Mountain Valley Pipeline Project

Docket No. CP16-10-000

Attachment DR4 General 3b2

February 23, 2017

U.S. Department of the Interior
Bureau of Land Management
Jackson Field Office
ATTN: Vicki Craft
Project Manager
411 Briarwood Drive, Suite 404
Jackson, Mississippi 39206-3039

Re: Comments on the Federal Energy Regulatory Commission (FERC) Draft Environmental Impact Statement (DEIS) for the Proposed Mountain Valley Project by the Mountain Valley Pipeline Company, LLC and proposed Equitrans Expansion Project by the Equitrans LP; FERC No. CP16-10-000, CP16-13-000; West Virginia and Virginia

Dear Ms. Craft:

Please see the following response by Mountain Valley Pipeline, LLC (MVP or Mountain Valley) in regards to the Bureau of Land Management's (BLM) comments within the United States Department of Interior's December 22, 2016 comments (Accession number 20161223-5049) on the Federal Energy Regulatory Commission (FERC) Draft Environmental Impact Statement (DEIS) for the Proposed Mountain Valley Pipeline Project (Project):

BLM Comment No. 1 Analyses, reports, and mitigation plans referenced in the DEIS (i.e. draft blasting report) are still in draft form or not yet available.

Mountain Valley Response No. 1: MVP will provide a Blasting Plan for the Project that will be included as an appendix in the forthcoming Plan of Development (POD).

BLM Comment No. 2: A final route with updated maps of the final route. The route is not finalized because the applicant has filed multiple changes or variations to the route since the DEIS was published.

Mountain Valley Response No. 2: MVP will provide an updated alignment sheet and a bore profile in the POD.

BLM Comment No. 3: Clear disclosure of the full Right-of-Way grant width and disturbance area.

Mountain Valley Response No. 3: The following table outlines the disturbance area that will be required to construct and operate the Project for both the Jefferson National Forest and the Weston Gauley. This table will be included in the forthcoming POD.

Land Requirements for the Mountain Valley Pipeline Project on Federal Land

Facility	Land Required for Construction (acres)	Land Required for Operation (acres)
JNF Crossing		
Pipeline [a/]	50.8	21.3
Additional Temporary Workspace	0.8	0.0
Access Roads	31.1	20.4
Weston and Gauley Turnpike		
Pipeline [b/]	0.0	0.0
Additional Temporary Workspace	0.0	0.0
Access Roads	0.0	0.0

a/ Acreage based on 125-foot-wide construction right-of-way and 50-foot-wide permanent right-of-way.
b/ MVP will bore under the approximate 60-foot USACE Weston and Gauley Turnpike property. The total bore length will be approximately 130-feet. bore

BLM Comment No. 4: The results of geotechnical and/or geophysical analysis demonstrating that it is feasible to bore under the Appalachian National Scenic Trail and the Weston Gauley Bridge Turnpike Trail.

Mountain Valley Response No. 4:

Weston Gauley Bridge Turnpike Trail:

Mountain Valley has conducted desktop and field reconnaissance activities to gather geologic information to determine the feasibility for the proposed conventional bore.

The WGBTT bore crossing is located on west-dipping bedrock of the Appalachian Plateau geologic province.[1] Geologic mapping of the Braxton County, West Virginia area, specifically the Burnsville and Orlando quadrangles, has not been completed (see status of geologic quadrangle completion in West Virginia as of April 2016.[2] The state-wide geologic map for West Virginia is interpreted to indicate that the Pennsylvanian-age Monongahela Formation is the ridge-forming sandstone at the WGBTT bore site.[3]

The Upper Pennsylvanian-aged Monongahela Formation consists of non-marine cyclic sequences of sandstone, siltstone, red and gray shale, limestone, and coal. The Formation extends from the top of the Waynesburg coal to the base of the Pittsburgh coal and includes the Uniontown, Sewickley, and Redstone coals. In West Virginia, the thickness of the Formation generally ranges from 170 feet to 300 feet. Sandstone in the Formation is described as medium-light-gray, very fine- to coarse-grained, conglomeratic with rounded quartz pebbles; thin-bedded to massive. Siltstone and shale in the Formation are described as medium- dark-gray to grayish-red, thin to poorly bedded, slightly fissile, silty, carbonaceous, and slightly calcareous. The shales and siltstones of the Formation, commonly known as red beds, are associated with landslides. Coal beds are also found in the Monongahela Formation and are often underlain by underclay, flint clay, or semi-flint clay. These clays are described as medium-gray, grayish-yellow, grayish-red, poorly bedded and brecciated with concoidal fracture and containing fossil root prints.[4]

There are no readily available geotechnical data on the Monongahela Formation. However, it is noted that

[1] See www.wvgs.wvnet.edu/www/maps/pprovinces.htm.
[2] See www.wvgs.wvnet.edu/www/statemap/statemap.htm.
[3] See www.wvgs.wvnet.edu/www/maps/geomap.htm.
[4] See https://mrdata.usgs.gov/geology/state/sgmc-unit.php?unit=WVPAm%3B0.

this geologic rock-type is commonly found capping ridges throughout central-northern West Virginia and southwestern Pennsylvania, and Mountain Valley's personnel have pre-existing experience with pipeline installation in this formation. It is not anticipated that the Monongahela Formation at the WGBTT will present a particularly challenging bore project, particularly given that the approximate bore length is 125 feet, relatively minor in nature.

The Momentum Midstream 36-inch-diameter Stonewall Pipeline crosses under the WGBTT via a conventional bore approximately ¼-mile from the proposed MVP crossing. The Momentum bore was apparently successful as the pipeline is installed and currently operating.

Therefore, based on rock description, Mountain Valley's experience with this type of geology for other pipeline installations, the relatively limited bore length and the completed nearby Momentum-Stonewall bore, the proposed MVP conventional bore under the WGBTT does not appear to present Mountain Valley with a significant risk for completion.

Appalachian National Scenic Trail:

Mountain Valley has completed a geophysical analysis for bring feasibility determination through known geologic mapping combined with field reconnaissance, more fully described in subsequent paragraphs, that has determined the bore path will encounter primarily solid rock within the region that the bore will encounter, which is approximately 90 feet below the ANST. The ANST bore crossing is located in the folded and thrust-faulted Valley and Ridge geologic province, on the crest of Peters Mountain at the border between West Virginia and Virginia. The geologic formations that underlie the Peters Mountain ridgeline are the Devonian age Tuscarora and Rose Hill Formations that dip moderately (30-degrees) to the southeast (note that these formations generally correspond to the White Medina Formation and Red Medina Formation in West Virginia).

The proposed boring would proceed at a 2-degree upward angle from southeast to the northwest receiving pit (from Virginia into West Virginia). The boring would proceed at the prescribed 2-degree angle along the bedrock formations that dip at 30-degrees, and therefore is assumed to penetrate several units of the Tuscarora and Rose Hill formations. The proposed bore is slated to be approximately 600 feet in length between the bore pit and receiving pit, with a maximum depth of approximately 92 feet below ground at the ridgeline.

The Tuscarora and Rose Hill Formations are found throughout the Valley and Ridge province, as thrust faulting has resulted in repeated geologic sections throughout. The Tuscarora is the dominant ridge-former in the vicinity of Milepost 196.3, with the Rose Hill being somewhat less weather resistant than the Tuscarora, but nonetheless also a ridge-former. The following descriptions of these formations were taken from various sources at different locations within the Valley and Ridge province, in order to provide a comprehensive geologic description.

The Tuscarora Formation sandstone and conglomerate units consist of thin to very thick-bedded, white to light-gray, medium to coarse-grained sandstone and strongly welded quartzite. Thin beds of quartz-pebble conglomerate occur in the lower half of the formation. The Tuscarora displays cross-bedding and clay rip-ups. The Tuscarora quartzite is typically the most weather-resistant (aka, hardest) rock-type in the Valley and Ridge province of southern West Virginia and southwestern Virginia. As a result, it plays a prominent role in the shaping of the local topography and is well exposed in numerous mountain outcrops.

The Tuscarora conformably contacts the Rose Hill Formation at the top of the last quartz arenite of the Tuscarora. The Rose Hill Formation is composed of deep-red hematitic sandstones, brown to tan medium-

grained sandstones with clay galls, and red and green sandy and micaceous shales. The shales and hematitic sandstones are distinctive and permit ready identification of the unit. The hematitic sandstone is bounded above and below by greenish-gray to red shale with thin gray sandstone interbeds, some of which have abundant brachiopod fossils. Ripple marks are common on the sandstone beds.

The Tuscarora sandstone and conglomerate units can be quite hard, particularly where it demonstrates low-grade metamorphism to a welded quartzite.

