USDA United States Department of Agriculture | Forest Service | George Washington and Jefferson National Forests | 5162 Valleypointe Parkway Roanoke, VA 24019 540-265-5100

**File Code:** 2720; 1900
**Date:** June 16, 2015

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

Dear Ms. Bose:

The George Washington and Jefferson National Forests received the Federal Energy Regulatory Commission's Notice of Intent to prepare an Environmental Impact Statement (EIS) for the Mountain Valley Pipeline Project (Docket No. PF15-3-000). As a cooperating agency, the Forest Service appreciates the opportunity to review and provide comments on the proposed Mountain Valley Pipeline Project.

Pursuant to NEPA regulations (40 CFR § 1501.6(b)), we have identified scoping issues for your consideration in the preparation of the EIS. We have also provided comments and concerns regarding the assessment of project effects on National Forest System lands. Our detailed discussions are attached.

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

Sincerely,

for

H. THOMAS SPEAKS, JR.
Forest Supervisor

# SCOPING COMMENTS OF THE JEFFERSON NATIONAL FOREST MOUNTAIN VALLEY PIPELINE PROJECT (DOCKET NO. PF15-3-000)

## GENERAL COMMENTS

### Environmental Impact Statement

The environmental impact statement (EIS) for the proposed Mountain Valley Pipeline (MVP) Project should analyze and discuss all potential effects of the proposed pipeline to the Jefferson National Forest (JNF). The EIS should include analyses of temporary and permanent disturbances, and direct and indirect project effects, caused by the construction, operation, and maintenance of the pipeline corridor, access roads, staging areas, disposal areas, and any associated facilities. In addition to the rights-of-way (ROW) clearing and construction, operation, and maintenance of the aforementioned facilities, the EIS should identify and assess impacts associated with any meters, compressor stations, mainline valves, project-related electricity transmission lines, communication towers, access roads, contractor yards horizontal directional drill and inspection tools (e.g., smart pigs), and launching/receiving facility locations that are needed for construction and/or operation of the proposed pipeline.

The EIS should identify and map any project feature or facility that would not be in compliance with the JNF 2004 Revised Land and Resource Management Plan (JNF Forest Plan or Forest Plan). If a project feature or facility is not in compliance with a Forest Plan, proposals for making the project feature or facility compliant with the plan should be identified and evaluated. Otherwise, the impacts of amending the Forest Plan should be identified and evaluated for all affected resources, including implications to Wilderness Areas, Rare Communities, and Special Biological Areas.

The Notice of Intent (NOI) issued by the Federal Energy Regulatory Commission details 4 new compressor stations in Wetzel, Braxton, and Fayette Counties, West Virginia and Montgomery County, Virginia; 4 new meter stations; 49 main line valves, and 6 pig[1] launchers and/or receivers. The MVP Project would involve the construction and operation of about 294 miles of 42-inch-diameter buried steel pipeline in Wetzel, Harrison, Doddridge, Lewis, Braxton, Webster, Nicholas, Greenbrier, Fayette, Summers, and Monroe Counties, West Virginia and Giles, Montgomery, Roanoke, Franklin, and Pittsylvania Counties in Virginia. It is important that the Forest Service know the specifics of all pipelines, pipeline facilities, associated appurtenances and access roads on and near National Forest System (NFS) lands as soon as practicable during this process; all specifics should be disclosed in order for any entity to adequately analyze potential impacts.

### Project Safety

The locations and characteristics of proposed valve sites and other above-ground features on NFS lands need to be disclosed. The analysis should clearly describe any risks to the public and to Forest Service employees, partners, cooperators, and volunteers, associated with these

[1] A "pig" is an internal tool that the pipeline company inserts into and pushes through the pipeline for cleaning, inspections, or other purposes.

facilities, as well as any restrictions on administrative and public use of the land in the vicinity of these facilities.

On NFS lands, proposed cover depths must meet Forest Service standards, which could differ from those proposed by the applicant.

We are concerned about the possibility of plugged and abandoned gas wells, and encountering underground coal mines or other hazards that could arise from crossing reclaimed mine lands with construction equipment. The EIS should identify potential hazards and propose measures to prevent accidents.

**Alternatives**

The Forest Service will assess how the proposed pipeline conforms to the directions contained in the Forest Plan. Changes in the Forest Plan could be required if the pipeline is authorized across the JNF. The EIS will provide the documentation to support any needed amendments to the Forest Plans. It is necessary to understand why any proposed routes (preferred or alternative) crossing national forest system (NFS) lands are selected over those not crossing NFS lands. Therefore, the EIS should contain a comparison of project effects for routes crossing NFS lands versus routes not crossing NFS lands. Discussions and other relevant information should also be provided to justify the necessity of any proposed route crossing NFS lands.

Alternatives should address the ability to utilize existing corridors rather than creating new ones; the analysis should consider co-locating with other existing and proposed projects.

The No Action alternative, system alternatives, collocation alternatives, and potential route alternatives should be fully addressed in regard to their feasibility and environmental effects. Comparisons of the alternatives should be based on analyses of site-specific impacts to resources potentially affected by the proposed project, which may not necessarily be correlated with the footprint of the proposed project.

The Forest Plan standards regarding special use authorizations and ROWs require the following:

> *Limit to needs that cannot be reasonably met on non-NFS lands or that enhance programs and activities. Locate uses where they minimize the need for additional designated sites and best serve their intended purpose. Require joint use on land when feasible.*
>
> *Develop and use existing corridors and sites to their greatest potential in order to reduce the need for additional commitment of lands for these uses. When feasible, expansion of existing corridors and sites is preferable to designating new sites.*

## GEOLOGY

Major areas of concern regarding the geological resources include potential impacts to groundwater and potential impacts to, and from, geologic hazards. Specific geologic hazards include landslides, debris flows, slope failure, slope stability, sedimentation, sinkholes, flooding, acid producing rock formations and seismic activity. Our recommendations for specific evaluations of geologic hazards are detailed below.

