

## **5.0 CONCLUSIONS AND RECOMMENDATIONS**

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### **5.1 CONCLUSIONS OF THE ENVIRONMENTAL ANALYSIS**

The conclusions and recommendations presented in this section are those of the FERC environmental staff. Our conclusions and recommendations were developed with input from the FS, the EPA, the COE, the BLM, the PHMSA, the WVDNR, and the WVDEP as cooperating agencies. The federal cooperating agencies may adopt the EIS per 40 CFR 1506.3 if, after an independent review of the document, they conclude that their permitting requirements and/or regulatory responsibilities have been satisfied. However, these agencies would present their own conclusions and recommendations in their respective and applicable records of decision. Otherwise, they may elect to conduct their own supplemental environmental analysis, if necessary.

We determined that construction and operation of the MVP and the EEP would result in limited adverse environmental impacts, with the exception of impacts on forested land. This determination is based on a review of the information provided by the Applicants and further developed from data requests; field investigations; scoping; literature research; alternatives analyses; and contacts with federal, state, and local agencies as well as individual members of the public. As part of our review, we developed specific mitigation measures that we determined would appropriately and reasonably reduce the environmental impacts resulting from construction and operation of the projects. We are therefore recommending that our mitigation measures be attached as conditions to any authorization issued by the Commission. A summary of the anticipated impacts, our conclusions, and our recommended mitigation measures is provided below, by resource area.

#### **5.1.1 Geological Resources**

The MVP pipeline would cross steep topography (32 percent greater than 15 percent grade) and karst terrain (17 percent of route). About 67 percent of the MVP pipeline would cross areas susceptible to landslides. Almost half of the EEP pipelines would cross steep topography, and they all would have potential for landslides. There is no karst along the EEP. All areas disturbed during pipeline construction would be restored as closely as possible to pre-construction contours and revegetated, in accordance with the FERC Plan for Mountain Valley and recommendations of the Wildlife Habitat Council; while Equitrans would follow the measures its project-specific Plan and the PADEP *Erosion and Sediment Pollution Control Program Manual*. Mountain Valley would use the procedures provided in its *Landslide Mitigation Plan* when constructing through landslide prone areas and Equitrans would employ a geotechnical engineer to inspect slopes prior to construction. Mountain Valley would implement the procedures in its *Karst Mitigation Plan* to investigate and prevent any impacts on karst features. Mountain Valley is continuing to evaluate avoidance and mitigation measures for Canoe Cave and the Mount Tabor Sinkhole Plain.

The MVP would be located within 0.25 mile of 233 active oil and gas wells. The EEP would be located within 0.25 mile of 42 active oil and gas wells. The Applicants would install safety fence or flagging around wells in proximity to the working area. Equitrans would also

institute its *Hot Work Safety Program* to assess and prevent hazards when construction is in close proximity to the oil or gas wells.

The MVP would be with 0.25 mile of 97 inactive mining operations consisting mainly of coal, sand, gravel, and limestone mines, and would cross 19 surface and underground mines, of which four are actively operated. The EEP would be located within 0.25 mile of 19 closed coal mines, and would cross 13 closed underground coal mines. Mountain Valley would follow the procedures outlined in its *Mining Area Construction Plan* and Equitrans would employ the procedures outlined in its *Mine Subsidence Plan* to prevent hazards from mine crossings. In addition, we have included a recommendation that Mountain Valley file a plan to avoid active mines or compensate for the loss of coal assets.

With the implementation of the Applicants' BMPs, as well as our additional recommendations regarding karst topography and mines, we conclude that impacts on geological resources would be adequately minimized.

### **5.1.2 Soils**

The MVP and EEP would traverse a variety of soil types and conditions. Construction activities, such as clearing, grading, trenching, and backfilling, could adversely affect soil resources by causing erosion, compaction, and introduction of excess rock or fill material to the surface, which could hinder restoration. Permanent impacts on soils would mainly occur at the aboveground facilities where the sites would be graveled and converted to industrial use.

Construction of the MVP would disturb about 4,189 acres of soils that are classified as having the potential for severe water erosion. Construction of the EEP would affect about 126 acres of soils rated as being prone to erosion by water. However, Mountain Valley would implement the measures contained in the FERC Plan and its project specific *Erosion and Sediment Control Plan*; while Equitrans would implement the measures in its project-specific Plan and the PADEP *Erosion and Sediment Pollution Control Program Manual* to control erosion and enhance successful restoration.

Construction of the MVP would disturb about 2,353 acres of prime farmland or farmland of statewide importance. Construction of the EEP would affect a total of 94 acres of prime farmland and farmland of statewide importance combined. The Applicants would reduce impacts on agricultural lands by repairing or replacing irrigation systems and/or drain tiles, segregating topsoil, removing rocks, and decompacting soils.

The MVP would traverse 118 miles of areas identified as having shallow bedrock (<7 feet) and the EEP would traverse approximately 1 mile of shallow depth to bedrock (<5 feet). Mountain Valley has stated that it would first attempt to use methods other than blasting such as ripping, chipping, or grinding to remove bedrock encountered during construction. Equitrans does not anticipate that blasting would be required along the EEP and that bedrock could be removed via conventional methods. Mountain Valley would follow the procedures in its *Blasting Plan* to prevent impacts from blasting. If blasting should become necessary for construction the EEP, Equitrans would file a blasting plan with the FERC for approval prior to any blasting commencing.

Based on our analysis of the Applicants proposed measures, we conclude that potential impacts on soils would be effectively minimized.

### **5.1.3 Water Resources**

#### **5.1.3.1 Groundwater**

Groundwater resources in the area of the projects come from the Appalachian Plateau Regional, Valley and Ridge Regional, and Blue Ridge and Piedmont Crystalline-Rock aquifer systems. None of the projects would cross any EPA-designated SSAs, and no state-designated aquifers have been identified in the project area. The MVP would cross two mine pools, while the EEP would cross one.