Review of the Tuscarora Formation core shows intervals of white and gray well-cemented sandstone and conglomerate layers, which form the most weather-resistant (i.e., ridge forming) units in the formation in the Appalachian basin, including the vicinity of the MVP bore at MP 196.3. However, silt and shale partings, joints and fractures are also common to the Tuscarora, which would reduce the overall resistance to boring through the Formation.

The Rose Hill Formation is generally observed to be less weather-resistant (i.e., less hard) than the Tuscarora, with more frequent occurrences of shale and siltstone units. The hematite-cemented sandstone units of the Rose Hill are relatively hard compared to the Formation shale and siltstone units, but are generally less indurated than the Tuscarora Formation. Therefore, the Tuscarora quartzite is the dominant ridge-forming unit in the region surrounding the MVP bore at Milepost 196.3.

Conventional or Auger boring is one of the most popular trenchless methods and has been used for more than 50 years. It consists of a jacking pipe that is advanced ("jacked") and a rotating cutting head that is attached to the leading edge of the auger string. The spoil is transported back by the rotation of auger flights within the steel jacking pipe. Auger boring can be used to install pipes ranging from 4 to 60 inches in diameter. Drive lengths for typical auger boring projects range from about 40 to 600 feet. Auger bores can be successfully completed in a range of soil types from dry sand to firm clay to hard rock. Boulders and cobbles up to one third of the diameter of the installed pipe can be accommodated. Mountain Valley has consulted with its trenchless technology consultant, RK&K Engineering, with site specific information for the design and execution of installing the pipeline under the ANST through a trenchless technology, such as Conventional Boring. Mountain Valley is very confident in a successful pipeline installation at this location with trenchless technology. In the unlikely event that the conventional boring method fails; however, Mountain Valley has identified the steps to be implemented as part of a prudent contingency planning process. Selection of the correct contingency action would depend on the specific circumstances of the bore failure; however, other trenchless techniques are available and will be utilized through the Contingency Plan for the Proposed Crossing of the Appalachian National Scenic Trail.

BLM Comment No. 5: Contingency plans for potential failure of the direct bore method under the Appalachian National Scenic Trail or the Weston Gauley Bridge Turnpike Trail.

Mountain Valley Response No. 5: Mountain Valley's Contingency Plan for the Proposed Crossing of the Appalachian National Scenic Trail was filed to the docket on February 9, 2017 and is referenced as Attachment DR4 Alternatives 8. The contingency plan in this document also applies to the Weston Gauley Bridge Turnpike Trail, though that crossing is much shorter than the ANST crossing and is not likely to require contingency action.

If the conventional bore fails, Mountain Valley will first shift the bore entry ten feet to the east or west of the original bore entry and attempt another bore. Should a reattempted conventional bore be deemed unsuccessful, Mountain Valley will employ one of two alternative trenchless bore methods discussed in the Contingency Plan.

BLM Comment No. 6: Analysis of project-induced landslides and specific data on steep slope cuts and fills including analysis of catastrophic hazards related to steep slope construction.

Mountain Valley Response No. 6: Mountain Valley filed its Landslide Mitigation Plan (LMP) and Site-Specific Design of Stabilization Measures in Selected High-Hazard Portions of the Route of the Proposed Mountain Valley Pipeline Project in Jefferson National Forest to the FERC docket on December 22, 2016. These documents discuss the effects of steep slope construction and Mountain Valley's proposed landslide mitigation measures throughout the project and within National Forest System lands. An updated LMP will be filed to the docket in February 2017.

BLM Comment No. 7: The results of feasibility studies for water body crossings on federal lands.

Mountain Valley Response No. 7: Mountain Valley has determined it is feasible to cross all water crossings using an open cut – dry ditch method. Water will be diverted around the ditch utilizing a dam and flume or a dam and pump method.

Additional information concerning stream crossing feasibility will be included in a Least Environmentally Damaging Practicable Alternatives (LEDPA) analysis as part of its application for coverage under the U.S. Army Corps of Engineers Nationwide 12 permit. MVP plans to provide the LEDPA analysis to the BLM in March 2017.

BLM Comment No. 8: Visual Resource Survey methodology is either incorrect or improperly explained. A clear description of how the visual impact assessment was conducted. Visual impacts disclosed in detail, not simply listed.

Mountain Valley Response No. 8: Mountain Valle prepared a visual impact analysis ("VIA") which contains a description on how the assessment was conducted. The VIA was submitted with the U.S. Forest Service (USFS on February 18, 2017.

BLM Comment No. 9: Meaningful analysis and a visual impact assessment of the stated alternative of open cut trenching the Appalachian National Scenic Trail. Include a detailed analysis of the potential "substantial surface disruption of the ANST and surrounding area during days to weeks of construction, with likely permanent effects to the landscape during operations." DEIS at 3-46. Provide proof of consultation with the National Park Service regarding this alternative.

Mountain Valley Response No. 9: Mountain Valley created a Contingency Plan for the Proposed Crossing of the Appalachian National Scenic Trail that removed the open-cut crossing technique as an alternative.

BLM Comment No. 10: Visual impact assessments showing that adequate screening can be left on each side of the bore for users of the Weston Gauley Bridge Turnpike Trail and proof of coordination with the U.S. Army Corps of Engineers.

Mountain Valley Response No. 10: The visual impact assessment was submitted to the U.S. Army Corps of Engineers (USACE) and BLM on February 15, 2017. In regards to providing proof of coordination with USACE, MVP has continued to keep the agency informed on Project status. USACE has issued concurrence to the BLM for the MVP crossing of the Weston Gauley Bridge Turnpike Trail. Consultation is pending until the visual analysis and updated Plan of Development are submitted.

BLM Comment No. 11: Meaningful analysis of the alternatives to crossing waterbodies with a dry open-cut method.

Mountain Valley Response No. 11: Mountain Valley Pipeline evaluated 17 waterbody crossings using trenchless methods. The two trenchless methods considered for the crossings are horizontal directional drilling (HDD) and conventional bore (also known as jack and bore or auger bore) installation. Based on site characteristics, the geometry of each crossing, and the advantages and disadvantages of each crossing method, Mountain Valley assessed the feasibility of each trenchless method for the crossings. Further information was submitted to FERC within Attachment DOI-40.

Mountain Valley considered trenchless waterbody crossing methods. Below is a discussion surrounding each and why they are inherently riskier than the dry open-cut method.

Horizontal Bore Crossing Method (Conventional Auger Bore): Waterbodies directly associated with or immediately adjacent to railroads or major roadways may be crossed using a horizontal boring machine as part of railroad or road crossing. This method entails excavation of two pits, one on each side of the waterbody and feature to be crossed. The boring machine is lowered into one pit and then a horizontal hole is bored for the length of crossing. The pipeline section is pushed through the bore hole.

There are some disadvantages with auger boring. First is the need to construct launch and receive pits. The launch pit where the jacking machine is located can be 4 to 10 feet wider and 10 to 25 feet longer than the pipe section being installed. Also, auger boring requires accurate initial setup of equipment to ensure installation of the pipe at the proper depth and grade. When the bore pit excavations are below the water table, groundwater infiltration is possible, depending on the local soil properties. The stability of the bore pit wall will depend on the excavated soil properties and the infiltration rate of the groundwater. The bore pits will likely require significant dewatering measures due to the depth of the pits at or below stream beds. When ground water level must be controlled, a dewatering system that is compatible with the properties, characteristics, and behavior of the soils is required. The ground water infiltration may be controlled by sealing the bore pits and by using dewatering pumps. If the bore pits cannot be adequately dewatered or sealed, poor bore pit stability could have a negative impact on boring operations. This would also pose a risk of failure to boring that is likely insurmountable as well as a safety risk to construction staff. Therefore, Mountain Valley does not plan to use this crossing methodology for any waterbody crossing.

Direct Pipe © is a trenchless installation method that combines features of HDD and utilizes a Microtunnel Boring Machine connected to the leading edge of an assembled length of pipe and a pipe thruster to jack the pipeline into place, similar to, but in the opposite direction of HDD pullback operations. As with microtunneling, the slurry collection/recycling system and pressure control features at the excavation face minimize the potential for drilling fluid loss. Direct Pipe © requires a large work area on the launch side of a proposed crossing to accommodate the pipe thruster, supporting equipment and long lengths of welded product pipe. The pipe thruster requires that structural steel, including piles, be installed to support the operation. The large work area equates to a much larger environmental impact area or limit of disturbance than open trench construction. Direct Pipe © also requires the use of a slurry for the process, which inserts the use of bentonite or clay particles to the environment to be controlled and disposed of. Due to the associated increase of environmental impacts as a result of a large impact area on the launch side and employment of a slurry use and disposal, MVP does not intend to utilize Direct Pipe © technology for the waterbody crossings.

HDD method: This method allows for trenchless construction across an area by pre-drilling a hole well below the depth of a conventional pipeline lay and then pulling the pipeline through the pre-drilled borehole.