Geologic impacts and effects should be discussed for all construction activities resulting in temporary and permanent disturbance including but not limited to construction of the pipeline

corridor, access roads, staging areas, disposal areas, and any other area disturbed during construction. One of the bases for assessing potential impacts is to consider the impacts associated with existing pipeline corridors in comparable geologic settings (similar geologic materials, geologic structures, and geologic processes) within a physiographic province (such as the Ridge and Valley physiographic province). Similarities and differences between the proposed pipeline project and existing pipeline corridors can be noted and evaluated. Existing pipeline corridors which have been in place for one or two decades or more can provide some information on potential effects during operation of this proposed pipeline.

**Geologic Hazards**

Potential effects of construction and operation of the pipeline, roads, and associated facilities on geologic hazards that may affect infrastructure, public health and safety, and resources should be evaluated. We provide specific geologic hazards and recommendations for geologic hazards below, and we can provide additional detail and discussion upon request.

*Natural landslides*
Identify existing slope stability conditions in the footprint of, or relevant to, the proposed facilities (such as existing landslides; streamside slopes subject to undermining by streams; geologic structures that may be adverse to slope stability such as dip slopes; debris flow paths). Assess potential for various types of landslides (mass movements, mass wasting) to affect pipelines, access roads, and other project facilities.

*Natural debris flows*
Assess the potential for debris flow type of landslides to impact the pipeline and associated facilities and consider the frequency of historic major debris flow events in Virginia and West Virginia from 1949 to 1996 (Figure 1).

**Figure 1**. Role of debris flows in long-term landscape denudation in the central Appalachians of Virginia (Eaton et al. 2003)

*Swarms of Debris Flows*

Assess the potential impacts on pipeline and access roads of swarms of debris flows, such as occurred in June 1949 in Augusta County (Figure 2) and in August 1969 in Nelson County (Figure 3).

**Figure 2.** June 17-18, 1949 storm triggered more than 100 debris flows in the Little River area on the North River Ranger District in Augusta County, Virginia (Hack and Goodlett 1960).

**Figure 3.** Debris flows in Davis Creek area triggered by remnants of Hurricane Camille August 19/20, 1969 in Nelson County, Virginia (Morgan et al. 1999).

*Project-related slope failures (landslides)*
Assess the slope stability of proposed cut slopes and fill slopes during construction and operation of the pipeline, access roads, and associated facilities. Identify any risks to people, facilities, and resources associated with potential failure of slopes modified for the project.

*Road fill slope stability*
In considering the stability of road fill slopes, determine the slope percent at which road construction would switch from cut-and-fill to full bench construction. Prepare a slope map of the project area including areas of potential access road construction. Use slope percent for cut-and-fill to full bench construction as one of the slope breaks in classifying slopes on the slope map. Identify methods and locations for disposal of excess excavation, such as from full bench road construction.

*Trench backfill stability*
In considering the stability of fill in pipeline trenches, determine the slope percent at which fill in trenches would be unstable and subject to fill slope failure. Prepare a slope map of the project area. Use slope percent at which fill in trenches would be unstable as one of the slope breaks in classifying slopes on the slope map. Identify methods and locations for disposal of excess excavation from the trenches.

*Corridor road slope stability*
The road built in the pipeline corridor is a different type of road than the more familiar access road, cutting a wide swath across the landscape in order to accommodate heavy construction equipment traffic to dig the trench and install the pipeline. While different in scale and layout than an access road, the construction within the corridor is basically a wide road with an adjacent pipeline trench (Figure 4).

Assess the slope stability of the corridor road and adjacent pipeline trench during construction and operation of the pipeline. Of special concern is the loose, unconsolidated material (soil, colluvium, weathered or fractured bedrock) resulting from the excavation and stored in temporary piles or berms. Calculate the volume (cubic yards) of loose, excavated materials and determine how long these piles or berms remain before some or all of the material is used for backfill or is graded as part of reclamation.

If a significant rainstorm occurs while these temporary piles or berms are present (Figure 4), it could result in a mass failure of the temporary piles or berms, and then, a debris flow that could produce off-site damage downslope and in stream channels. To estimate the volume and stability of these temporary piles or berms, a cross-section of this stage of the construction process is needed. The project design would have at least two types of cross-sections: original ground surface and final cut-and-fill. However, the project design needs a third cross-section to show temporary piles or berms as well as excavations (cut-slope); this design cross-section would show the construction at the point of maximum loose excavated material, that is, before the trench is backfilled (Figure 4). Longitudinal profiles showing the slope percent or grade along the corridor road at this stage of construction would also be needed to assess slope stability.

**Figure 4.** Example of construction road with adjacent pipeline trench. Material excavated for the road is piled on uphill side of road; material excavated for the trench is piled in a berm on downhill side of trench.

*Project-related debris flows*

Assess the potential for debris flows caused by failure of fill slopes caused by the project effects, such as the construction of corridor roads, pipeline, and associated facilities, and the construction and use of access roads. Assess the potential for debris flows caused by failure of waste disposal areas, such as disposal areas for excess excavation along access roads, corridor road and pipeline. Assess risks to public safety, downslope infrastructure, streams and other resources associated with potential failure of fill slopes or disposal areas for the project (Collins 2008).

*Project-related sedimentation*

Assess the potential for sedimentation due to surface erosion and mass wasting during construction and operation of the pipeline, access roads, and associated facilities. Consider the significant role of debris flows in sedimentation as indicated by Eaton et al. (2003) and shown in the excerpt below.

> "In the Appalachians, and probably other mountainous terrains located in humid-temperate climates, the role of high-magnitude events on geomorphic effectiveness and landscape evolution arguably has been underestimated. The presence of coarse bedload stored in upland channels, porous regolith that mantles the slopes, and densely vegetated terrain marginalizes the effectiveness of frequent, low magnitude storms in mobilizing sediment. In contrast, high-magnitude events trigger debris flows, which incise streams, export sediment from the uplands, and deposit regolith onto debris fans or into lowland stream channels and floodplains."

Thus it is important to not only assess the potential for sedimentation due to surface erosion, but to also assess debris flows resulting from failure of fill slopes or disposal areas.

*Sinkholes (ground collapse)*
Identify and map karst geologic areas and features (sinkholes, caves, disappearing streams, etc.) onsite or downslope from the pipeline, access roads, and associated facilities. Assess the potential for sinkholes (ground collapse) to affect pipelines, roads, and associated facilities.