Mountain Valley has identified 20 springs/swallets (karst features) within 500 feet of the MVP. Because field surveys have not been completed, in part due to lack of access, we have recommended that prior to construction the Applicants should file with the Secretary the location of all water wells, springs, swallets, and other drinking water sources within 150 feet (500 feet in karst terrain) of the pipeline and aboveground facilities.

The Applicants would conduct pre-construction water quality and water yield surveys on water resources within 150 feet of the project (500 feet in karst terrain). According to the Applicants, post-construction water quality/yield samples may be collected if the water supply owner lodges a complaint after construction. In the event of construction-related impacts, the Applicants would provide an alternative water source.

Construction activities are not likely to significantly impact groundwater resources because the majority of construction would involve shallow excavations. Mountain Valley would prevent or adequately minimize accidental spills and leaks of hazardous materials into groundwater resources during construction and operation by adhering to its *SPCCP*. Equitrans would follow its *SPCCP* and *Preparedness, Prevention, and Contingency and Emergency Action Plans*. Given the Applicants' proposed measures, we conclude that potential impacts on groundwater resources would be minimized.

#### **5.1.3.2 Surface Waters**

The MVP would result in 361 perennial waterbody crossings. The EEP would cross 16 perennial waterbody crossings. Mountain Valley would cross all waterbodies (except three) using open-cut dry crossing methods (either flumes or dam-and-pump techniques). For the three major rivers (Elk River, the Gauley River, and the Greenbrier River) that would be crossed via wet open-cut, we are recommending that Mountain Valley file the results of turbidity and sedimentation modeling prior to construction. We also recommended HDD feasibility and geotechnical studies for the alternative alignments identified for the crossing of the Pigg River and the Blackwater River. Equitrans would use open-cut dry crossing methods for all but two waterbodies. The Monongahela River and South Fork Tenmile Creek would be crossed with HDDs. To address an HDD failure or frac-out, Equitrans developed a *HDD Contingency Plan*.

Mountain Valley identified five source water protection areas within 0.3 mile of the MVP. We are recommending that, prior to construction, Mountain Valley should file contingency plans outlining measures that would be taken to minimize potential impacts on public surface water supplies. The EEP would not cross any source water protection areas.

To reduce impacts on waterbodies, the Applicants would adhere to the measures outlined in their project-specific Procedures. We conclude that these measures would adequately minimize impacts on surface water resources.

#### **5.1.4 Wetlands**

Construction of the MVP and the EEP would impact a total of 39.3 acres of wetlands, including 10.3 acres of forested wetlands, 26.9 acres of herbaceous wetlands, and 2.1 acres of shrub-scrub wetlands. During operation, 3.0 acres of forested wetlands would be permanently converted to herbaceous wetlands.

The Applicants would minimize impacts on wetlands by reducing the construction right-of-way width to 75 feet through wetlands, and following the measures outlined in their project-specific Procedures. The Applicants also submitted applications to the COE to obtain permits to cross Waters of the United States and wetlands under Section 404 of the CWA. To compensate for conversions of wetland types, the Applicants propose to purchase credits from approved wetland mitigation banks in the respective states.

Mountain Valley requested alternative measures from FERC's Procedures in several areas where it concluded that site-specific conditions do not allow for a 50-foot setback of extra workspace from wetlands or where a 75-foot-wide right-of-way is insufficient to accommodate wetland construction. Based on our review, we have determined that Mountain Valley has provided adequate site-specific justification for ATWS within 50 feet of a wetland. However, Mountain Valley has not disclosed the wetlands that would require a right-of-way greater than 75 feet nor have they provided site-specific justification. Therefore, we are recommending that Mountain Valley file additional information for FERC review and approval.

Based on the measures developed by Mountain Valley and Equitrans, we conclude that impacts on wetland resources would be effectively minimized.

#### **5.1.5 Vegetation**

The MVP pipeline would cross about 245 miles of forest, 0.3 mile of shrublands, and 3.6 miles of grasslands. The EEP pipelines would cross about 4 miles of forest and 0.2 mile of grasslands. Impacts on shrublands and grasslands would be short-term, as the Applicants would revegetate the right-of-way after pipeline installation, and shrubs and grasses would be reestablished in a few years. While forest would be allowed to regenerate in temporary workspaces, this would be a long-term impact because it would take many years for trees to mature. The 50-foot-wide operational easement for the pipelines would be kept clear of trees, which would represent a permanent impact. Construction of the MVP and the EEP would affect about 4,856 acres of upland forest. The construction and operation of aboveground facilities would also have permanent impacts on vegetation, as those sites would be converted to industrial

use and maintained as gravel yards without vegetation. Construction of the aboveground facilities for the MVP and EEP combined would impact 91 acres of upland forest.

The MVP would impact about 2,485 acres of contiguous interior forest ranging from Small Core (less than 250 acres) to Large Core (greater than 500 acres) forest areas in West Virginia. In Virginia, the MVP would impact about 938 acres of contiguous interior forest during construction classified as High to Outstanding quality. To minimize forest fragmentation and edge effects, Mountain Valley has collocated about 29 percent of the pipeline route with existing linear corridors.

Mountain Valley developed an *Exotic and Invasive Species Control Plan*, and would implement invasive species control measures during the restoration phase of construction to control invasive plant species. Equitrans has not developed a formal control plan regarding invasive plants, but would implement invasive species control strategies during and following construction to control invasive plant species.

Given that Mountain Valley would follow our Plan, its project specific *Erosion and Sediment Control Plan*, and the reseeding recommendation of the Wildlife Habitat Council; while Equitrans would follow its project-specific Plan and the PADEP *Erosion and Sediment Pollution Control Program Manual*, we conclude that the projects would not have significant adverse impacts on grasslands and shrublands. However, in considering the total acres of forest affected, the quality and use of forest for wildlife habitat, and the time required for full restoration in temporary workspaces, we conclude that the projects would have significant impacts on forest.