The primary advantage of the HDD method is minimal planned disturbance of the surface between the entry and exit points of the HDD (limited to the temporary deployment of telemetry cable and water pipe),

provided there is reasonable access to the entry and exit points for the drilling rig and fluids handling equipment.

Disadvantages for HDD are the amount of workspace required and the potential for inadvertent return. For a HDD, it is necessary to prefabricate a section of pipe aboveground that is equal to the length of the HDD. Existing surface features such as roads and railroads, could restrict the length of the prefabricated section to less than that of the HDD length. Therefore, the HDD method requires specific site conditions. Furthermore, commonly accepted industry practice of a bending radius of 100 times the pipe outer diameter, the allowable bending radius for 42-inch steel pipe is 4,200 feet. This is a typical conservative industry rule of thumb and is not based on any actual stress analysis. Based on the stress analysis for the pipe grade and wall thickness used for the MVP Project, the minimum bend radius without over stressing the pipe is 1,510 feet. For assessment purposes, an allowable maximum pipe bend radius of 2,500 feet was used for HDD crossings, with some exceptions made on a case by case basis. An HDD with an entry angle of 12 degrees, exit angle of 6 degrees and a bend radius of 2,500 would require a minimum length of at least 1,287 feet if the terrain was flat. Changes in site elevation from entry to exit may cause the minimum required length to change. A bend radius of 2,500 feet is the max radius for a 42-inch-diameter pipe, but was necessary to traverse the crossings within the MVP alignment provided. Use of a 2,500-foot radius will increase the risk associated with successfully completing the crossings by HDD, utilizing analysis based on pipeline depths of at least 25 feet below rivers for HDD construction. The pipeline depth for HDD was based on minimizing the potential for inadvertent returns.

Another disadvantage of the HDD method is the possibility of an inadvertent return, when the pressurized drilling mud in the borehole finds a fracture or weak area and the drilling fluids discharge into the waterbody and other areas.

Due to environmental risks associated with an inadvertent return and the design limitations inherent with the size of the pipe and the difficult terrain, often not allowing adequate pullback space, it was determined that the HDD method is not preferable at any location along the MVP route. Therefore, MVP will not utilize the HDD at any location along the proposed route, including in areas of karst terrain.

BLM Comment No. 12: The results of formal consultation with the United States Fish and Wildlife Service (USFWS). Consultation with the USFWS is inadequately characterized, incomplete, and insufficient with respect to several species, including Threatened and Endangered Species and Migratory Birds. Address the several outstanding surveys that preclude effects determinations and impacts analysis.

Mountain Valley Response No. 12: MVP has engaged the USFWS Field Offices in Gloucester, Virginia and Elkins, West Virginia in informal consultation under Section 7 of the ESA since Project inception. This process has involved coordination via email, telephone, and in-person meetings. MVP has conducted field surveys and submitted corresponding reports. In February 2016, MVP submitted a first draft of the biological assessment to USFWS for review and comment. MVP attended a meeting with both offices of USFWS on April 7, 2016 to discuss the document. USFWS provided a variety of recommendations, which were incorporated into a revised draft that MVP submitted to USFWS in October 2016. On December 8 2016, MVP attended another meeting with both offices of USFWS to discuss the revised draft. MVP is currently awaiting written comments from USFWS on that document. Once those are received, MVP will submit a final Biological Assessment (BA) to FERC, for submission to USFWS, to initiate formal consultation under Section 7.

BLM Comment No. 13: BLM Concerns: The results of final cultural resource surveys and documentation of consultation with agencies regarding sites potentially eligible for listing in the National Register of Historic Places.

Mountain Valley Response No. 13: The following table includes individual Phase 1 Archaeological Investigation Reports and their current status:

Reports	Report Submitted to USFS	Report filed with FERC	Comments from USFS	Comments filed with FERC
Phase I Archaeological Investigation in Jefferson National Forest, Monroe County, West Virginia, and Giles and Montgomery Counties, Virginia ARPA Permit BBW433302T	5/16/2016	7/18/2016	5/24/2016	2/17/2017
Phase I Archaeological Investigation, FS78 Modification Survey Boundary (Mystery Ridge adjustment), ARPA Permit BBW433302T – Amendment 1	10/10/2016	10/27/16	None received to date	Not Filed
Phase I Archaeological Investigation, Craig Creek to Brush Mountain Route Survey ARPA Permit BBW433302T – Amendment 2	11/21/2016	12/22/2016	None received to date	Not Filed
Phase I Archaeological Investigation Report, Craig Creek to Brush Mountain Route Survey ARPA Permit BBW433302T – Amendment 3 (Mystery Ridge adjustment and Craig Creek spur)	2/3/2017	2/17/2017	None received to date	Not Filed
Phase II Archaeological Investigations (Sites 44GS0238, 44GS0240, 44GS0241, 44GS0242, 44GS0243, 44GS0244, 44GS0247, 44GS0251, and 44MY0577)	TBD	TBD	None received to date	Not Filed
Visual Impact Analysis for the Jefferson National Forest (including the Appalachian National Scenic Trail	2/17/2017	2/17/2017	Pending USFS review and comment	Pending USFS review and comment
Visual Impact Analysis for the Weston & Gauley Bridge Turnpike	2/17/2017	2/17/2017	Pending USACE review and comment	Pending USACE review and comment
VOL I Combined Archaeological and Architectural Phase I Survey**,** Wetzel, Harrison, Doddridge, and Lewis Counties, West Virginia **(including Weston & Gauley Bridge Turnpike)**	6/13/2016	6/24/2016	7/14/2016	7/18/2016
Criteria of Effects Report, Wetzel, Harrison, Lewis. Braxton, Nicholas, Fayette, Summers, and Monroe Counties, West Virginia **(including the Weston & Gauley Bridge Turnpike)**	2/17/2017	2/17/2017	Pending SHPO review and comment	Pending SHPO review and comment

BLM Comment No. 14: Soil and erosion plans and mitigation measures on federal lands are needed.

Mountain Valley Response No. 14: On December 22, 2016, Mountain Valley submitted (filed on docket) updated erosion and sedimentation control plans, including restoration plans for USFS property.

BLM Comment No. 15: A mine pool mitigation plan is needed.

Mountain Valley Response No. 15: Mountain Valley does not expect any mine pools to be crossed by the pipeline in Virginia. The coal mines identified by Mountain Valley in the Virginia portion of the proposed alignment are inactive, historic, shallow, small coal seam excavations that do not have an extensive subsurface network and do not present a high likelihood of being flooded or retaining a significant water resource.

Mountain Valley conducted geotechnical evaluations in potential mine pool areas for this Project in West Virginia. A copy of the evaluation was filed to the docket as Attachment DR3 General-4 on October 13, 2016 (see Attachment H to that filing). Three mine pool boring locations were selected in areas mapped as potential mine pools by the West Virginia Mine Pool Atlas. The three test boring locations were selected based on their proximity to these potential mine pools and at locations where the surface elevation of the proposed route is closest to the elevation of the potential mine pool. Mountain Valley included the depths of the potential mine pools in its April 21, 2016 response to the FERC's March 31, 2016 data request, Resource Report 2, Request No. 19(a). Maps of the boring locations are included in Attachment DR3 General-4. The borings were advanced to a depth of 30 feet below the surface elevation of the low point of the proposed route in the area since the pipeline trench is not anticipated to be deeper than approximately 10 feet below ground surface.

The test borings did not intercept any voids. Although small quantities of groundwater were intercepted by two of the three test borings, laboratory test results (which are included in the report) indicated that the water encountered was not impacted by impurities typically encountered in mine pools and are not the result of mine pools. Based upon the results of this evaluation and prior desktop analysis, Mountain Valley does not anticipate intercepting mine voids or mine pools during Project construction.

On February 17, 2017, Mountain Valley submitted the Mine Pool Mitigation Plan to the docket as Attachment DR4 Geology 12 and includes the plan that will be implement if a mine pool is discovered during construction activities. The plan also represents various scenarios that could be encountered and the solutions to resolve any issues.

The following responses are in regards to the BLM Comment Table within the December 22, 2016 DOI Comments.

BLM Comment No. 16: Archeological work was called into question at the scoping meetings. There have been many native American sites presented to the staff by the public that were ignored by the sponsor's archeologist. At the Rocky Mount meeting a landowner presented the staff with pictures and documentation of a unique and rare stone sundial that was missed by the archeological team of the sponsor. Please provide documentation that these sites were incorporated in the analysis.