*Flooding*
Assess potential for flooding to affect pipelines, roads, and associated facilities. Assess how the slope modifications in the pipeline corridor and access roads would affect surface water flows and runoff.

*Acid-producing rock (sulfide) hazards*
Identify sulfide-bearing geologic materials in project area (Figure 5). Assess potential impacts of project to result in effects such as barren acidic cut slopes, acidic runoff, fill seepage and deterioration (Orndorff and Daniels 2002).

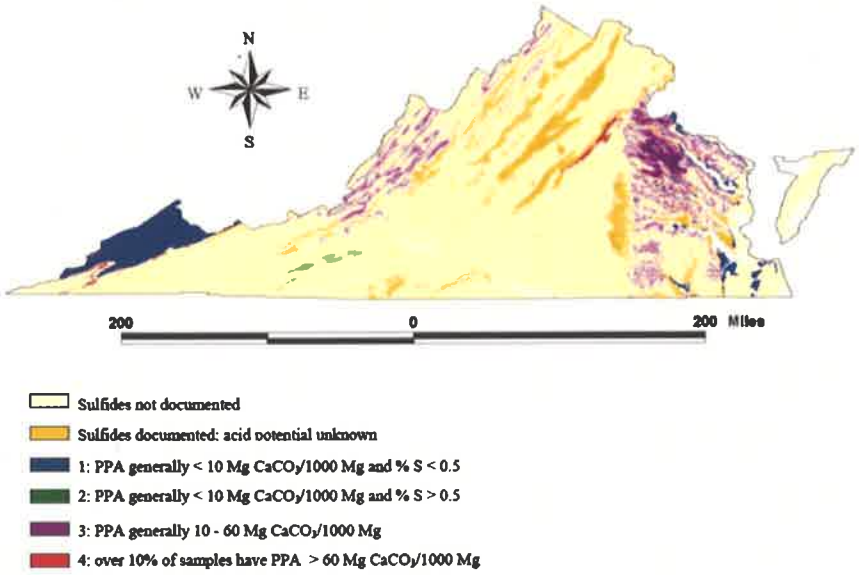


Figure 9. Geographic extent and hazard ratings for sulfide-bearing geologic materials in Virginia.

**Figure 5.** Delineation and Management of Sulfidic Materials in Virginia Highway Corridors. (Orndorff and Daniels 2002)

*Seismic hazards*
Assess potential effects relating to seismic hazards from earthquakes.

## SOILS

We recommend the EIS provide total acres of pipeline and road construction including cut and fill slopes and bladed areas for other facilities so that project effects on soil productivity can be evaluated. The EIS should identify and discuss mitigation measures for erosion control, trench construction, and road construction. Protocols for monitoring and inspections of mitigation measures should be described.

During construction, the Forest Service requires following state or federal construction standards; any variances, such as length of trench open at one time, must be justified in terms of benefits to soil and water protection. Road construction with grades over 25% will be water barred, mulched, seeded with annuals after construction. Proven erosion control vegetation mixes must be seeded at appropriate times of the year. These mixes are subject to prior Forest Service approval, and they must not contain any species that are considered invasive by the Forest Service. Erosion control measures must be installed prior to or immediately after construction of an area.

The following protocols, at minimum, should be followed when collecting soils data on national forest lands:

- Use USDA NRCS Web Soil Survey for basic soil survey maps for the survey area.
- The survey area includes locations of all roads and other associated facilities.
- Field verify soil survey maps with field soil profile descriptions. At least one description for each map unit. Identify soils not included in map unit descriptions found in Web Soil Survey. GPS field profile descriptions and areas of apparent slope failure, wetness and rock outcrop.
- Soil profile descriptions will use the protocols in the "Field Book for Describing and Sampling Soils," National Soil Survey Center, Natural Resources Conservation Service, USDA.
- Field soil profile descriptions will include pH and slope.
- Field notes will include a decision on whether the soil profile description fits the map unit description or not and why.
- Survey Soil contact will consult with FS soil contact biweekly with schedule adjusted as needed.
- Field soil profile descriptions will be to 40 inches or bedrock using a bucket auger or shovel. Justification for bedrock is needed.

The following deliverables, at minimum, should be provided to the Forest Service following collection of soils data:

- a final map and spreadsheet showing locations of survey sites;
- a summary of each field description;
- a notebook containing original field notes including observations on surface features such as wetness, slope failure, outcrops, shallow rooting, root wad descriptions, road cut notes, and other pertinent information.

## WATER RESOURCES

### Surface Water

The EIS should identify streams, waterbodies, wetlands, floodplains and other riparian areas crossed or potentially affected by the proposed pipeline. The uses of streams in the affected area should be identified including any downstream water supplies. The EIS should include calculations of estimates of soil erosion and resultant sedimentation from pipeline construction and associated activities in the streams and address impacts of the sedimentation, including impacts due to the chemical composition of the sediment, on aquatic biota. The EIS should also evaluate to the physical character of the streams and potential impacts from stream crossings. Surveys should be conducted to adequately establish baseline and characterize water quality (water chemistry, stream turbidity, stream temperature), water quantity (hillslope hydrology, in-stream flows), and stream channel characteristics (fluvial geomorphology, bed/bank stability, substrate composition, substrate embeddedness, and habitat composition).

Identification, inventory and assessment of all streams (perennial, intermittent, and ephemeral), associated riparian corridors, and aquatic/riparian dependent biota within the corridor and those potentially affected downstream. Effective measures will need to be prescribed to protect stream water quality, the physical character of the streams, levels of streamflow, stream connectivity, streamside vegetation communities, stream biota, slope stability, and to minimize erosion and sedimentation.

During construction, staging areas should not be located in or near riparian corridors. No streams should be dewatered during construction and stream connectivity should be maintained during and after construction.

The EIS should include an analysis of potential contamination to water (and any other resource) that could result from construction equipment (i.e., oils, fuels, and fluids) and materials used to construct the pipeline or associated facilities. A response plan for equipment failures resulting in spills of contaminants should be described.

The EIS should include an analysis of potential water contamination resulting from long-term operation and maintenance of the proposed pipeline.