### **5.1.6 Wildlife and Aquatic Resources**

The MVP and the EEP could have both direct and indirect effects on wildlife species and their habitats. Direct effects of construction on wildlife include the displacement of mobile wildlife from the right-of-way into adjacent areas, and the potential mortality for some individuals of non-mobile species unable to escape equipment. The removal of existing vegetation within the construction work area could also affect wildlife by reducing the amount of available habitat for nesting, cover, and foraging. The creation of a grassy and shrub corridor within the operational right-of-way may increase predation along the forest edge. Indirect effects of construction could include lower reproductive success by disrupting courting, nesting, or breeding of some species. Some of these effects would be temporary, lasting only while construction is occurring; or short-term, lasting no more than a few years until the pre-construction habitat and vegetation type would be reestablished. Other effects would be longer term such as the re-establishment of forested habitats, which could take decades.

A variety of migratory bird species, including BCCs, are associated with the habitats that would be affected by the MVP and the EEP. The clearing of vegetation during the nesting season could have direct impacts on individual migratory birds. Implementing the Mountain Valley's and Equitrans' *Migratory Bird Habitat Conservation Plans*, including adhering to the proposed vegetation and tree clearing window to avoid the migratory bird nesting season or conducting nest surveys and utilizing nest protection buffers prior to construction, would also minimize impacts.

Given the measures proposed by the Applicants, we conclude that the projects would not have a significant adverse effect on wildlife populations overall. However, some forested species may experience a higher level of impact due to the long-term loss of forested habitat.

The MVP proposed pipeline right-of-way would cross 33 waterbodies classified as fisheries of special concern. None of the waterbodies that would be crossed by the EEP are classified as fisheries of special concern. Mountain Valley has indicated they would cross all fisheries of special concern within state-designated dates for crossing windows. Mountain Valley has proposed to use an open-cut dry crossing method at all waterbody crossings, except three major rivers that would be wet open-cut. Equitrans has proposed to use an HDD at two waterbody crossings and the open-cut dry method for the remaining crossings.

In-stream pipeline construction across waterbodies could have both direct and indirect effects on aquatic species and their habitats, including increased sedimentation and turbidity, alteration or removal of aquatic habitat cover, stream bank erosion, impingement or entrainment of fish and other biota associated with the use of water pumps, downstream scouring, and the potential for fuel and chemical spills.

Construction-related clearing of trees and other riparian vegetation at waterbody crossings would be minimized and restoration would be implemented in compliance with federal and state permits. The Applicants would also implement guidelines from their Procedures to minimize or prevent sediment or other hazards to aquatic biota, including fuels or other equipment liquids, from entering waterbodies adjacent to aboveground facilities and access roads. No in-stream blasting is expected to be required for the EEP. Mountain Valley is still assessing where blasting may be necessary; however, Mountain Valley would only conduct blasting at waterbody crossings once the trench corridor has been isolated from the waterbody and all aquatic biota has been relocated from the work area. Therefore, we do not expect any blasting-related fishery impacts.

Based on our review of potential effects of the MVP and the EEP as described above, we conclude that the projects would result in some temporary impacts on aquatic resources, but that these impacts may be adequately mitigated through adherence to the measures described in the Mountain Valley's and Equitrans' Procedures and agency recommendations regarding the timing of in-water construction activities.

### **5.1.7 Special Status Species**

Based on our review of existing records and Mountain Valley's and Equitrans' informal consultations with the FWS, we identified 22 federally listed threatened or endangered species (or federal candidate species or federal species of concern) that would be potentially present in the vicinity of the projects. We have concluded that construction and operation of the projects would have no effect on 5 of the species, would be not likely to adversely affect 6 species, no adverse impacts anticipated for 4 species, not likely to contribute to a trend toward federal listing for 1 species, and would be likely to adversely affect 3 species (Indiana bat, northern long-eared bat, and Roanoke logperch). Determinations for the remaining 3 species are pending 2016 surveys. We concluded that construction and operation of the EEP would be not likely to adversely affect the two endangered bats assumed to be present in the vicinity of the EEP. The

conclusion was based in part upon Equitrans implementing effects avoidance and minimization measures outlined in the FWS-approved EEP *Myotis Bat Conservation Plan*.

The FERC staff will produce a BA for MVP in the near future, and enter into formal consultations with the FWS. We are recommending that no construction begin until biological surveys are done and we have completed our consultations with the FWS to comply with Section 7 of the ESA.

The projects could also affect twenty species that are state-listed as threatened, endangered, or were noted by the applicable state agencies as being of special concern. Based on our review, we have concluded that the MVP and the EEP would not significantly impact 10 of these species. Determinations for the remaining 10 species are pending 2016 surveys or coordination with the state agencies.

Mountain Valley also submitted a draft BE to the FS regarding whether special status species would be affected where the MVP right-of-way is proposed to overlap with Jefferson National Forest land. The BE classifies the effects of the MVP within the Jefferson National Forest on the federally listed species as May Affect – Is Not Likely to Adversely Affect. The BE classifies the effects of the MVP on FS Sensitive Species as ranging from Beneficial Impacts to May Effect – Is Not Likely to Cause a Trend Toward Federal Listing or Loss of Viability.

Field surveys have documented the presence of 11 of 13 Jefferson National Forest MIS in the vicinity of the MVP. Field surveys to-date have not documented any FS Locally Rare Species in the vicinity of the MVP.

### **5.1.8 Land Use, Special Interest Areas, and Visual Resources**

The MVP pipeline route would mostly cross forest (81 percent), followed by agricultural land (13 percent), and open land (5 percent). Land affected by EEP construction is mostly agricultural (45.4 percent), followed by forest (37.1 percent), and open land (13.4 percent).

Mountain Valley has so far identified two Christmas tree farms and two farms that are potentially transitioning to organic farming. Mountain Valley stated it would negotiate the value of lost production of orchards with landowners if impacts are unavoidable. Mountain Valley developed an OFPP to minimize impacts on organic farms. No orchards, tree farms, specialty crops, or organic farms were identified along the EEP. Equitrans did identify a farm along the route that is enrolled in the Pennsylvania Agricultural Land Preserve Program as well as the Forward Township Agricultural Security Area. Equitrans would coordinate with the landowner and has committed to using BMPs in order to reduce impacts to the farm.

