does not slope toward the viewer on the AT as seems to be indicated by USGS topo at 20’ contour intervals? This reviewer is skeptical that the pipeline corridor would not be visible in the photographic simulation for this KOP given the distance, aspect, and vegetative screening. • Please describe how the color for the post-construction herbaceous groundcover in the corridor was determined for the photos. Explain whether the color varies by location (same of different color for valley vs. side or top of mountain). <p>The photo simulations are somewhat disappointing overall. Some photos are too dark and the major landform in the image is backlit. Examples are Torry Ridge Trail 1 and BRP Three Ridges. Lacking quality lighting in the photos eliminates our ability to see existing landscape elements of color, texture and pattern, without which we cannot assess the degree of contrast introduced by the proposed project.</p>
T-23 & Supplemental Information filed January 10, 2017, Info p. 23	3.2	USFS Full Visual Simulations (Proposed Action): Simulations for the GWNF and the BRP are included together in this section. Section 4.1.3, later in the chapter, includes both units in its sub-section heading, and I recommend that this section be named in a similar fashion as follows: Full Visual Simulations for the GWNF and BRP (Proposed Action)
T-23 & Supplemental Information filed January 10, 2017, p. 23	3.2.1	<p>KOP 34: Torry Ridge Trail 1 – the text states that the permanent right-of-way is outlined in yellow. However, the photos for Torry Ridge Trail 1 in the DEIS do not include the yellow line on the permanent r-o-w photo; the line is included on the contingency plan photo.</p> <p>VIA Supplemental Info – KOP 34: The yellow outline of the r-o-w does not appear in any of the photos.</p> <p>The dark quality of the photograph used for this simulation is not sufficient. To assess the contrasts of texture, color, form, line and pattern introduced by the proposed action, we must have a good quality photograph for the existing condition.</p>
T-39 & Supplemental Information filed January 10, 2017, p. 39, A-13	3.2.6 3.2.6 in the Supp Info	KOP 64 Shenandoah Mountain South Terminus: The single photograph taken to represent potential views for the Shenandoah Mountain Trail is insufficient for the FS to verify that vegetation screens all views to the pipeline corridor except at the crossing only. Aerial photography was used by ACP to make this determination; however a view can be obtained from beneath the canopy layer if certain conditions exist, such as a rock outcrop.

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T-85 to T-87 & Supplemental Information filed January 10, 2017, p. 39, 41-44	3.3.2 3.2.5 in the Supp Info	KOP 40 Bee Mountain Photos: Some of the texture on the mountain is visible in the photographs. It seems that the proposed powerline corridor would be noticeable in the photo simulation. The FS agrees that the proposed project will not be visible from this KOP during leaf-off, but additional information is needed about why it is not visible in the leaf-off simulation
T-50 & Supplemental Information filed January 10, 2017, p. 103	4.1.1	Description of Table 4-1 – In the first sentence delete the phrase “both at the KOP itself and generally”. Add a sentence that states: “All of the KOPs listed in Table 4-1 have a Concern Level of 1, meaning the users are considered to have a high regard for scenery and they value the natural appearing landscape character.”
T-50 & Supplemental Information filed January 10, 2017, p. 104	Table 4-1	<p>Table 4-1: Delete “in GWNF” from the title. The KOPs and viewsheds include a mix of GWNF, BRP, and private locations.</p> <p>As explained in the comment to Section 4.8.9.1 (separate FS comments document), include only the column for “In Viewshed” SIOs; delete the column for “At KOP” SIOs.</p> <p>Existing footnote #2 should be deleted since there will not be a column for the SIO at the KOP.</p> <p>Existing footnote #3 will become footnote #2. It should state “Lands viewed from KOP are not part of the GWNF and therefore are not assigned a SIO.”</p> <p>Existing footnote #4 will become footnote #3. The In Viewshed SIO needs to be changed to NA and the footnote text will be the same as footnote #2.</p> <p>Add a footnote (#4) to the KOP 65. The In Viewshed SIO needs to be changed to NA and the footnote text will be the same as footnote #2.</p>
T-51 and Supplemental Information filed January 10, 2017, p. 104	Table 4-2	SIO for GWNF MP 122.4 to 122.7 – Based on the MA prescription and the Scenic Classes inventory, the FS determined that the SIO for this area is Moderate, not High.
Supplemental Information filed January 10, 2017, p. 103	4.1.1	The FS determined that the SIO on the GWNJ from MP 122.4 to 122.7 is Moderate SIO (not High). Therefore 14.2 miles of the proposed pipeline on the GWNF would go through SIO of Moderate, and 0.1 mile would go through SIO of High.
T-51 & Supplemental Information filed January 10, 2017, p. 103	4.1.3.1 in App T 4.1.2.1 in Supp Info	<p>Discussion: Third paragraph – I do not agree with the first sentence that the viewing distance is a factor in the project not dominating the landscape character. The distances between the KOPs and the visible project area are in the middleground, some of them less than one mile. In the middleground, many elements of form, line, color, texture and pattern are visible. Using SMS terminology, I recommend the following change to this sentence:</p> <p>The ACP post-construction project would be noticeable to casual observers at most of the modeled KOPs. The degree of contrast introduced by the project will vary by KOP depending on the distance viewed, the extensiveness of the view and the scale of the right-of-</p>