The EIS should include a discussion on the effects of the proposed pipeline on Priority and Reference watersheds from the Revised Jefferson National Forest Plan 2004, as well as Management Prescriptions 9A4 (Aquatic Habitat Areas, specifically Craig Creek), and 9F (rare communities).

### Groundwater

The EIS should include an assessment of potential project effects on groundwater during construction and operation of the pipeline, access roads, and associated facilities. Karst geologic areas and features (sinkholes, caves, disappearing streams, etc.) onsite or downslope from the pipeline, access roads, disposal areas and associated facilities should be identified and mapped.

Springs, wetlands, groundwater-dependent ecosystems, or other indications of shallow groundwater should be identified and mapped. The EIS should evaluate the potential for project excavations (trenches, roads) to intercept shallow groundwater. Groundwater recharge and discharge areas relevant to the proposed project should be identified and mapped. Potential impacts on karst systems and the flora and fauna associated with sinkhole ponds also needs to be

addressed. We recommend the EIS include a description of the methods to be used to cross perennial or intermittent streams and valley bottoms where the pipeline would encounter permanent or seasonal groundwater flows.

Hazardous and toxic chemicals or materials that would be transported to and used in the pipeline corridor should be listed and described in the EIS, and the description should include the spill prevention and control procedures for transporting and using hazardous and toxic chemicals or materials.

## SPECIAL STATUS SPECIES

The analysis of impacts on federally listed threatened and endangered species and their habitat will need to be addressed in a Biological Assessment and the impacts on sensitive species (species listed on the Regional Foresters list of sensitive species) will need to be addressed in a Biological Evaluation. The Forest Service will provide lists of the species to be included in the analysis. In addition, impacts to globally and locally rare species will also need to be addressed in the environmental analysis. The Forest Service will provide lists of locally rare species that could be affected by the project. Effects of proposed pipeline project on habitat for golden and bald eagles will need to analyzed and appropriate mitigation measures taken to comply with the Bald and Golden Eagle Act. The impacts of the project on the Management Indicator Species (MIS) identified in the Forest Plan will also need to be addressed in the environmental analysis.

The analysis must be conducted in enough detail to allow the Forest Service to make a determination of effects on population viability within the Forest boundary. Actions that would result in a loss of viability or a trend toward federal listing are prohibited by Forest Service directives (FSM 2670.32). Direction in the Forest Plans requires that impacts be avoided or minimized to the maximum extent practical, and that unavoidable impacts be mitigated.

### Aquatic Special Status Species

The EIS should analyze project effects on potentially occurring aquatic special status species including but not limited to Roanoke logperch, candy darter, orangefin madtom, roughhead shiner, Kanawha minnow, James spinymussel, yellow lance, Atlantic pigtoe, green floater, green-faced clubtail, Allegheny snaketail, Maureen's shale stream beetle (*Hydraena maureenae*), *Hydrothyria venosa, Nardia lescurii*, and wild trout resources (Forest Plan MIS). Potential impacts on all wild and stocked trout streams should be assessed. In addition, there are several newly described crayfish species in the proposed pipeline area that are dependent on wooded spring/seeps (*Cambarus sp. A* and *Cambarus sp. B)*; the effects to these species/habitat should be disclosed.

One of the proposed routes crosses 6$^{th}$ level HUC watersheds included in the Federally Listed Fish and Mussel Conservation Plan developed in conjunction with the FWS. This Conservation Plan specifies management actions in 6$^{th}$ level HUC watersheds that contain Federally Listed fish or mussel species. Effects in these watersheds need to be analyzed.

Objective 3.01 in the Jefferson NF Plan (page 2-6) states that Watersheds are managed in a manner that results in sedimentation rates that stabilize or improve the biological condition category of the stream as monitored using aquatic macroinvertebrates. Biologic stream condition at pipeline crossings should be assessed prior to development using aquatic macroinvertebrates.

EPA rapid bioassessment protocol II (1989) has been used by the Forest as modified by Voshell (1997). See attached protocol.

**Terrestrial Special Status Species**

Both bald and golden eagles are known to be on or near the JNF. Bald eagles nests have been identified in the vicinity. Golden eagles are known to winter on ridges in the Forest, both along the Allegheny and Blue Ridge Mountains. Both have large breeding (bald) and wintering (both) ranges. Recent camera trapping surveys for wintering golden eagles have documented a large population on both Forests. Surveys for active nests for bald eagles should be conducted near all major water bodies along the survey corridor. Effects of the proposed pipeline project on habitat for these species should be analyzed and appropriate mitigation measures implemented to comply with the Bald and Golden Eagle Act. Bald Eagles are also a Regional Forester's Sensitive Species in the Southern and Eastern Regions due to recent federal endangered species act post-listing requirements.

Any cave locations and karst areas within or adjacent to the corridor (2 miles) should be identified and mapped. All surveys for bats should follow the current survey guidelines as issued by the U.S. Fish and Wildlife Service.

The Peter's Mountain Mallow is a federally listed plant whose only known worldwide location is on Peter's Mountain. The proposed route across Peter's Mountain should be surveyed for the possible presence of this plant.

Locally rare and sensitive species should be surveyed to determine presence of the species or habitats. The EIS should include an analysis of the effects of proposed actions on any locally rare or sensitive species or suitable habitats found, and assuming presence in the case for hard to survey species.

The sensitive species listed and briefly discussed below are of particular concern on the JNF.

- Pirate bush and other rare plants are likely to be encountered in the alternative routes.
- Peregrine falcons have recently been documented expanding their breeding range into western Virginia. Any exposed clifflines encountered along the proposed route should be surveyed for potential breeding activity. Peregrines have recently been documented in the Ripplemead area, not far from the first proposed route.

Page 2-12 of the JNF Forest Plan identifies and addresses MIS. The following MIS will need to be surveyed for in the proposed project area and effects of the proposed pipeline project evaluated for the species found present, or habitat suitable for the species found present, in the EIS: pileated woodpecker, ovenbird, chestnut-sided warbler, Acadian flycatcher, hooded warbler, scarlet tanager, pine warbler, eastern towhee, and eastern wild turkey; black bear, and white-tailed deer.