Mountain Valley has identified 117 residences within 50 feet of its proposed construction work area, 35 of which would be within 10 feet. Mountain Valley has purchased 7 of the residences and has developed site-specific construction plans for all other residences within 50 feet of construction work areas. We are recommending that prior to construction Mountain Valley should file evidence of landowner concurrence for site-specific residential construction plans where construction would be within 10 feet.

Equitrans has identified four residences within the boundary of the proposed Redhook Compressor Station. Equitrans stated that it purchased one of the properties and has signed sales agreements for two of the properties. We are recommending that Equitrans file the current status of its easement negotiations for the compressor station.

Federally owned or managed recreational and special use areas that would be crossed by the MVP pipeline route include the Weston and Gauley Bridge Turnpike, the BRP, and the Jefferson National Forest. Mountain Valley is proposing to bore under the Weston and Gauley Bridge Turnpike and the BRP. We are recommending that Mountain Valley document that their crossing plans were reviewed by the appropriate federal land managing agencies.

About 3.4 miles of the MVP pipeline route would cross the Jefferson National Forest. Within the Jefferson National Forest, the pipeline would cross the ANST and the Brush Mountain Inventoried Roadless Area. Mountain Valley intends to cross under the ANST using a bore along an alternative route variation.

On the Jefferson National Forest, construction of the MVP would impact a total of about 81 acres. The route of the MVP pipeline through the Jefferson National Forest would cross five separate management prescriptions outlined in the LRMP: ANST Corridor (Rx4A); Mix of Successional Habitats in Forested Landscapes (Rx8A1); Old Growth Forest Communities-Disturbance Associated (Rx6C); Urban/Suburban Interface (Rx4J); and Riparian Corridors (Rx11). Construction of the MVP would result in a long-term impact on about 14.1 acres within Rx4J and 52.4 acres within Rx8A1. Operation of the MVP would result in a permanent loss of timber of about 31.1 acres, including 5.7 acres of Rx4J and 25.4 acres of Rx8A1. The FS analyzed amendments to its LRMP to allow for the MVP within the Jefferson National Forest. This includes one plan-level amendment to reallocate management prescription areas, and three project-specific amendments that apply to the MVP only. Impacts on National Forest resources would be minimized by Mountain Valley following the measures outlined in its POD that must be approved by the FS and BLM.

Visual resources along the pipeline route are a function of topographic relief, vegetation, water, wildlife, land use, and human uses and development. Permanent visual impacts would occur where compressor stations and M&R stations would be built; because these include aboveground buildings. Construction of new aboveground facilities would result in conversion of 48.8 acres of forest, agricultural, and open land into industrial land. Most of the aboveground facilities would be erected in rural areas, with few visual receptors such as houses or travelers on roads. In some cases, the facilities would be screened by topography or vegetation, reducing visual impacts.

Mountain Valley performed a visual resources analysis of its pipeline route. It identified nine KOPs where visual impacts may be high because the pipeline corridor may stand out from the surrounding landscape and would be visible to viewers. In appendix S of this EIS we reproduce visual simulations for the highly sensitive KOPs.

With implementation of the Applicants' Plans, we conclude that overall impacts on land use and visual resources would be adequately minimized.

### 5.1.9 Socioeconomics

The influx of non-local construction workers could affect local housing availability, as they compete with visitors for limited accommodations in rural areas with few hotels. Peak non-local employees working on the MVP would average between 536 and 671 people per spread. The total peak workforce for the EEP, including pipelines and aboveground facilities, would be about 400 people. The Applicants would not build any temporary “man-camps” or project housing complexes. Instead, non-local construction workers would need to find housing in vacant rental units, including houses, apartments, mobile home parks, hotels/motels, and campgrounds and RV parks. We estimate that in the affected counties combined there are a total of 14,516 rental units, 33,054 hotel rooms, and 3,100 camping and RV spaces. In those counties where housing is limited, workers would likely find accommodations at adjacent larger communities that are within commuting distance. Some construction workers would bring their own lodgings in the form of RVs; others would share units. For the MVP, construction workers would be spread out along 11 separate pipeline spreads and 7 aboveground facilities across 17 counties. The projects would have only temporary impacts on population and local housing during construction. While it would take about 2.5 years to build the MVP, the average worker would only be on the job for about 10 months for the pipeline and 8 months for aboveground facilities.

There is no evidence that the projects would cause significant adverse health or environmental harm to any community with a disproportionate number of minorities, low-income, or other vulnerable populations. Our analysis of environmental justice found that in the counties that contain MVP facilities in West Virginia, minorities represent between 1.9 to 7.1 percent of the population, compared to the state-wide average of 6.3 percent. In the affected counties of Virginia, minorities comprise between 2.5 and 23.7 percent of the population, compared to the Virginia-wide average of 29.8 percent. In the Pennsylvania counties that contain EEP facilities, minorities comprise between 6.1 and 19.3 percent of the population, compared to the Pennsylvania-wide average of 17.4 percent. Fourteen of the 17 counties in the MVP area have poverty rates that are higher than the respective statewide levels. For the EEP, two of the four counties crossed have poverty rates that are higher than the respective state averages. The projects would mitigate for impacts on low income communities through short-term employment, spending on commodities, and generation of tax revenues that would stimulate the local economy.

Mountain Valley proposes to use 365 roads to access the construction right-of-way, including 247 existing roads, 27 new access roads, and 1 access road that is both existing and new. Equitrans proposes to use 28 access roads during construction for access to the right-of-way during construction of the EEP, including 17 existing roads and 11 new roads. Construction workers would typically commute from yards to the right-of-way, with an average of about 45 vehicle trips. Construction equipment would typically stay on the right-of-way. The Applicants would minimize impacts on local road users by following the measures outlined in their project-specific *Traffic and Transportation Management Plans*. After construction, the Applicants would repair all roads to their original condition.