Mountain Valley Response No. 16: On November 2, 2016, Alan O'Hara wrote to FERC regarding a "Native American sundial" on his property. While Mr. O'Hara's tract is near MP 248.7, the specific location it is not crossed by the Project and will not be disturbed. The southeastern edge of Mr. O'Hara's property is 350 feet northwest of the edge of the direct Area of Potential Effects. The Virginia State Historic Preservation Office V-CRIS database shows no previously identified archaeological sites on Mr. O'Hara's land and the specific location of the purported resource about which he is concerned is not known. This area was not deliberately ignored or inadvertently missed during surveys, it was merely excluded because the Project does not impact said location.

In regards to instances where cultural surveys are necessary due to the potential for disturbance, Mountain Valley has established cultural resource survey protocols with the West Virginia State Historic Preservation Office, Virginia State Historic Preservation Office, and the U.S. Forest Service (USFS). Mountain Valley has followed the requirements as outlined in those protocols and surveyed all available areas in which surface disturbance is anticipated. Cultural surveys within the area of the Weston and Gauley Bridge Turnpike have been completed yielding no additional resources. Cultural surveys on the Jefferson National Forest are ongoing and being conducted in close coordination with the USFS archaeologist. Mountain Valley has also developed a Plan for Unanticipated Historic Properties and Human Remains, West Virginia and Virginia. This plan was initially provided to WVDCH and VDHR on February 19, 2015, for their review and comment. The plan outlines the steps that MVP will take in the event that previously unknown

archaeological resources or human remains are discovered during the course of project construction. The plan has been updated to reflect comments of WVDCH and VDHR and was filed to the docket.

BLM Comment No. 17: This sentence discusses the 50-foot-wide operational easement (ROW). Would there be initial additional disturbance surrounding this ROW? If so, amount should be stated.

Mountain Valley Response No. 17: Mountain Valley would generally use a 125-foot-wide construction right-of-way to install the pipeline in uplands and a 75-foot-wide construction right-of-way through wetlands.

The width of the construction right-of-way for the Equitrans Expansion Project (EEP) pipelines would vary between 85 feet and 125 feet in uplands, depending on the segment (see DEIS Table 2.3-2). Equitrans would use a 75-foot-wide construction right-of-way to cross wetlands.

BLM Comment No. 18: This sentence states that forests will be the only resource that would be adversely affected. If forests are adversely affected, T&E species and Birds of Conservation Concern would also subsequently be adversely affected. Please provide clarification on the linkage of these resources and how that influences the determination of affect.

Mountain Valley Response No. 18: Forests are connected ecosystems, with adverse effects to forests generally translating to effects to associated wildlife. The DEIS Executive Summary describes this interrelationship of forests and wildlife impacts (ES-5 to ES-6), and this summary is supported by a robust discussion of that interrelationship and impacts to wildlife in Section 4.5.2.

BLM Comment No. 19: There seems to be inconsistency with the 36 MLVs and the total of the MLVs from the descriptions in the next page. Please provide corrections or clarification.

Mountain Valley Response No. 19: Mountain Valley intends to construct 36 MLVs and it is likely that the DEIS text should be updated to more clearly reflect the plans.

BLM Comment No. 20: This methodology section could be improved by discussing all the aspects of determining affect under NEPA: Context, timing, duration and intensity. You provide good thresholds for duration. For intensity, you define the threshold for a significant impact as having a substantial effect, which is circular. Consider providing more detail (and reference to NEPA) on what constitutes significance/substantial effect. Timing may not apply to all resources, but it could be an Important part of the analysis for affects to biological resources, particularly (ex. Noise Impacts during breeding season or hunting season, or the impacts of winter construction). Consider either adding thresholds for timing in the overall methodology section or in the resource, but at least mention it as an indicator of effect. Because thresholds for context, timing, duration, and intensity can very resource by resource, consider providing general guidance on these thresholds in this overview, and then specific thresholds for each resources. For example, the threshold for significance for cultural resources could be tied to whether the criteria for eligibility to listing as a historic property is diminished. Context could be whether it is an impact that is specific to a site or whether impacts specific to a site have a regional effect (destroying a small camp is different than destroying a regional trading site). Each resource needs to clearly state the potential effect, including the effect on context, timing, intensity and duration. Example: the short term, localized effects to vegetation during and shortly after construction would not result in a significant impact, with the implementation of the Vegetation Management Plan (POD Appx. C).

Mountain Valley Response No. 20: To assist FERC with this issue, Mountain Valley notes that the timing and intensity of impacts to federally listed species are covered in the BA. For example, impacts to the federally endangered Roanoke logperch are categorized by the time of year in which they occur, since the

species needs differ during the various phases of its annual reproductive cycle. A threshold for defining what intensity constitutes a significant level of sedimentation impact is 10% above baseline; this was based on best available science from peer reviewed literature. Similar methodologies have been applied for all species throughout the BA.

The timing and intensity of impacts to migratory birds are considered within the Migratory Bird Conservation Plan. Tree-clearing activities during the nesting season are most relevant to forest birds, whereas construction activities during the nesting season are most relevant to scrub-shrub or ground-nesting species. Similar analysis is contained for various bird and forest impacts throughout the Migratory Bird Conservation Plan.

BLM Comment No. 21: Consider adding the following bullet of measures to include in the Blasting Plan: Provide landowners (not just owners of structures) within .25 miles of any blasting activity with 24 hours' notice of blasting activity

Mountain Valley Response No. 21: Mountain Valley will notify USACE or USFS prior to any blasting occurring within 0.25 mile of USACE or USFS property. Mountain Valley will amend the Blasting Plan to notify the federal agencies when blasting will occur within 0.25 miles of USACE or USFS property. For the remainder of the project, Mountain Valley will follow standard notification protocol as described in the DEIS (Section 4.1.2.7).

BLM Comment No. 22: This statement acknowledges the lack of information within the analysis. If the soil composition changes the measures needed to address the soils will change too, therefore collaboration with the FS is needed in order to corroborate the analysis.

Mountain Valley Response No. 22: Mountain Valley conducted soils testing in the areas of the JNF in consultation with Tom Bailey of the USFS and submitted a report on April 13, 2016, for USFS review and comment. Mountain Valley has followed up with Mr. Bailey to see if additional testing is required for route revisions. Mountain Valley is awaiting a USFS response.

BLM Comment No. 23: Mountain Valley can't wait to discover a mine pool in order to come up with a mine pool mitigation plan, this plan has to be disclosed within the EIS and not after. Please indicate that BLM will require MVP to submit a Mine Pool Mitigation Plan.

Mountain Valley Response No. 23: Mountain Valley Pipeline has developed a Mine Pool Mitigation Plan (Attachment DR4 Geology 12) that MVP will implement if a mine pool is discovered during construction activities. The Plan represents various scenarios that could be encountered and the solutions to resolve any issues.

BLM Comment No. 24: Waterbodies crossed. Using dry open-cut method. Please provide options and assessment of other ways to cross waterbodies. Why can't we require HDD at all water crossings to prevent any chance of environmental damage. Cheap is not the best way.

Mountain Valley Response No. 24: The main types of waterbody crossing methods are described as follows:

Open-Cut Crossing Method: An open-cut waterbody crossing is conducted using methods similar to conventional upland open-cut trenching. Open-cut crossing method can be implement by either wet-ditch or dry-ditch crossings. Open-cut dry-ditch methods are completed in a controlled manner, such that all aspects of the construction process are visible during the installation. Adjustments can be made throughout the process address potential issues, minimizing potential for adverse impacts to the resource and

downstream users. The pipeline trench is excavated across the waterbody, followed by installation of a prefabricated segment of pipeline, and backfilling of the trench with native material. For wet-ditch construction, stream flow is not isolated from the construction activities, and upland methods are used for crossing of the waterbody. Mountain Valley proposes no wet-ditch open-cut methods for any waterbodies along the project area. All open-cut crossing methods would be conducted in accordance with all time-of-year restrictions for instream construction activities, limiting use of equipment within the waterbody or use of an equipment bridge as per the FERC Procedures. Erosion and sediment control is conducted through use of turbidity curtains and sediment booms. In a dry-ditch open-cut crossing method, stream flow is conveyed around or through the work area using the Dam and Pump, flume or cofferdam methods described below. For waterbodies with no flow present at the time of crossing installation, no streamflow diversion is necessary and the crossing would be installed using standard upland construction procedures. Per FERC guidelines, this would only be done when the Environmental Inspector verifies that water is unlikely to flow between initial stream disturbance and final stabilization of the feature.