## VEGETATION

**Non-Native Invasive Plants**

We are concerned with the potential to introduce or expand the occurrence of non-native invasive plants (NNIP) due to site disturbance or creating conditions (e.g., increased light),

respectively, that could favor some NNIPs. The proposed pipeline should be inventoried before construction to identify locations of populations of non-native invasive species in, and adjacent to, the corridor. The Forest Service can provide a list of the high priority species of concern. The area should be treated before construction to reduce potential seed sources and vegetative propagation. Measures should be established to prevent infestations during and after construction through equipment cleaning, monitoring and treatment. A maintenance plan should be established for long-term periodic monitoring and treatment and to identify the entity responsible for the maintenance and treatment of NNIPs. The maintenance plan should include, at minimum, the acres and frequency of mechanical and chemical maintenance means to control NNIPs. Where chemical use is proposed, the types of chemical (trade names), application methods, and application rates should be identified and analyzed. The analysis should include a discussion of impacts of chemical use on all non-target species, including humans.

**Forest Vegetation**

The analysis should include a description of the anticipated impacts to timber in the proposed ROW. The temporary re-vegetation in construction areas and the expected vegetation community that would permanently occupy the proposed ROW should also be described. Areas proposed for the removal of trees will be evaluated for old growth characteristics according to Forest Service guidelines. If any areas are determined to meet the definition of old growth, the effects of harvesting the old growth should be evaluated in the environmental analysis. Avoidance of impacts to old growth may be required.

We are concerned about impacts of construction activities on trees adjacent to the ROW. Digging and soil compaction from heavy machinery may adversely affect roots of trees adjacent to the ROW leading to mortality of these trees. Therefore, the EIS should contain a discussion of such effects on trees. Ideally, the effects would be quantified in the EIS and mitigation measures would be proposed.

The impact to existing and future old growth as well as size and connectivity of old growth patches should be disclosed. The ROW construction may adversely impact existing and future old growth forest as identified by the Forest Plan (page 2-26 and Appendix D). Existing old growth will be defined pursuant to the Guidance for Conserving and Restoring Old Growth Forest Communities on National Forests in the Southern Region (R8 Guidance). This will require vegetative surveys designed to address the four operational criteria that define old growth per the R8 Guidance. These surveys may coincide with the vegetation surveys described later in this document with the addition of coring of trees that represent the oldest age class of a given stand so that criteria 1 of the R8 Guidance is addressed. We can provide a tally sheet that we use to document old growth surveys and would encourage that use, but any survey that adequately documents and addresses the four criteria of an operational definition for old growth would suffice to quantify impacts to existing old growth. The location and extent of existing and future old growth per the Forest Plan can be provided upon request.

**Fire and Timber Resources**

A number of specific items relating to land use and the Fire and Timber programs and/or resources on the JNF would potentially be impacted by the MVP proposal and therefore should be evaluated in the EIS. We discuss these items below.

The analysis should disclose the number of acres where prescribed fire and timber activities would be eliminated as management tools, either directly or indirectly as a result of buffer areas, restricting access, or isolating previously manageable blocks of land. The MVP proposal would alter or reduce our ability to achieve the desired conditions and objectives of the JNF Forest Plan through the use of prescribed fire and timber activities. This impact is not expected to be limited to the actual corridor of the ROW itself, but may well restrict activities in the vicinity of the ROW. We presume that the ROW could not serve as a firebreak for prescribed fire activities and that these activities could not occur within a certain distance of the ROW. Similarly, the ROW could limit access and our ability to use prescribed fire to manage NFS lands throughout the entire length of the ROW. Likewise, the ROW would remove some number of acres from the Lands Suitable for Timber Production. It is unknown whether we could harvest directly adjacent to the ROW or cross the ROW with heavy machinery and/or logging trucks. Thus, the ROW may isolate or otherwise limit our ability to manage NFS lands through the commercial timber sale program.

We recommend that the potential use of any roads for future management be analyzed and a conscious decision be made regarding the disposition of that access (e.g. a permanent system road vs. a temporary road). Just as the proposed ROW could isolate or restrict access to blocks of land for future management in some areas, roads constructed to access the ROW could also facilitate future management in other areas. We recommend that the location, design, and future use of any roads constructed for this project is closely coordinated with our engineering and natural resources group. There may be opportunities to identify roads that could be placed on our permanent road system, built to minimum specifications, and used for future management activities. Other access routes may not serve that function and would likely be considered "temporary roads" for the purpose of this project.

We are concerned that the proposed ROW would serve as a vector for human activity that may lead to increased wildfire starts. There may also be an impact on our ability to manage any future wildfires in the vicinity of the ROW. An analysis and disclosure of any constraints on suppression tactics as it relates to wildfire suppression should be performed.

Potential impacts to fuel loading resulting from any construction activities should be analyzed and disclosed. Un-utilized woody material, such as tops and grubbed stumps, would add to fuel loads in the vicinity of the ROW. Potential mitigation measures, such as chipping and blowing or lopping and scattering tops back into the surrounding forest and/or burning the material onsite, should be discussed.

The volume and value of timber to be removed should be disclosed as part of an economic analysis in the effects disclosure. Our first and foremost economic concern is that the volume and value of timber proposed for removal during the construction phase is properly quantified and accounted. Forest merchantability specifications and marking/cruising standards should be used to quantify the volume of timber. The value of timber should be appraised utilizing established Forest schedules and procedures. Our staff can provide this information upon request.

We also have a concern regarding utilization of wood that would be felled during construction. We strongly recommend that any wood cut that has a product value (e.g. sawtimber, pulpwood, biomass) and is feasible to remove is removed and utilized appropriately. Not only is waste of

valuable natural resources undesirable, utilization of the wood will have secondary positive economic benefits to local communities.

Additionally, issues relating to existing and/or proposed timber sales and planned prescribed burns are potential project effects on fire and timber resources. These potential effects are economic impacts that should be identified and analyzed in the EIS. We provide forest-specific examples below, and Forest Service staff can provide further information upon request.