We received comments regarding the potential effect of the MVP on property values, mortgages, and insurance policies. The value of a tract of land, with or without a dwelling,

would be related to many variables, including the size of the tract, improvements, land use, views, location, and nearby amenities, and the values of adjacent properties. The presence of a pipeline, and the restrictions associated with an easement, may influence a potential buyer's decision whether or not to purchase that property. Multiple studies indicate that the presence of a natural gas pipeline would not significantly reduce property values. One recent study conducted for the Interstate Natural Gas Association of America found that there was little difference in adjusted sale prices for houses adjacent to a pipeline easement and those further away in the same subdivision. Also, there is unsubstantiated evidence that buyers of land with pipeline easements were unable to obtain mortgages. We are unaware of an example when an insurance company considered the presence of a pipeline when underwriting homeowner policies.

During construction, the projects would have short-term positive economic impacts on the affected counties due to hiring and wages, and expenditures for commodities, including money spent at restaurants and hotels by workers. The long-term socioeconomic effect of the projects is likely to be beneficial due to the increase in tax revenues. Based on the analysis presented, we conclude that the projects would not have a significant adverse effect on the socioeconomic conditions of the project area.

#### **5.1.10 Cultural Resources**

We consulted with Indian tribes that may have an interest in the projects. No religious or cultural sites of importance to tribes were identified.

We also consulted with SHPOs, federal land managing agencies, local governments, and other consulting parties. The SHPOs reviewed cultural resources reports and provided us with their opinions on NRHP eligibility and potential project effects.

Equitrans identified two previously recorded historic properties in the direct APE for the H-318 pipeline: the Monongahela River Navigation System and the Pittsburgh & Lake Erie Railroad. Equitrans intends to avoid impacts on these two historic properties by using an HDD to cross under the Monongahela River.

Three previously recorded Historic Districts (Blue Ridge Parkway Historic District, North Fork Valley Rural Historic District, and Greater Newport Rural Historic District) that would be crossed by the MVP pipeline are listed on the NRHP. Mountain Valley intends to bore under the BRP. However, we need additional information to assess the effect of the MVP on the North Fork Valley Rural Historic District and the Greater Newport Rural Historic District. The MVP pipeline would avoid the previously recorded St. Bernard's Church and Cemetery, which is listed on the NRHP. Mountain Valley would bore under the previously recorded Weston and Gauley Bridge Turnpike, which is also listed on the NRHP, to avoid adverse impacts on that historic property.

The Applicants conducted archaeological and historical surveys covering about 88 percent of the MVP and all of the EEP. Mountain Valley identified 166 new archaeological sites and 94 new historic architectural sites. Seven new archaeological sites were identified by Equitrans.

Mountain Valley evaluated 99 archaeological sites and 43 historic architectural sites as being not eligible for the NRHP, requiring no further work. All of the newly identified archaeological sites along the EEP pipelines were evaluated as not eligible for the NRHP.

Three other historic sites (Wiseman Residence, Tilley Residence, and ANST) along the MVP were evaluated as eligible for nomination to the NRHP. Mountain Valley proposes to bore under the ANST. The pipeline construction right-of-way would avoid the Wiseman and Tilley residences.

Thirty-three unevaluated archaeological sites along the MVP would be avoided. Mountain Valley would conduct archaeological testing to assess the NRHP eligibility of another 52 archaeological sites which are currently unevaluated. Additional research would also be conducted at three historic architectural sites.

We conclude that the MVP may have adverse effects on historic properties, and those effects would have to be resolved through an agreement document. To ensure that our responsibilities under the NHPA are met, we are recommending that Mountain Valley not begin construction until after any additional required surveys and evaluative testing are completed, survey and testing reports and treatment plans (if necessary) have been reviewed by the appropriate consulting parties, we have provided the ACHP with an opportunity to comment, and we have given written notification to the Applicants to either proceed with treatment or construction.

## **5.1.11 Air Quality and Noise**

### **5.1.11.1 Air Quality**

Air quality impacts associated with construction of the projects would include emissions from construction equipment and fugitive dust. Such impacts would generally be temporary and localized and are not expected to cause or contribute to a violation of applicable air quality standards. Once construction activities in an area are completed, fugitive dust and construction equipment emissions would subside and the impact on air quality due to construction would go away completely. Further, MVP would occur in areas classified as attainment or unclassifiable while EEP's construction emissions would not exceed the General Conformity thresholds in areas of degraded air quality. Therefore, we conclude that the projects' construction-related impacts would not result in a significant impact on local or regional air quality.

Air quality would be affected by construction and operation of the MVP and the EEP. Temporary air emissions would be generated during project construction which would occur over a period of over 2 years and across three states; however, most air emissions associated with the MVP and the EEP would result from the long-term operation of the new compressor stations.

All areas covered by the MVP are designated as attainment or unclassifiable for all criteria pollutants; therefore the General Conformity Rule would not apply. All areas covered by the EEP in West Virginia and Pennsylvania are designated as attainment or unclassifiable for all criteria pollutants, except in some areas of Pennsylvania. Part of the EEP would be conducted in Greene, Allegheny, and Washington Counties in Pennsylvania which are currently classified as

nonattainment and/or maintenance for one or more pollutants. Therefore, a general conformity rule applicability was analyzed for project emissions occurring in those counties during construction, demolition, and operation. Results of the analysis show that the project emissions during construction and demolition would not exceed the General Conformity thresholds for the pollutants of concern, the general conformity rule applicability is not triggered. In addition, emissions during operations would be administered in accordance with the approved Pennsylvania's SIP that addresses the general conformity rule; hence, would be considered exempt from the rule.

Fugitive dust would result from land clearing, open burning, grading, excavation, concrete work, and vehicle traffic on paved and unpaved roads. Construction of the MVP and the EEP would occur over 2 years and across three states. However, most construction related emissions would be temporary and localized, and would dissipate with time and distance from areas of active construction. Mountain Valley and Equitrans would implement measures to control fugitive dust emissions. Mountain Valley and Equitrans prepared separate dust control plans and described how it would control fugitive dust in other application materials. We have reviewed the dust control plans and procedures and found them to be sufficient.