Dam-and-Pump Crossing Method: Temporary dams, typically constructed using sandbags and plastic sheeting, are installed upstream and downstream to isolate the work area from streamflow. Following dam installation, pumps are used to dewater and transport the stream flow around the construction work area and trench. Secondary or backup pumps are maintained "in the ready" onsite in the event a mechanical issue arises during crossing installation. Pump outlets are protected with riprap or other energy dissipation device to minimize scour potential during operation. Isolating the crossing area maintains downstream flow beyond the work area and minimizes potential downstream sedimentation, while providing a controlled construction area. Any water encountered in the work area will be removed using a pump and dewatered to a stabilized upland area adjacent to the waterbody using a pumped water filter bag. The crossing will be completed as a continuous activity from dam and pump installation to stabilization of the stream bank. Trenching and backfilling must be completed and the disturbed stream banks must be stabilized before the dam and pump is removed. Spoil piles will be kept a minimum of 10 feet from the water's edge and will be contained by E&S controls. Pumps will be placed in secondary containment as required by the projects SPCC plan.

Flume Crossing Method: The flume crossing method is typically used in combination with an equipment crossing and starts with the installation flume and cofferdam structure. The flume is sandbagged at each end to direct the stream flow through the flume, and the outlet is protected with riprap or other energy dissipation device to minimize scour potential during operation. The flume crossing must be made operational prior to the start of construction in the stream. No material will be removed from the stream until the flume is in place and functioning to convey streamflow around the proposed work area. The pipeline trench can then be excavated (while dry), the pipe installed and backfill completed with the flume in place. This minimizes potential sedimentation of downstream areas. Any water encountered in the work area will be removed using a pump and dewatered to a stabilized upland area adjacent to the waterbody using a pumped water filter bag. The flume crossing will be completed as fast as practicable from flume installation to stabilization of the stream bank. Trenching and backfilling must be completed and the disturbed stream banks must be stabilized before the flume crossing is removed. Spoil piles will be kept a minimum of 10 feet from the water's edge and will be contained by E&S controls. Pumps used in the trench dewatering will be placed in secondary containment as required by the projects SPCC plan.

Cofferdam (portadam) Crossing Method: This method may be used for crossing channels 10 feet or wider, and will be designed to maintain streamflow. A cofferdam will be constructed within the construction ROW (sandbags, steel plates, inflatable bladder, etc.), enclosing approximately 60% the streambed in a semi-circle. The cofferdam would seal tightly to the streambed to minimize water from entering the construction area while diverting streamflow within the existing stream channel and around the work area. Pumps will be utilized to remove groundwater from the excavations. All earth disturbance will occur in the dry area behind the cofferdam. The pipe will be installed and the disturbed area backfilled and stabilized. Sediment

barriers at the waterline should be in good working order before the cofferdam is removed. Stabilization will be with either native rock, riprap or vegetation. The cofferdam is then set up from the opposite bank and extends far enough to include the tie-in point in mid-stream. The remainder of the pipe is installed and the tie-in weld is made. Clean up follows the same procedures described above. Spoil piles will be kept a minimum of 10 feet from the water's edge and will be contained by E&S controls. Pumps used in the trench dewatering will be placed in secondary containment as required by the projects SPCC plan.

Conventional Bore Crossing Method: Waterbodies directly associated with or immediately adjacent to railroads or major roadways may be crossed using a conventional boring machine as part of railroad or road crossing. This method entails excavation of two pits, one on each side of the waterbody and feature to be crossed. The boring machine is lowered into one pit and then a horizontal hole is bored for the length of crossing. The pipeline section is pushed through the bore hole. This method is typically not feasible in areas where the adjacent topography exceeds a 30% slope. This is due to the size of excavation necessary to accommodate installation of the pipeline equipment, boring machine and support equipment. Also, worker safety becomes an issue when the topography exceeds a 30% slope. E&S controls would be installed in accordance with the Project's approved ESC Plan.

Direct Pipe ©: Direct Pipe © is a trenchless installation method that combines features of horizontal directional drilling (HDD) and utilizes a Microtunnel Boring Machine connected to the leading edge of an assembled length of pipe and a pipe thruster to jack the pipeline into place, similar to, but in the opposite direction of HDD pullback operations. As with microtunneling, the slurry collection/recycling system and pressure control features at the excavation face minimize the potential for drilling fluid loss. Direct Pipe © requires a large work area on the launch side of a proposed crossing to accommodate the pipe thruster, supporting equipment, and long lengths of welded product pipe. The pipe thruster requires that structural steel, including piles, be installed to support the operation. The large work area equates to a much larger environmental impact area or limit of disturbance than open trench construction. Direct Pipe © also requires the use of a slurry for the process, which inserts the use of bentonite or clay particles to the environment to be controlled and disposed of. Due to the associated increase of environmental impacts as a result of a large impact area on the launch side and employment of a slurry use and disposal, MVP does not intend to utilize Direct Pipe © technology for the waterbody crossings.

Horizontal Directional Drill Crossing method: Horizontal directional drilling (HDD) is a method that allows for trenchless construction across an area by pre-drilling a hole below the depth of a conventional pipeline lay and then pulling the pipeline through the pre-drilled borehole. Following establishment of the pilot hole, multiple reaming passes may be necessary to establish the needed diameter to facilitate installation of the pipeline. Duration for implementing an HDD varies on several factors, including but not limited to: length of bore (distance), bore diameter, geology present at the site, equipment capacity, occurrences of inadvertent returns containment/cleanup, etc. An HDD installation can be completed in as little as a few weeks or extend for several months. In the event of a successful HDD installation, there is minimal (if any) planned disturbance of the surface between the entry and exit points. Any disturbance in these areas would be limited to the temporary deployment of telemetry cable and water pipe), provided there is reasonable access to the entry and exit points for the drilling rig and fluids handling equipment.

An HDD installation requires significant support structure including increased workspace for setup and operation, transportation of drilling materials (water trucks, waste trucks for disposal of drilling mud/drill cuttings, drilling supplies, etc.), and expanded areas for monitoring/inspection for detection of inadvertent returns. The boring activity requires use of drilling fluids to lubricate the drill bit/reamer as well as to transport drill cuttings back to the drill rig for processing and disposal. Drilling mud typically consists of bentonite clay and additives to seal the bore hole and increase capacity of the mud to transport cuttings. Drilling mud is pressurized into the bore hole through the drill bit which then forces the spent drilling

mud/cuttings back to surface through the cavity created by the drill. Since this is not a fully contained system, potential exists for drilling mud/cuttings to migrate away from the bore path along fractures or other voids in the strata through which the HDD is being installed. Migration of drilling mud may result in an inadvertent return (IR) of drilling mud to surface by following existing fractures, voids, groundwater flow paths. Rarely does an IR occur within the construction ROW and in many cases, IRs have occurred several hundred feet either side of the bore path. If an IR occurs to an upland area, typically it can be contained and managed with minimal adverse impacts to the affected area if early detection of the IR occurs. If the IR occurs to a surface water, water well or spring or wetland habitat, adverse impacts can occur as the IR is moved along the flow path of the waterbody. Drilling mud, when released to waters, can quickly spread and drop out of solution resulting in heavy sedimentation deposition along the flow path. This would have an adverse impact on aquatic species as result of the sediment deposition and increased turbidity. Impacts to water supply wells and springs could result in increased turbidity, discoloration, taste impacts, decreased yield and water system operation.

MVP is confident that in most instances, the open-cut dry ditch methodology provides the least environmentally damaging crossing for the following reasons:

- Creates a safe and controlled construction environment when compared to HDD or conventional bore. Numerous issues - such as IR, hole failure, pipe breaks, pipe deflections can occur with HDD or conventional bore. The open-cut method allows the operator to work in an open controlled environment, minimizing the duration of the crossing and reducing the potential for uncontrolled discharge (i.e. IR).

- Enables that all equipment can be monitored and any unforeseen events can be properly and immediately addressed.

- Decreases the potential for downstream impacts by isolating the work area and maintaining downstream flows.

- The crossing of the resource is much quicker when compared to a Conventional Bore or HDD. Less time spent at the resource crossing decreases the potential for resource impacts due to extended construction times.

- The temporary impacts are contained to the work area and there is not a risk for impacts occurring outside of the limits of disturbance due to an IR.

- Specialized equipment, such as boring or drilling machinery, is not required.

BLM Comment No. 25: <u>The EIS should disclose the measures and procedures that will minimize or avoid impacts on Tier Ill and Wild Natural Trout Streams.</u>

Mountain Valley Response No. 25: In West Virginia, advanced erosion and sedimentation control BMPs will be incorporated at the Wild Natural Trout Streams and Tier III streams. These measures include applying permanent seeding and mulching within four days of reaching final grade; temporary seeding and mulching within four days if the areas will not be disturbed for more than 14 days; and using one of three reinforced filtration devices (RFDs) at these crossings. The RFD BMPs include triple-stacked compost filter sock, super silt fence, or belted silt fence.

In Virginia, appropriate BMPs will be implemented to avoid impacts to all waterbodies and wetlands, including Tier III and Wild Natural Trout Streams. BMPs will be implemented in accordance with the terms

and conditions contained in MVP's Annual Standards and Specifications as well as the Project site-specific erosion and sedimentation control plan as reviewed and approved by the VADEQ (pending). In addition, each waterbody and wetland crossed by the Project will be installed as separate construction activity utilizing specialized construction crews. This will facilitate restoration of the waterbody and wetland crossings immediately following pipeline installation. BMPs will be maintained throughout the duration of construction/restoration in accordance with applicable permit conditions.