We are concerned that the expected creation of a large amount of open vegetation from mature forests would limit future management opportunities in the vicinity of the ROW. The impacts to changes in vegetation age and structure in terms of the acres and percentages of forested stands greater than 40 and 100 years old that would move to a grass/forb condition should be clearly stated. These impacts should be disclosed in context of the objectives for Management Prescription 8.A.1 where other vegetation management activities such as prescribed fire and/or timber harvests are the primary management tools as described in the Forest Plan (pages 3-112 thorough 3-116). This will require an extensive vegetation survey as discussed above that documents age, structural condition, and species by diameter class for all areas potentially impacted by the proposed ROW and any access required during construction. We also recommend that site index should be measured as that information can be useful in preliminary estimates of volume and value of any wood products. We encourage the use of the Forest Service Common Stand Exam methodology. However, any survey that adequately describes the previously mentioned stand characteristics would suffice.

**LAND USE**

The EIS should identify and evaluate potential project effects on all existing special use permits. The proposed study corridor includes power lines, telephone lines, road easements, recreation special use permits and outstanding mineral rights. The analysis should consider any existing features or land uses and mitigation measures for project effects on these features.

The proposed route of MVP crosses the Appalachian National Scenic Trail on the crest of Peter's Mountain on lands that appear to be privately owned. However, this 107-acre tract, along with a limited easement on JNF lands to its southeast, is formally in the process of being donated to the JNF by Appalachian Power Company. This donation is partial mitigation for an earlier energy project, and completion is expected within the next few months. This land should be analyzed in this proposal as if it is JNF land.

**ILLEGAL OHV USE**

The EIS should address illegal use of Off-Highway Vehicles (OHV) on NFS lands, as well as any other illegal activities resulting from increased access to the forest interior. OHVs include all types of motorized vehicles, both street-legal and non-street-legal, including but not limited to all-terrain vehicles (ATVs), utility vehicles (UTVs, side-by-sides), four-wheel-drive (4WD) trucks and jeeps, motorcycles, etc. Corridors such as the proposed pipeline route provide access or otherwise become trespass routes for illegal OHV use. Effects of illegal OHV use, including natural and cultural resource damage, erosion, loss of vegetative cover, increased access to protected areas, illegal hunting, disturbance of legitimate forest users, and other user conflicts,

should be analyzed and discussed. Measures to prevent illegal OHV use on NFS lands should be incorporated into the design of the project and analyzed and discussed in the EIS.

We are particularly concerned about illegal OHV use in the following areas:

- Appalachian National Scenic Trail
- Wilderness, and the vicinity of Wildernesses
- Existing JNF forest roads, especially seasonally or permanently gated roads.

## SCENERY AND RECREATION

We recommend including sections in the EIS on scenery, recreation (dispersed recreation, trails and developed recreation), and the Recreation Opportunity Spectrum (ROS) (USDA 1986); Forest Plan 2004) due to the intrinsic values of these resources which contribute to improved mental, emotional and spiritual health, and physical health. In addition, the extensiveness of potential effects of the proposed pipeline on these resources justifies the need for analyzing project effects on these resources in the EIS.

### Scenery

The Forest Plan provides that Scenic Integrity Objectives (SIOs) (USDA 1996) be met within every management area. The analysis should include visual simulations for all route alternatives on NFS lands as they would be seen from a variety of viewpoints on and off of NFS lands, including roads, trails, observation points, residential areas, scenic trails and roads, railways that carry passenger trains, and rivers used for canoeing and kayaking. The EIS should analyze the project impacts to national forest scenery in terms of achieving the SIOs contained in the Forest Plan. It is critically important that the visual impacts analysis conducted meet the standards and use the definitions of the Forest Service's Scenery Management System.

The Appalachian National Scenic Trail (A.T., Forest Trail #1) is of particular concern due to its national status and Congressional designation under the National Trails System Act of 1968. Of particular note, the specific location of the A.T. with respect to the original proposed MVP Project route should be verified, as it may not be correctly shown on current project maps. It is worth noting that the National Park Service of the U.S. Department of the Interior is the lead federal administrator agency for the entire A.T., regardless of land ownership through the Appalachian Trail Park Office (NPS-APPA); and that management of the A.T. is accomplished through the A.T. Cooperative Management System, including cooperation and coordination among NPS-APPA, the U.S. Forest Service, the Appalachian Trail Conservancy (ATC), and Local A.T. Clubs (including 5 Clubs on the JNF). Local A.T. Clubs are affiliated with ATC, but are standalone organizations.

Also of concern are potential impacts of the project on scenery for recreationists accessing the national forest via U.S. 460 between Blacksburg and Pearisburg, Virginia. Crossing the pipeline appears to be necessary to access from the south and west Jefferson NF developed sites including the very popular Cascade Falls, as well as Blacksburg Shooting Range, Caldwell Fields, Cherokee Flats, Interior Whistlestop, Glen Alton and White Rocks. Viewing the pipeline may impact the scenery viewed by people accessing multiple trailheads including several for the Appalachian National Scenic Trail and for the popular Poverty Creek Trail System, as well as potentially impacting the scenery viewed from those trails. The analysis should consider impacts such as a change in character and scenic integrity of the surrounding landscape from natural

appearing (unaltered or appears unaltered) and rural (slightly altered) to commercial-industrial character (moderately to heavily altered).

Potential impacts to critical protected lands must be identified and analyzed in the EIS, even if the proposed routes occur outside the boundaries of these areas. Therefore, although the currently proposed pipeline routes appear to avoid some of the most critical protected lands on the JNF, including Wilderness (MA #1A), Recommended Wilderness Study Area (MA #1B), National Scenic Area (MA #4F), and Proposed National Scenic Area (MA #4FA), the EIS should contain analyses of project effects on these areas. Two of the alternate routes appear to travel either through or very close to Brush Mountain East Wilderness. The analysis should be based on current and specific legal wilderness boundary descriptions. This includes the exact dimensions of the power line corridor which separates Brush Mountain Wilderness from Brush Mountain East Wilderness.

Other areas of particular concern include areas immediately adjacent to Wilderness, forest roads including both roads open to public motor vehicle use and roads gated against public motor vehicle use either seasonally or longer, and all forest trails in the official USFS database and/or shown on the most recent National Geographic/Trails Illustrated Map # 787, 2015 update.