Emissions generated during operation of the pipeline portion of MVP and EEP would be minimal, limited to emissions from maintenance vehicles and equipment and fugitive emissions (considered negligible for the pipeline). Mountain Valley submitted applications for construction and operation of the Bradshaw, Harris, and Stallworth Compressor Stations to the WVDEP and were issued Permits to Construct. Mountain Valley is required to file a Title V permit application with the WVDEP within twelve months of startup of operations of the Bradshaw Compressor Station. EEP submitted application for construction and operation of the Redhook compressor station to the PADEP. The Harris, Stallworth, and Redhook Compressor station would not exceed the major source emissions thresholds to be subject to Title V operating permit. All compressor stations would be minor sources with respect to Prevention of Significant Deterioration and New Source Review.

Mountain Valley and Equitrans would minimize potential impacts on air quality caused by operation of the new compressor stations by adhering to applicable federal and state regulations to minimize emissions. Minimization of the criteria air pollutant emissions, HAPs, and GHGs would be achieved by operating the most efficient turbines, installing SoLoNO<sub>x</sub> system for larger turbines, installing BAT, and adhering to good operating and maintenance practices on combustion engines and using natural gas as fuel. The screening analyses conducted for Mountain Valley's and Equitrans' compressor stations show criteria air pollutant concentrations are below the applicable NAAQS. We conclude that any emissions resulting from operation of the compressor stations would not result in significant impacts on local or regional air quality.

#### **5.1.11.2 Noise**

Construction equipment for the projects would be operated on an as-needed basis. NSAs near the construction areas may experience an increase in perceptible noise, but the effect would be temporary and local. Noise mitigation measures that would be employed during construction include the use of sound-muffling devices on engines and the installation of barriers between

construction activity and NSAs, as well as, limiting the great majority of construction to daytime hours. Additional noise mitigation measures could be implemented to further reduce construction noise disturbances at NSAs. Proposed mitigation would reduce noise levels from HDD activity to below 55 dBA  $L_{dn}$ . Based on modeled noise levels, mitigation measures proposed, and the temporary nature of construction, we conclude that the projects would not result in significant noise impacts on residents and the surrounding communities during construction.

The new compressor stations and associated meter stations would generate noise on a continuous basis (i.e., 24 hours a day) once operating. Mountain Valley and Equitrans completed analyses to identify the estimated noise impacts at the nearest NSAs from the facilities and found that noise levels from each compressor station and meter station during normal operations would be below the FERC criterion of 55 dBA  $L_{dn}$  and noise level increases would be undetectable to barely detectable at NSAs for all compressor stations and meter stations, except at Mobley Tap's NSA-MT-1 which would be moderately noticeable. Mountain Valley would be conduct a post-construction noise surveys at NSAs for each of the three compressor stations while operating on full-load to ensure that the noise impacts are acceptable. To ensure that the actual noise levels produced at the compressor stations would not cause significant impacts on nearby NSAs, we are recommending that Mountain Valley and Equitrans file noise surveys.

Noise from planned or unplanned blowdown events could exceed the noise criteria but would be infrequent and of relative short duration. Noise impacts would result from operation of MVP and the EEP's pipeline facilities, compressor stations, and meter stations. Based on the analyses conducted, mitigation measures proposed, and our recommendations, we conclude that operation of MVP and EEP would not result in significant noise impacts on residents and the surrounding communities.

### **5.1.12 Reliability and Safety**

The projects and associated aboveground facilities would be designed, constructed, operated, and maintained to meet the DOT Minimum Federal Safety Standards in 49 CFR 192 and other applicable federal and state regulations. These regulations include specifications for material selection and qualification; minimum design requirements; and protection of the pipeline from internal, external, and atmospheric corrosion. We received comments expressing concern about how the pipeline would be maintained over time and the long-term safety of operations. The DOT rules require regular inspection and maintenance, including repairs as necessary, to ensure the pipeline has adequate strength to transport the natural gas safely.

We received several comments about the potential effects of a pipeline rupture and natural gas ignition (the area of potential effect is sometimes referred to as the potential impact radius). While a pipeline rupture does not necessarily ignite, the DOT does publish rules that define high consequence areas where a gas pipeline accident could do considerable harm to people and their property and requires an integrity management program to minimize the potential for an accident. Mountain Valley and Equitrans would implement its own management plan for its pipeline facilities which would be clearly marked at line-of-sight intervals and at other key points to indicate the presence of the pipeline. The pipeline system would be inspected to observe right-of-way conditions and identify soil erosion that may expose the pipe, dead

vegetation that may indicate a leak in the pipeline, conditions of the vegetation cover and erosion control measures, unauthorized encroachment on the right-of-way such as buildings and other structures, and other conditions that could present a safety hazard or require preventive maintenance or repairs. Mountain Valley and Equitrans would employ the use of data acquisition systems that would allow for continuous monitoring and control of the projects.

Mountain Valley and Equitrans would prepare an emergency response plan that would provide procedures to be followed in the event of an emergency that would meet the requirements of 49 CFR 192.615. The plan would include the procedures for communicating with emergency services departments, prompt responses for each type of emergency, logistics, emergency shut down and pressure reduction, emergency service department notification, and service restoration. Installation of the pipeline within the Jefferson National Forest would not prevent FS personnel from fighting fires, including the use of heavy equipment near or over the pipeline.

We conclude that the Applicants' implementation of the above measures would help to protect public safety and the integrity of the proposed facilities.

### **5.1.13 Cumulative Impacts**

We analyzed cumulative impacts of the MVP and EEP, in addition to other projects that may occur within the same area of geographic scope and timeframe. The other projects we examined include oil and gas well, gathering lines, and related facilities; mining and other energy projects; other FERC-jurisdictional natural gas transportation projects; residential or commercial developments; and road improvement projects.