BLM Comment No. 26: The EIS states that the crossing on Craig Creek is to be modified. The EIS does not seem to stick with one well established route, which makes it difficult to seriously analyze impacts to the environment. At this stage the Proposed Route should not be subject to arbitrary change.

Mountain Valley Response No. 26: Mountain Valley is finalizing its evaluation of two alternative routing alignments between (mileposts) MPs 219.5 and 220.0 of the Proposed Route for the Mountain Valley Pipeline Project (Project) in the area of Craig Creek. Mountain Valley is consulting with the USFS on the alternatives analysis and Mountain Valley expects to submit the final alternatives analysis in February 2017.

BLM Comment No. 27: The Conclusion makes reference to a Blasting Plan that as of now it's still a draft and not a final version.

Mountain Valley Response No. 27: Mountain Valley will provide USFS the final Blasting Plan in forthcoming POD submittal.

BLM Comment No. 28: Why are the first two maps (which are for West Virginia) showing the size of core forest areas whereas the third map (which is for Virginia) is showing the quality of core areas? Please provide three maps (2 for WV and 1 for VA) which show the size of core areas and 3 additional maps (2 for WV and 1 for VA) which show the quality of core areas.

Mountain Valley Response No. 28: These maps were prepared based on datasets available from each state and the state datasets are not consistent. The State of West Virginia's dataset simply categorizes "core forest" based on a size threshold whereas the Commonwealth of Virginia's cores were identified in the Virginia Natural Landscape Assessment (VaNLA) based on an Ecological Integrity Score used to rank the habitat.

BLM Comment No. 29: This sentence is stating that vegetation communities of special concern are national and state forests, parks, etc. This makes it sound like the entire national forest or park are vegetation communities of special concern. It should state what the actual definition of vegetation communities of special concern are (a definition is probably given on a state National Heritage Program [NHP] website), should state what agency has designated, recognized and ranked the vegetative communities (the NHPs), and should state that some of these can be found within national forests (NF), parks, etc. Were the NHPs coordinated with regarding this project? If not, they should be and a list of vegetation communities of special concern within the project area can be provided and should be documented in the DEIS.

Mountain Valley Response No. 29: For clarification, the text in Section 4.4.1.4 Vegetation of Special Concern or Management of the DEIS is related to public and conservation lands. The section is intended to provide a description of vegetation found within Virginia Department of Conservation and Recreation Conservation Areas, Virginia Outdoor Foundation Easements, New River Conservancy Easement, and the Jefferson National Forest, not a description of vegetation communities of special concern as defined by the Virginia Division of Natural Heritage.

Virginia Department of Conservation and Recreation's website states that the definition of vegetation community of special concern includes vegetation communities that have been assigned a state or global

conservation rank, based on their rareness. A list of rank assignments as designated by the Virginia Division of Natural Heritage is provided below. The Division of Natural Heritage explains that state ranks are assigned in a manner similar to global ranks, but consider only those factors within the political boundaries of Virginia.

- S1 = Critically Imperiled - At very high risk of extirpation from the state due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.

- S2 = Imperiled - At high risk of extirpation from the state due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.

- S3 = Vulnerable - At moderate risk of extirpation from the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.

- SH = Possibly Extirpated - Known only from historical occurrences but still some hope of rediscovery.

- SX = Presumed Extirpated - Not located despite intensive searches and virtually no likelihood of rediscovery.

The Virginia Department of Conservation and Recreation, Division of Natural Heritage and the West Virginia Department of Natural Resources were consulted regarding the Project. Survey data for listed species and the communities that support them can be found in plant survey reports.

BLM Comment No. 30: Sixty acres of the Jefferson NF contain forests over 100 years old but only 9 of those acres are considered old growth? Although the definition of old growth forests is listed on line 4 of this page and specifies that other factors besides age are used to determine if a forest is old growth, it would probably be beneficial here to say what the factors are for why 51 acres of 60 acres that are 100 years old or older are not considered old growth.

Mountain Valley Response No. 30: Based on areas designated as old growth forest within the Jefferson National Forest Land and Resource Management Plan (January 2004), the Project is expected to disturb approximately 7.5 acres of old growth forest. Appendix B of the Jefferson National Forest Land and Resource Management Plan provides more information on the criteria for designating old growth forest.

BLM Comment No. 31: This sentence states that areas outside of the 50-foot-wide ROW would be allowed to naturally revegetate. How big of an area would be initially cleared in addition to the permanent 50 ft. ROW? The extra footage should be mentioned here as well on Page ES-6 in the first paragraph.

Mountain Valley Response No. 31: As discussed in Section 2.3.1.1 of the DEIS, the entire construction width will be cleared. This is generally a 125-foot-wide corridor. In sensitive areas (such as wetlands and stream crossings) this width is reduced to 75 feet. After construction, the right-of-way will generally be maintained at 50 feet wide. Section 2.3.1.1 of the DEIS also includes information regarding ROW width during construction and operation.

BLM Comment No. 32: How much area would initially be cleared and then reforested surrounding the 50-foot ROW? Should be stated here.

Mountain Valley Response No. 32: As discussed in Section 2.3.1.1 of the DEIS, the entire construction width will be cleared. This is generally a 125-foot-wide corridor. In sensitive areas (such as wetlands and

stream crossings) this width is reduced to 75 feet. After construction, the right-of-way will generally be maintained at 50 feet wide. Most of the ROW will be vegetated with hydro-seeding (or other mass seed application). However, some sensitive resources, including forested wetlands and riparian strips, will be hand planted with trees, though a 10-foot-wide strip over the pipeline will be maintained in an herbaceous state. Likewise, scrub-shrub habitat areas that are suitable for the state-listed loggerhead shrike will be hand planted with shrub species as well. Details for replanting on the Jefferson National Forest are contained within Appendix D of the Plan of Development.

BLM Comment No. 33: Why is this analysis discussing size of core areas for WV but quality of core areas for VA? Analysis should include size of core areas affected for both WV and VA and quality of core areas for both WV and VA.

Mountain Valley Response No. 33: These maps were prepared based on datasets available from each state and the datasets are not consistent. The State of West Virginia's dataset simply categorizes "core forest" based on a size threshold whereas the Commonwealth of Virginia's cores were identified in the VaNLA based on an Ecological Integrity Score used to rank the habitat.

BLM Comment No. 34: The information of the additional surveys that the EIS states should have occurred on August 2016 should be Incorporated to the EIS. Not including it suggests that the Applicant or FERC are withholding information from the public and the agencies in order, therefore providing an incomplete analysis.

Mountain Valley Response No. 34: Mountain Valley has kept the USFS informed with all surveys conducted to date through emails during surveys and reporting post-survey. All surveys conducted for plants will also be discussed in the updated Biological Evaluation expected to be submitted to the USFS in February 2017.

BLM Comment No. 35: When the EIS states that prior to the end of the draft EIS comment period Mountain Valley should file a plan that describes how long term and permanent impacts on migratory birds, documenting consultations with FWS, FS, WVDNR and VDGIF is controversial. This information is needed in order to inform the public and the other federal agencies of pertinent findings and it cannot just get published a few days before the comment period ends.

Mountain Valley Response No. 35: A first draft of MVP's Migratory Bird Conservation Plan was provided to USFWS in March 2016. An updated draft was submitted in October 2016. A final draft is currently being finalized.

BLM Comment No. 36: Results of and recommendations from the FWS consultations are essential to have before adequately being able to assess the affects from the project on threatened and endangered species. These results need to be included in this DEIS. Without it, all agencies involved cannot adequately and comprehensively make a decision regarding impacts of the project on threatened and endangered species.

Mountain Valley Response No. 36: In February 2016, MVP submitted a first draft of the BA to USFWS for review and comment. MVP attended a meeting with both offices of USFWS on April 7, 2016 to discuss the document. USFWS provided a variety of recommendations, which MVP incorporated into a revised draft that was submitted to USFWS in October 2016. On December 8, 2016, MVP attended another meeting with both offices of USFWS to discuss the revised draft BA. MVP received written comments from USFWS on the revised draft BA on January 18, 2017, and responses to the comments are currently being incorporated into the final BA, which MVP will submit to FERC, for submission to USFWS, to initiate formal consultation under Section 7.

BLM Comment No. 37: If "informal consultation" was purely a request for threatened and endangered species at the project site (as noted in Line 5 of this paragraph), this is not truly considered "consultation" and instead would be considered "coordination." "Consultation" results in concurrence or lack of concurrence from FWS and recommendations for mitigation if impacts are anticipated.