It is important to note that the Omnibus Public Lands Management Act of 2009 (P.L.111-11) designated new wilderness, wilderness additions, potential wilderness areas, wilderness study areas, and national scenic areas on the JNF. Analysis should be based upon current designations as shown in current USFS GIS data, and not on the 2004 JNF Forest Plan designations alone.

Analysis should also give consideration to the several state scenic byways in the proposal area.

**Recreation**

Project effects on recreation settings should be included in the EIS. In the Forest Service, recreation settings are inventoried and categorized on a spectrum from primitive to urban. This inventory is called the Recreation Opportunity Spectrum (ROS). Potential changes to the inventoried ROS should be evaluated in the EIS for each action alternative.

An analysis of potential project effects on developed recreation sites and/or visitor experience should be included in the EIS. The analysis should include the primary egress and ingress routes to the developed recreation sites and the potential impacts to their experience during project implementation and operations. The analysis should utilize current Forest Service GIS data and other available data for current USFS system trails and roads locations.

The EIS should consider the impacts of construction, operation, and maintenance of the proposed pipeline facilities across National Forest System lands on recreationists using the NFS lands, both in terms of safety and disruptions to developed and dispersed recreation. NFS lands are open to and used by a significant number of recreationists, including those visiting developed recreation sites and official Forest Service system trails (existing and planned). As important are those recreationists hunting, fishing, bushwhacking, and engaging in a nearly limitless list of other dispersed recreation activities which are allowed, managed for, and welcomed on NFS lands, both on and off-trail. These many types of dispersed recreation activities occur throughout the general forest area, and most are not confined to specific management areas or management prescriptions. Recognizing and planning for the temporary disruptions to popular trails, roads (both open and closed), and other access routes is critical. Proposed restrictions on the timing of

proposed project activities to avoid conflict with seasonal recreation activities, including hunting seasons, should be identified. Closures must be minimized.

We recommend the EIS include analyses of project effects on recreational fishing resources and impacts on angling in popular fishing areas, especially trout streams. The analysis should address recreational fishing at both developed and dispersed recreation sites.

All acres of the national forest are inventoried for the ROS with a range of settings on the JNF from Roaded Natural to Semi-Primitive. Within the national forest proclamation boundaries, the intermixed public and private land ownership and density of roads results in the majority of the JNF inventoried with a ROS of Roaded Natural. The places where people can experience the elements and characteristics of semi-primitive settings are limited. If the project would result in loss of Semi-Primitive settings (acres that would be shifted in the ROS inventory from semi-primitive to roaded natural), that would be a concern. The EIS should include an analysis of the impacts of the proposed routes on the inventoried ROS.

The EIS should also identify and discuss any proposed plans to improve opportunities for developed recreation, dispersed recreation and trails.

## HERITAGE RESOURCES

Based on available cultural resource information, no known resources are within the confines of the proposed study corridor. Several cultural anomalies are nearby but should remain unaffected. A cultural resource survey should be conducted throughout the entire Area of Potential Effect within the Jefferson National Forest under the authority of an ARPA permit.

The analysis should consider potential impacts to the full range of cultural resources, including both historic and prehistoric sites. If the analysis identifies potential effects to historic properties, acceptable mitigation can only be achieved through consultation with FERC, the Virginia Department of Cultural Resources, the Advisory Council on Historic Preservation, and the Forest Service.

Federally recognized Tribes must be consulted during federal undertakings. In addition to FERC's responsibility to consult with Tribal governments, the Forest Service shall fulfill the obligation to consult with Tribes when issuing a permit to conduct archaeological investigations on NFS lands.

### Cultural Attachment

The issue of cultural attachment was addressed in the Draft Environmental Impact Statement for the Appalachian Power Company (APCo) 765 kV Transmission Line (March 1996) completed by the Forest Service. Cultural attachment, as defined for that analysis, is the cumulative effect over time of a collection of traditions, attitudes, practices, and stories that tie a person to the land, to physical place, and to kinship patterns. It is distinguished from attachment to lifestyle, views, and rural ambiance. Unlike some other attachments such as attachment to view or a particular lifestyle, cultural attachment is non-transferable and therefore cannot be moved to another place with similar physical characteristics.

Areas of high, medium and low cultural attachment were identified in the DEIS for the APCo 765 kV Transmission Line. A section of Peters Mountain was identified as an area of cultural attachment and the attachment was rated as high/medium on the east side of Peters Mountain on

National Forest System lands. This section of Peters Mountain that was identified with cultural attachment is north of the Proposed Route of the MVP pipeline, but contains sections of the alternative routes. The impacts of the pipeline on the cultural attachment on Peters Mountain will need to be addressed in the environmental analysis for this pipeline.

## Literature Cited


Collins, T. K. 2008. Debris flows caused by failure of fill slopes: early detection, warning, and loss prevention. Landslides 5:107–120.

Eaton, L.S., B.A. Morgan, R.C. Kochel, and A.D. Howard. 2003. Role of debris flows in long-term landscape denudation in the central Appalachians of Virginia. Geology 2003;31;339-342. Available at http://geology.gsapubs.org/content/31/4/339.short. Accessed April 21, 2014.

(Forest Plan.) Revised Land and Resource Management Plan for the Jefferson National Forest. 2004. Available at http://fsweb.gwjeff.r8.fs.fed.us/fstemplate/planning/documents/2004JNFPlan.pdf. Accessed June 10, 2015.

Hack, J. T. and J.C. Goodlett. 1960. Geomorphology and forest ecology of a mountain region in the central Appalachians. USGS Professional Paper 347. Available at http://pubs.er.usgs.gov/publication/pp347. Accessed April 21, 2015.

Morgan, B.A., G. Iovine, P.G. Chirico and G.F. Wieczorek. 1999. Inventory of Debris-Flow and Floods in Lovingston and Horseshoe Mountain, VA: 7.5 minute quadrangles from the August 19/20, 1969 storm in Nelson County, VA. USGS OFR-99-518. Available at http://geology.er.usgs.gov/eespteam/terrainmodeling/ofr99_518.htm. Accessed April 21, 2015.