We considered other projects within the geographic scope for cumulative impacts on water resources, wetlands, vegetation, wildlife, and land use using the HUC-10 watersheds crossed by the MVP and EEP. For permanent or long-term air quality cumulative impacts associated with compressor stations the area of geographic scope was air quality control regions either directly affected or those located within about 31 miles. The geographic scope for air quality impacts for construction (as well as noise and generalized visual resources) was 0.25 mile. For cultural resources cumulative impacts, the county was the area of geographic scope.

The MVP would cross 31 HUC 10 watersheds and the EEP would cross 3 HUC 10 watersheds. The 33 HUC10 watersheds (the projects share one HUC 10 watershed) combined total 4,557,727 acres. The MVP and the EEP account for about 6,533 acres of impacts (0.1 percent) of these watersheds, while other projects located within the same watersheds account for 82,607 acres (1.8 percent) of impact. Combined, the 20 counties crossed by the MVP and EEP cover about 6,972,384 acres. For all resources analyzed, and in consideration of the Applicants' proposed measures and our recommendations for additional measures intended to result in the further avoidance, minimization, and/or mitigation of effects, we conclude that the effects of adding the impacts of the MVP and EEP with the impacts of other projects would not be significant.

### 5.1.14 Alternatives

As an alternative to the proposed action, we evaluated the no-action alternative, system alternatives, route alternatives, and aboveground facility site alternatives. While the no-action alternative would eliminate the environmental impacts identified in the EIS, the stated objectives of the Applicants' proposals would not be met. Further, the natural gas shippers would seek alternative transportation infrastructure that would impact similar resources as the projects.

Our analysis of system alternatives included an evaluation of whether existing or proposed natural gas pipeline systems could meet the projects' objectives while offering a significant environmental advantage. We could not identify any existing interstate natural gas transmission systems that fully extend from the Applicants' proposed starting points (in southwestern Pennsylvania and northern West Virginia) to the termini of their pipelines (in the case of MVP this would be at Transco Station 165 in southeast Virginia). Because existing systems have their capacities already subscribed, there would not be enough space available on those systems for the additional volumes proposed by Equitrans (0.4Bcf/d) and Mountain Valley (2Bcf/d). Therefore, we conclude that no existing interstate natural gas transmission system could reasonably replace the proposed projects.

We also evaluated merging the ACP and the MVP into one project (one pipeline alternative; using a variety of engineering options) along the ACP route. We determined that the one-pipe alternative would not be technically feasible or practical.

We evaluated two major route alternatives for the MVP: Alternative 1 and Northern Pipeline Alternative – ACP Collocation. Neither of the major route alternatives offered significant environmental advantages over the proposed MVP. None of Equitrans' proposed pipelines was long enough to have a major route alternative.

Since pre-filing, Mountain Valley considered modifying its original route in response to landowner requests, avoidance of sensitive resources, or engineering considerations. Mountain Valley adopted 11 route variations and 572 minor route variations into its proposed route as of the end of July 2016. We recommended that Mountain Valley provide us additional information for two route variations since we did not have adequate data to fully assess it. We also recommended that Mountain Valley adopt one route variation and two minor route variations into the proposed route; and Equitrans should provide additional information for one new alternative route.

Of the 32 stakeholder requested minor route variations that were filed for the MVP, 14 were resolved through one of Mountain Valley's adopted variations, or workspace adjustments, or were no longer applicable. Of the remaining 18 requests, we are recommending that Mountain Valley provide additional information before we can conclude that the landowner's concern has been adequately considered and addressed.

## 5.2 FERC STAFF'S RECOMMENDED MITIGATION

If the Commission authorizes the MVP and the EEP, we recommend that the following measures be included as specific environmental conditions in the Commission's Order. These measures would further mitigate the environmental impact associated with construction and operation of the proposed projects. We have included several recommendations that require the Applicants to provide updated information **prior to the end of the draft EIS comment period**. Other recommendations require the filing of additional information **prior to construction**. Lastly, some recommendations require actions **during operations**. Some recommendations are standard conditions typically attached to Commission Orders. There are recommendations that apply to both Applicants and other recommendations are specific to either Mountain Valley or Equitrans.

**Recommendations 1 through 10 are standard conditions that apply to both Mountain Valley and Equitrans.**

1. Mountain Valley and Equitrans shall each follow the construction procedures and mitigation measures described in its application and supplements, including responses to staff data requests and as identified in the EIS, unless modified by the Order. The Applicants must:
  - a. request any modification to these procedures, measures, or conditions in a filing with the Secretary;
  - b. justify each modification relative to site-specific conditions;
  - c. explain how that modification provides an equal or greater level of environmental protection than the original measure; and
  - d. receive approval in writing from the Director of OEP **before using that modification**.
2. The Director of OEP has delegated authority to take whatever steps are necessary to ensure the protection of all environmental resources during construction and operation of the projects. This authority shall allow:
  - a. the modification of conditions of the Order; and
  - b. the design and implementation of any additional measures deemed necessary (including stop-work authority) to ensure continued compliance with the intent of the environmental conditions as well as the avoidance or mitigation of adverse environmental impact resulting from construction and operation of the projects.
3. **Prior to any construction**, Mountain Valley and Equitrans shall each file an affirmative statement with the Secretary, certified by a senior company official, that all company personnel, EIs, and contractor personnel will be informed of the EIs' authority and have been or will be trained on the implementation of the environmental mitigation measures appropriate to their jobs **before** becoming involved with construction and restoration activities.

4. The authorized facility locations shall be as shown in the EIS, as supplemented by filed alignment sheets. **As soon as they are available, and before the start of construction,** Mountain Valley and Equitrans shall each file any revised detailed survey alignment maps/sheets at a scale not smaller than 1:6,000 with station positions for all facilities approved by the Order. All requests for modifications of environmental conditions of the Order or site-specific clearances must be written and must reference locations designated on these alignment maps/sheets.