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		way within that view, the angle of view, the aspect of view, and the terrain upon which the pipeline is located. For some KOPs that view a small area at a relatively close distance to the project area, the pipeline corridor would begin to dominate the characteristic landscape. For KOPs that have a relatively expansive view at a greater distance and with other alterations visible on the landscape, the project is not likely to dominate the characteristic landscape.
T-52 & Supplemental Information filed January 10, 2017, p. 104	4.1.3.1 in App T; 4.1.2.1 in Supp. Info.	Discussion: Regarding Raven’s Roost KOP, a portion of the pipeline corridor viewed in the valley is on the GWNF. The pipeline right-of-way mimics the road corridor at the base of Torry Ridge, but will be wider. It will be more highly visible than the road as it sweeps to the north through a forested area where there are no other openings in the immediate vicinity. The length of the pipeline that would be visible is substantial. The contrast in color and line will attract the viewer’s eye. An explanation for why the northwest portion of the pipeline closest to the KOP is less visible in the photo simulation than the northern portion that is further away.
T-52 & Supplemental Information filed January 10, 2017, p. 105	4.1.3.1 in App T; 4.1.2.1 in Supp Info	Discussion: Regarding the BRP Three Ridges Overlook – Neither the KOP nor the lands viewed from it are on the GWNF. However, given the descriptions provided in this paragraph, I would disagree with the statement that the pipeline “would not dominate the viewshed”.
T-52 & Supplemental Information filed January 10, 2017, p. 104-105	4.1.3.1 in App T; 4.1.2.1 in Supp Info	Discussion: Regarding the Shenandoah Mountain Trail – In the sentence, “The viewing area for these changes would be relatively small, limited to the area immediately near each intersection of the corridor...”. The single photograph provided is not sufficient for the FS to verify that vegetation screens all views from the Shenandoah Mountain Trail. Additional photographs are needed.
T-32 to T-34 Supplemental Information filed January 10, 2017, p. 32-34	Photos	KOP 34 Raven’s Roost: I have to question the accuracy of the simulation for the 75’ wide corridor. From this superior vantage (view angled down), it is unlikely that the corridor running across the bottom of Torry Ridge would be so screened by the vegetation along the edge of the r-o-w. The scale of houses visible in the valley indicate that the width of the corridor throughout this simulation is understated. Additional explanation is needed.
T-52 & Supplemental Information filed January 10, 2017, p. 105	4.1.3.2 in App T; 4.1.2.2 in Supp Info	Summary: Regarding views of the ACP corridor from Raven’s Roost, a portion of the pipeline corridor viewed in the valley is on the GWNF. In the near middleground there are only a few alterations, not “many”, as stated. I need to question the accuracy of the visibility of the corridor at the base of Torry Ridge and extending around the north. See other comments pertaining to the photos. The text in this section may need to be modified based on the outcome of resolving questions related to the photo simulation.
T-53 & Supplemental Information filed January 10, 2017, p. 106	4.1.3.2 in App T; 4.1.2.2 in Supp Info	Summary: Regarding views from ANST on Bee Mountain (KOP 40), the lands visible from this KOP are not GWNF lands and therefore do not have an assigned SIO. Delete the phrase “be consistent with SIO designation from this location.”