Mountain Valley Response No. 37: The Section 7 regulations define "informal consultation" as "an optional process that includes all discussions, correspondence, etc., between the Service and the Federal agency or the designated non-Federal representative prior to formal consultation, if required." 50 C.F.R. § 402.02. Thus, the interactions that Mountain Valley has had with USFWS to date are part of Section 7 informal consultation. As noted above, Mountain Valley received written comments from USFWS on the draft BA on January 18, 2017, and is currently incorporating those comments into the final BA, which Mountain Valley will submit to FERC, for submission to USFWS, to initiate formal consultation under Section 7. The final BA will include avoidance, minimization, and mitigation measures.

BLM Comment No. 38: Effect determinations are not in standard determination language. I've never heard of a "Not Likely to Contribute to a Trend Toward Federal Listing" or "No Adverse Impacts Anticipated." Standard determination language needs to be used.

Mountain Valley Response No. 38: Species that received with non-standard determination language are species that are not currently listed under the ESA as threatened or endangered.

BLM Comment No. 39: Three species are pending 2016 surveys or consultation with FWS and VDGIF before effect determinations are made. The analysis regarding impacts is therefore incomplete and a decision cannot be made by the agencies involved in approving/not approving this project.

Mountain Valley Response No. 39: The species listed in Table 4.7.1-1 that are pending 2016 surveys include the Bog turtle and Running buffalo clover. Bog turtle surveys were completed except for a single parcel where Mountain Valley has not been granted access. Field surveys conducted to date indicated no suitable habitat for the species. The survey of the remaining parcel will be conducted as soon as Mountain Valley obtains permission to access the property. An addendum report will be submitted once the assessment can be completed. For Running Buffalo Clover, a 0.14-mile area of survey remains. Surveys will be conducted as soon as Mountain Valley obtains permission to access the properties.

On table 4.7.1-1 the Ellett Valley millipede is listed as pending ongoing consultation with the FWS and VDGIF. The DEIS incorrectly lists the Ellett Valley Millipede as a "federally listed species" subject to Endangered Species Act Section 7 consultation on pages 4-191 and 5-24. The Ellett Valley Millipede is correctly identified on page 4-159 as a non-listed "species of concern."

The discussion of the requirements applicable to the Ellett Valley Millipede on pages 4-158 to 4-159 and 4-188 should be clarified and updated. This species is listed by Virginia as "threatened" under state regulation (4 VAC 15-20-130.D) but has no federal Endangered Species Act listing. There is no applicable state or federal consultation or field survey requirement. However, Mountain Valley has engaged in ongoing consultation with VDGIF, VDCR, and other authorities regarding this species and its potential occurrence in Slussers Chapel Cave and Old Mill Cave. In response to concerns expressed about potential impacts to these cave systems, including possible Ellett Valley Millipede habitat, Mountain Valley has revised its route through the area to avoid any potential impact to the caves. Surveys for Ellett Valley millipedes have not been conducted.

BLM Comment No. 40: An explanation/reason for the timing restriction recommended by FWS for why construction can only occur between 7/31 - 8/1 needs to be given. Are there fish present during that time? If there is, then a "No Effect" determination cannot be made. Is this determination supposed to be "May

Affect, Not Likely to Adversely Affect?" Standard determination language needs to be used throughout the document.

Mountain Valley Response No. 40: Instream construction in Stony Creek is permissible between July 31 and August 15 because numerous time-of-year restrictions apply to the stream including those associated with cold-water streams, wild trout, stocked trout, the candy darter, and mussels. Fish surveys for candy darters were not recommended by Virginia Department of Game and Inland Fisheries (VDGIF) as long as Mountain Valley crosses downstream of Kimbalton and adheres to time-of-year restrictions for instream work. The effect determination language stated in the comment is reserved for determinations made to federally listed species. Although candy darters are listed as a federal species of concern, the species is not currently listed as threatened or endangered by USFWS.

BLM Comment No. 41: What is the reason for the time restriction? Please include explanation in text.

Mountain Valley Response No. 41: The time-of-year restriction applies to the orangefin madtom. The sentence in the DEIS may need to be modified to: "The VDGIF further stated that surveys would not be necessary as long as Mountain Valley would abide by the time-of-year restrictions (i.e., VDGIF requests that no construction take place between March 15 and May 31) for orangefin madtom for all in-water construction in perennial streams within its native range of the Roanoke and Pigg River basins."

BLM Comment No. 42: What is the effect determination? May affect, not likely to adversely affect? Why?

Mountain Valley Response No. 42: The comment is in reference to the orangefin madtom, which is not a federally listed species. Therefore, the standard Section 7 determination language (e.g., may affect, not likely to adversely to affect) that is reserved for USFWS effects determinations does not apply.

BLM Comment No. 43: What is the effect determination? May affect, not likely to adversely affect? Standard effect determination needs to be used throughout the document. This comment is relevant for the entire T&E Section - 4.7.

Mountain Valley Response No. 43: The paragraph is in reference to three federally endangered mussels (snuffbox, clubshell, James spinymussel). Consequently, the language in the DEIS should be revised to "may affect, not likely to adversely affect."

BLM Comment No. 44: A full effect analysis needs to be done for mussels for this DEIS to be complete. Full impacts cannot be determined without a completed FWS consultation resulting in their response, concurrence, and recommendations. This needs to be incorporated into the DEIS for NEPA analysis to be complete. This consultation comment is relevant for the entire T&E Section - 4.7.

Mountain Valley Response No. 44: Mountain Valley received written comments from USFWS on the draft BA on January 18, 2017, and is currently incorporating those comments into the final BA, which Mountain Valley will submit to FERC, for submission to USFWS, to initiate formal consultation under Section 7. The final BA will include avoidance, minimization, and mitigation measures.

BLM Comment No. 45: NEPA analysis is not complete for the Bog Turtle since surveys are not done. Therefore, determinations can't be made and actual impacts cannot be determined. Analysis and therefore DEIS is incomplete.

Mountain Valley Response No. 45: The bog turtle surveys are complete. The final report was submitted to USFWS on November 15, 2016. No suitable habitat for the species was found during field surveys.

BLM Comment No. 46 NEPA analysis is not complete for the Ellett Valley millipede since consultation has not been completed. Therefore, determinations can't be made and actual impacts cannot be determined. Analysis and therefore DEIS is incomplete.

Mountain Valley Response No. 46: The DEIS incorrectly lists the Ellett Valley Millipede as a "federally listed species" subject to Endangered Species Act Section 7 consultation on pages 4-191 and 5-24. The Ellett Valley Millipede is correctly identified on page 4-159 as a non-listed "species of concern."

The discussion of the requirements applicable to the Ellett Valley Millipede on pages 4-158 to 4-159 and 4-188 should be clarified and updated. This species is listed by Virginia as "threatened" under state regulation (4 VAC 15-20-130.D) but has no federal Endangered Species Act listing. There is no applicable state or federal consultation or field survey requirement. However, Mountain Valley has engaged in ongoing consultation with VDGIF, VDCR, and other authorities regarding this species and its potential occurrence in Slussers Chapel Cave and Old Mill Cave. In response to concerns expressed about potential impacts to these cave systems, including possible Ellett Valley Millipede habitat, Mountain Valley has revised its route through the area to avoid any potential impact to the caves. Surveys for Ellett Valley millipedes have not been conducted.

BLM Comment No. 47: Did surveys follow FWS protocols? This needs to be stated.

Mountain Valley Response No. 47: EEP completed summer mist net surveys for Project facilities in Pennsylvania in accordance with guidelines contained in the USFWS 2015 Range-wide Indiana Bat Summer Survey (Table 1), USFWS 2014 Northern Long-Eared Bat Interim Conference and Planning Guidance, and PGC Standard and Minimum Effort Requirements for Qualified Bat Survey or Netting within the Commonwealth of Pennsylvania.

BLM Comment No. 48: Why was FWS consultation received for these species but no others? The concurrence letter needs to be in an Appendix of the DEIS and referenced in this sentence.

Mountain Valley Response No. 48: Mountain Valley and Equitrans conducted separate consultations with USFWS. A concurrence letter was received for the bats for the EEP because the bats were the only federally listed species with the potential to be impacted, and they were not found during surveys.

BLM Comment No. 49: How many surveys were conducted? Did surveys follow FWS protocols? Please incorporate answers.

Mountain Valley Response No. 49: The cumulative mist-net survey effort in West Virginia included 1,057 complete and 258 partial net nights at 191 sites and in Virginia included 1,100 complete and 183 partial net nights at 183 sites. Surveys for bats were conducted in accordance with guidelines contained in the USFWS 2014 Range-wide Indiana Bat Summer Survey Guidelines for portions of the Project that occur outside of known, occupied habitat for Indiana or northern long-eared bats.