Orndorff, Zenah and W. Lee Daniels. 2002. Delineation and Management of Sulfidic Materials in Virginia Highway Corridors. Virginia Transportation Research Council, 530 Edgemont Road Charlottesville, VA 22903. Report No. VTRC 03-CR3. Sept. 2002. Available at http://hdl.handle.net/10919/46714. Accessed April 21, 2015.

(USDA) United States Department of Agriculture, Forest Service. 1986. "ROS Book."

(USDA.) United States Department of Agriculture, Forest Service. 1996. National Forest Landscape Management: Volume 2, Chapter 1: "Landscape Aesthetics: A Handbook for Scenery Management." Agriculture Handbook 701. 257 pages.

## APPENDIX A

George Washington and Jefferson National Forest, Virginia
US Forest Service
*Contact: Dawn Kirk (dkirk@fs.fed.us or 540/291-2188)*
*February 2007, Updated April 2010*

# Rapid Bioassessment Protocol (RBP) Overview

Using EPA's Rapid Bioassessment Protocol II (EPA 1989)

### Aquatic Macroinvertebrates

Aquatic macroinvertebrate communities integrate the physical, chemical, and biological components of the riparian ecosystem and have been successfully used as bioindicators to monitor change and impacts (EPA 1989). An analysis of over 900 streams on the George Washington and Jefferson National Forests (GWJNF) has established the current range of conditions for aquatic macroinvertebrate communities found on the GWJNF. A Macroinvertebrate Aggregated Index for Streams (MAIS) (range of scores 0 to 18) incorporates nine ecological aspects (metrics) of the aquatic macroinvertebrate community to evaluate the current condition of a stream relative to others within that ecological section (Smith and Voshell 1997). A Rapid Bioassessment report provides raw data on the taxa collected in addition to the metric scores and the overall MAIS score. Adjectives of "very good" (MAIS = 17-18), "good" (MAIS = 13-16), poor/fair (MAIS - 7-12), and "very poor" (MAIS = 0-6) are added to the report to make it user friendly to non-technical managers and decision makers. The GWJNF uses the MAIS score as "coarse filter" screening tool on some projects to establish current "stream health" and to establish a baseline to evaluate effectiveness of standards, guidelines and mitigation measures in preventing changes and impacts to the aquatic community. When the MAIS score is low or has changed from previous monitoring, biologists examine the individual metric scores and/or raw data to identify limiting factors. The individual metrics often point to a limiting factor or trigger a more rigorous and quantitative monitoring effort.

#### Selecting Sample Locations

If an existing RBP sample site is not present or suitable, select a location in a downstream reach of a channel adjacent to or within the project area. Collect at least one sample prior to the initiation of the management project or activity. Upon completion of the project collect at least one more sample at the same location. The more samples collected in years before and after the project the more effective the monitoring of the activity. Another method to consider is collecting samples upstream of the affected area as well as downstream before and after a project to monitor effects. Properly document every new sample site.

#### Collecting Samples

Equipment/Gear
1 $m^2$ kick net (500 µm mesh), wash bucket, rinse bucket, labels, 70-90% ethyl alcohol, plastic storage bottles, datasheets, labels, pencils, waders.

Field Sampling Procedures

The collection window for macroinvertebrates is from **March 15 to May 30**. Select a reach of stream with one fast and one slow flowing riffle. Always collect the sample furthest downstream first and work upstream to your next location.

1. Select a fast flowing riffle with cobble/pebble substrate. Make sure the riffle is deep enough to sample.
2. Place the net so that the bottom is flush with the bottom of the stream.
3. Mark out an imaginary square meter directly in front of the net.
4. With your hands, was off the rocks within the square meter. After washing the rocks, stir up the remaining sediment to dislodge any remaining macroinvertebrates.
5. Lift the net out of the water. Transfer the sample into the wash bucket. Stand the net inside the wash bucket and rinse it out using the rinse bucket.
6. After rinsing the net, check the net for any remaining macroinvertebrates. If any are found, pick them off and transfer them to the wash bucket.
7. Remove any salamander or fish in the sample as they are needed not for analysis.
8. Repeat the same procedure at a riffle with a slower current.
9. Add the slow riffle sample to the fast riffle sample. Empty the wash bucket into a nalgene bottle.
10. Add a label (include: site ID, date, stream name) and fill the bottle with 70-90% ethyl alcohol until the sample is completely covered. Label the bottle on the outside with the same information on the internal label.
11. Properly document all site information on the RBP sampling datasheet.

Subsampling Procedure (if necessary)

1. Empty contents of sample into the subsampling sieve.
2. Wash off all large rocks, leaves, and sticks into the subsampling sieve and then discard them.
3. Fill the reservoir (pan) with water so it comes halfway up the sides of the subsampling sieve to float the debris.
4. Move the contents of the sample around in the water using your hands, until the sample seems to be evenly distributed in the sieve.
5. Without further disruption, pick the sieve slowly out of the water, so the sample rests fairly evenly on the screen.
6. Using random numbers, select a square.
7. Remove the contents of the square and place them into a petri dish or sorting tray.
8. Remove all the macroinvertebrates from the debris and place them into a sample vial with ethyl alcohol.
9. While sorting, keep a running count of the number of macroinvertebrates.
10. Continue selecting and sorting squares until 200 individuals have been collected. If the target number of macroinvertebrates is reached in the middle of sorting a square, continue sorting and counting the square until all the macroinvertebrates are removed.
11. Discard the substrate when all insects from a square have been removed from it
12. Label the sample vial with a paper label marked with pencil.

References

Environmental Protection Agency (EPA) 1989, Rapid Bioassement Protocols for use in Streams and Rivers: Benthic Macroinvertebrates and Fish. US EPA Report 444/4-89/001. Office of Water Regulations and Standards. US EPA. Washington, DC.

Smith, E.P. and J. Reese Voshell, Jr. 1997. Studies of benthic macroinvertebrates and fish in streams within EPA Region 3 for the development of biological indicators of ecological condition. Part 1 Benthic Macroinvertebrates. Final Report January 24, 1997, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061; Cooperative Agreement CF821462010, 23p.