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T-53 & Supplemental Information filed January 10, 2017, p. 106	4.1.3.2 in App T; 4.1.2.2 in Supp Info	Summary: Paragraph describing impacts to High SIO – The FS has determined that the 0.3 mile area of the GWNF between MPs 122.4 and 122.7 is assigned a Moderate SIO, not High. The only GWNF land with High SIO crossed by the ACP is the 0.1 mile of HDD under the ANST at MP 158 to 158.1.
T-53 & Supplemental Information filed January 10, 2017, p. 106	4.1.3.2 in App T; 4.1.2.2 in Supp Info	Summary: Paragraph describing the Moderate SIO erroneously refers to it as a Medium SIO.
Supplemental Information filed January 10, 2017, p. 51-52 text and pp. 53-56 photos	3.4.1	ANST KOP 02 Humpback Rocks, KOP 03 Battery Cliffs, KOP 04 Laurel Springs: Per the description of the “seen area” being between MPs 152 and 154, none of the visible area is on the GWNF. However, it is unlikely that the views from three different points share the identical potential “seen area”. Please verify the accuracy. Also, the description for ANST KOP 02 does not explain why the corridor in the middleground is “minimally perceptible” and “indistinguishable”. The open corridor would typically be evident at that distance. An intervening feature, aspect of the viewed area to the viewer, the existing landscape character, or some other explanation needs to be provided for why the corridor is not more visible in the simulation at that relatively short viewing distance.
Supplemental Information filed January 10, 2017, p. 52	3.4.5	ANST KOP 06: Little Raven’s Roost – The assessment should explain why the contrasts to existing landscape that would be apparent to the viewer will not dominate the view.
Supplemental Information filed January 10, 2017, p. 71 text and pp. 77-84 photos	3.4.7	ANST KOP 08a Three Ridges Overlook North, and ANST KOP 08b Three Ridges Overlook South – Per the description of the “seen area” being on Piney Mountain south of the HDD, the visible area of the pipeline viewed from these two KOPs is not on the GWNF. Since the format is following the SMS system for these KOPs, the description of the view should describe the contrasts of color, line and texture introduced by the pipeline crossing over the top of a natural appearing mountain covered in forest with no other obvious openings. The pipeline in this location provides potentially the biggest impact to scenery viewed from the ANST and BRP based on the photo simulations prepared by ACP, and should be described as such.
Supplemental Information filed January 10, 2017, p. 71	3.4.8	ANST KOP 08b Three Ridges Overlook South – The distance between the KOP and the proposed pipeline corridor needs to be provided.
Supplemental Information filed January 10, 2017, p. 106	4.1.3.1	Feathering Vegetation Clearing on the R-O-W – In the last sentence, change the word “present” to “visible” ...
Supplemental Information filed January 10, 2017, p. 107	4.1.3.2	Replanting the Right-of-Way: 1 st paragraph, last sentence is incomplete. In the 2 nd paragraph, the word “mange” should be “manage”.

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Supplemental Information filed January 10, 2017, p. 109	4.2.3	Mitigation of Visual Impacts on the GWNF should be the MNF.
Supplemental Information filed January 10, 2017, p. 110	4.4.2	Visual Impacts of ACP on the ANST – The 2 nd paragraph states that views from KOPs ANST 02, 03 and 04 are generally imperceptible and in the background distance zone. That is erroneous. All of the ANST KOPs are in the middleground distance zone; and question was raised in comments above as to why the pipeline was not more evident from KOP 02 in the photo simulation.
Supplemental Information filed January 10, 2017, p. 110	4.4.2	Visual Impacts of ACP on the ANST regarding KOP 06 – The statement that the pipeline will not dominate the view is arguable. There are other openings in the forest canopy further out in the valley, but the pipeline corridor cuts through natural appearing forest on the north end of the view, and information is needed about why the corridor isn't more visible in the western portion of the view which is closer to the KOP.
Supplemental Information filed January 10, 2017, p. 110-112	4.4.2	Throughout this section, the description of KOPs being in High SIOs is atypical of how the Forest Service assesses proposed actions. When the proposed action does not occur in the same management area or SIO as the KOP, it is more appropriate to use the phrasing that the KOPs are located on a Concern Level 1 National Scenic Trail.

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