BLM Comment No. 50: Mountain Valley performed a visual resources analysis of its pipeline route, encompassing a 3-mile-wide corridor. This distance corresponds to the FS defined "middle ground" zone. Visual impacts were assessed by the amount of contrast construction and operation of the facilities would create against the original landscape background from the perspective of a viewer at key observation point (KOP) within the 3-mile-wide corridor." I question if this is really how the analysis was performed. My hope is that this is actually how the area of potential impact for visual resources was established. How the analysis was conducted should be discussed in the Environmental Consequences section as pre-amble to the actual impacts discussion. Having said that, it's unclear from this explanation how the analysis was actually completed. Does this mean visual impacts were only addressed within a 3-mile corridor (i.e., 1.5

miles from centerline)? Or does this mean that KOPs were only established within the 3mile corridor? Also note that the Forest Service describes the Middle ground as up to 4 miles from the foreground, which would essentially be 4.5 miles from the viewer (Landscape and Aesthetics Handbook 700). From an analysis perspective, for those locations where the MVP crosses the KOP the visual analysis should have been completed for a 9-mile corridor (or 4.5 miles each side of the crossing).

Mountain Valley Response No. 50: The visual impact analysis was completed and submitted in February 2017 and the final VIA report describes the methodology for the analysis.

BLM Comment No. 51: The Appalachian National Scenic Trail should receive some special attention in this Visual Resource section of the document since the designation give scenic resources special value along the trail corridor.

Mountain Valley Response No. 51: The Jefferson National Forest Visual Impact Assessment that Mountain Valley submitted to the USFS in February 2017 assesses the on the visual impacts to users of the Appalachian National Scenic Trail.

BLM Comment No. 52: "Visual Resources within the Jefferson National Forest" While this section describes the existing environment and management prescriptions it is devoid of any analysis/discussion of what the actual impacts are (which is okay given that this is the "Affected Environment" section, but I point this out because impacts outside the Forest have been discussed). Please recall, that regardless of how the visual resource is being managed, the EIS must describe the impact on the affected environment, and only then determine whether the level of impact is allowable based on the management prescription.

Mountain Valley Response No. 52: The Jefferson National Forest Visual Impact Assessment that Mountain Valley submitted to the USFS in February 2017 assesses the on the visual impacts to users of the Appalachian National Scenic Trail and other places within the Jefferson National Forest.

BLM Comment No. 53: "We asked Mountain Valley to produce computer generated visual simulations for all KOPs with a high visual impact rating (see appendix S)." This should have been done for the ANST, even though it's not rated high, its scenic values are congressionally recognized and protected.

Mountain Valley Response No. 53: Mountain Valley submitted the Jefferson National Forest Visual Impact Assessment to the USFS in February 2017.

BLM Comment No. 54: "The level of visual impact varies depending on the surrounding vegetation and the amount of clearing that would be needed. Based on the visual simulations, views from Red Spring Mountain/I-64 crossing in Greenbrier County, West Virginia and from the Greenbrier River in Summers County, West Virginia would see the biggest changes due to the level of clearing needed and the proximity of the project to the KOPs. The changes to the viewshed would be tree clearing the right-of-way." It seems a discussion of the impact at each of the high rated KOPs would be more appropriate rather than just identify the two perceived to be the most impacted. It would be worth addressing (reference and summarize) each of the images presented in Appendix S since this work has already been completed. Also, I am left wondering why the level of clearing at these two referenced KOPs is so much higher.

Mountain Valley Response No. 54: The visual impacts to the Greenbrier River within Summers County are approximately 25 miles from USFS property and would not impact the visual landscape within the Jefferson National Forest. As shown in Appendix S of the DEIS, Key Observation Point 152 is located in Greenbrier County, West Virginia on Interstate 64 where the roadway will be crossed by the Mountain Valley Pipeline right-of-way. The viewpoint is approximately 0.3 miles east of the unincorporated

community of Lawn, West Virginia and represents travelers on Interstate 64. Photos were taken with leaf-off conditions and the simulation demonstrates that the right-of-way would be highly visible. Due to the linear nature of the roadway and speeds ranging between 55 and 70 miles-per-hour, views would be brief in duration and viewer sensitivity would be low. Interstate 64 is not listed as a scenic roadway in the state of West Virginia. Due to the short viewer duration of the crossing and low viewer sensitivity, visual impacts would be moderate for travelers on Interstate 64 in Greenbrier County, West Virginia.

BLM Comment No. 55: There's an analysis shift to quantifiable acres of visual disturbance under the Equitrans Expansion Project- this would be nice to see in the MVP section.

Mountain Valley Response No. 55: Construction of the Mountain Valley pipeline would cross approximately 245 miles of forest, affecting about 4,780 acres. During construction all trees would be removed from the construction right-of-way and ATWS. After pipeline installation, trees would be allowed to regenerate in the temporary workspaces. This would be a long-term impact, because of the time it takes trees to mature. However, trees would not be allowed to regenerate within the 50-foot-wide operational permanent pipeline right-of-way easement. This permanent easement would be covered by herbaceous and shrub vegetation, and could be a visible corridor depending on landscape, other land use, and points of observation. The Bradshaw Compressor Station will be constructed at approximately MP 2.8 in Wetzel County, West Virginia. No visual impacts are anticipated as the proposed facility will be located in a rural area with no identified visual receptors. The Harris Compressor Station will be constructed at approximately MP 77.5 in Braxton County, West Virginia. The proposed site for the Harris Compressor Station is located in a remote heavily wooded area; however, there is a residence directly adjacent to the western side of the site. MVP is in negotiations with the owner of this residence with the intent to purchase and remove the structure.

The Stallworth Compressor Station will be constructed at approximately MP 154.5 in Fayette County, West Virginia. The proposed site for the Stallworth Compressor Station is located in a remote area of Fayette County, West Virginia however there is a residence directly south of the site (approximately 0.2 mile from the southern boundary). It is anticipated that there would be minimal visual impacts to the residence due to the intervening forest vegetation and high relief terrain. This compressor station is located on a forested hilltop with a forest vegetation buffer between the station site and the residence. If there are visual impacts, it is anticipated that it will be from night lighting that will be necessary for the security of the site.

BLM Comment No. 56: Provide additional information about what does the Draft Blasting Plan includes taking into account the best available knowledge till now.

Mountain Valley Response No. 56: The Mountain Valley blasting plan and the contractor's site-specific blasting plans are based on and in accordance with the Bureau of Alcohol, Tobacco, Firearms and Explosives Federal Explosives Law and Regulations (2012) as well as applicable West Virginia and Virginia regulations.

BLM Comment No. 57: There is no mention of how the MVP or EEP will ensure that the public is safe from emissions (especially dust/ particulate matter) from the construction of the pipeline, especially in the case of the schools since they represent a sensitive group. Safety does not only involve analyzing historic deaths associated to pipelines.

Mountain Valley Response No. 57: Implementation of construction and restoration Best Management Practices and operational controls will be used to mitigate fugitive dust emissions. The project earth disturbance permit will outline specific practices that control fugitive dust, including a construction sequence; use of rock construction entrances; and temporary soil stabilization methods. Operational

controls are also implemented, including the use of a reduced speed limit on unpaved access roads as well as sweeping/vacuuming paved roadways when Project-related soils are tracked out onto paved surfaces.

Wet suppression, using water, is the predominate method of suppressing fugitive dust on unpaved roads and gravel pads as it causes finer materials to adhere into larger particles. Increasing the moisture content of the finer materials may be accomplished either naturally or mechanically. Moisture content of unpaved road surfaces can be naturally increased through rainfall. Moisture content can also be increased mechanically through the application of water. The amount of water required to sufficiently control fugitive dust emissions is dependent on the characteristics of materials (e.g., surface moisture content), ambient conditions (e.g., rainfall, humidity, temperature), activities occurring in the area (e.g., vehicle traffic, vehicle weight, speeds), etc. The contractors will have one or more water trucks available per spread that will load water from approved permitted sources to spray areas for dust control. Disturbed and trafficable areas will be kept sufficiently damp during working hours in dry conditions to minimize wind-blown or traffic-generated dust emissions. Areas to be watered include, but are not limited to, the following:

- the construction corridor for each pipeline, including additional temporary workspace;
- access roads;
- aboveground facility sites;
- active grading areas;
- un-stabilized areas;
- soil stockpiles; and
- parking areas.

The frequency at which water trucks will spray construction areas will vary based on weather and site conditions. More frequent applications will be required in dry conditions and where dust generation is likely, as well as near schools, churches, dwellings, recreational areas and places of public occupancy.

Mountain Valley Pipeline looks forward to continuing to work with BLM moving forward. Please feel free to contact me if you have questions or need any additional information. Thank you for your time and consideration.

Sincerely,

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