The exercise of eminent domain authority granted under NGA Section 7(h) in any condemnation proceedings related to the MVP or EEP must be consistent with the facilities and locations approved in the Commission Order. The right of eminent domain granted under NGA Section 7(h) does not authorize either Mountain Valley or Equitrans to increase the size of the natural gas pipelines approved in the Commission Order to accommodate future needs or to acquire a right-of-way for a pipeline to transport a commodity other than natural gas.

5. Mountain Valley and Equitrans shall each file detailed alignment maps/sheets and aerial photographs at a scale not smaller than 1:6,000 identifying all route realignments or facility relocations, and staging areas, contractor yards, new access roads, and other areas that would be used or disturbed and have not been previously identified in filings with the Secretary. Approval for each of these areas must be explicitly requested in writing. For each area, the request must include a description of the existing land use/cover type, and documentation of landowner approval, whether any cultural resources or federally listed threatened or endangered species would be affected, and whether any other environmentally sensitive areas are within or abutting the area. All areas shall be clearly identified on the maps/sheets/aerial photographs. Each area must be approved in writing by the Director of OEP **before construction in or near that area.**

This requirement does not apply to extra workspace allowed by the FERC Plan and/or minor field realignments per landowner needs and requirements which do not affect other landowners or sensitive environmental areas such as wetlands.

Examples of alterations requiring approval include all route realignments and facility location changes resulting from:

- a. implementation of cultural resources mitigation measures;
  - b. implementation of endangered, threatened, or special concern species mitigation measures;
  - c. recommendations by state regulatory authorities; and
  - d. agreements with individual landowners that affect other landowners or could affect sensitive environmental areas.
6. **Within 60 days of their acceptance of a Certificate and before construction begins,** Mountain Valley and Equitrans shall each file their respective Implementation Plans for review and written approval by the Director of OEP. Mountain Valley and Equitrans must each file revisions to their plans as schedules change. The plans shall identify:

- a. how Mountain Valley and Equitrans will each implement the construction procedures and mitigation measures described in its application and supplements (including responses to staff data requests), identified in the EIS, and required by the Order;
  - b. how the Mountain Valley and Equitrans will each incorporate these requirements into the contract bid documents, construction contracts (especially penalty clauses and specifications), and construction drawings so that the mitigation required at each site is clear to onsite construction and inspection personnel;
  - c. the number of EIs assigned to each project and spread, and how Mountain Valley and Equitrans will each ensure that sufficient personnel are available to implement the environmental mitigation;
  - d. company personnel, including EIs and contractors, who will receive copies of the appropriate materials;
  - e. the location and dates of the environmental compliance training and instructions Mountain Valley and Equitrans will each give to all personnel involved with construction and restoration (initial and refresher training as the projects progress and personnel change) with the opportunity for OEP staff to participate in the training sessions;
  - f. the company personnel (if known) and specific portion of the company's organization having responsibility for compliance;
  - g. the procedures (including use of contract penalties) that Mountain Valley and Equitrans will each follow if noncompliance occurs; and
  - h. for each discrete facility, a Gantt or PERT chart (or similar project scheduling diagram), and dates for:
    - i. the completion of all required surveys and reports;
    - ii. the environmental compliance training of onsite personnel;
    - iii. the start of construction; and
    - iv. the start and completion of restoration.
7. Mountain Valley and Equitrans shall each employ at least one EI per construction spread. The EIs shall be:
- a. responsible for monitoring and ensuring compliance with all mitigation measures required by the Order and other grants, permits, certificates, or other authorizing documents;
  - b. responsible for evaluating the construction contractor's implementation of the environmental mitigation measures required in the contract (see condition 6 above) and any other authorizing document;
  - c. empowered to order correction of acts that violate the environmental conditions of the Order, and any other authorizing document;
  - d. a full-time position, separate from all other activity inspectors;

- e. responsible for documenting compliance with the environmental conditions of the Order, as well as any environmental conditions/permit requirements imposed by other federal, state, or local agencies; and
  - f. responsible for maintaining status reports.
8. **Beginning with the filing of its Implementation Plan**, Mountain Valley and Equitrans shall each file updated status reports with the Secretary on a **weekly basis until all construction and restoration activities are complete**. On request, these status reports will also be provided to other federal and state agencies with permitting responsibilities. Status reports shall include:
- a. an update on the Mountain efforts to obtain the necessary federal authorizations;
  - b. the construction status of the their respective project facilities, work planned for the following reporting period, and any schedule changes for stream crossings or work in other environmentally sensitive areas;
  - c. a listing of all problems encountered and each instance of noncompliance observed by the EIs during the reporting period (both for the conditions imposed by the Commission and any environmental conditions/permit requirements imposed by other federal, state, or local agencies);
  - d. a description of corrective actions implemented in response to all instances of noncompliance, and their cost;
  - e. the effectiveness of all corrective actions implemented;
  - f. a description of any landowner/resident complaints that may relate to compliance with the requirements of the Order, and the measures taken to satisfy their concerns; and
  - g. copies of any correspondence received by Mountain Valley and Equitrans from other federal, state, or local permitting agencies concerning instances of noncompliance, and the responses of Mountain Valley and Equitrans to each letter.
9. Mountain Valley and Equitrans must each receive separate written authorization from the Director of OEP **before placing their respective projects into service**. Such authorization will only be granted following a determination that rehabilitation and restoration of areas affected by the projects are proceeding satisfactorily.
10. **Within 30 days of placing the authorized facilities in service**, Mountain Valley and Equitrans shall each file an affirmative statement with the Secretary, certified by a senior company official:
- a. that the facilities have been constructed in compliance with all applicable conditions, and that continuing activities will be consistent with all applicable conditions; or
  - b. identifying which of the Certificate conditions Mountain Valley and Equitrans has complied or will comply with. This statement shall also identify any areas

affected by their respective projects where compliance measures were not properly implemented, if not previously identified in filed status reports, and the reason for noncompliance.

**Recommendations 11 through 13 apply only to Mountain Valley and shall be adopted into the project design.**

11. Mountain Valley shall adopt Route Variation 35 into its proposed pipeline route and file with the Secretary alignment sheets and copies of USGS 7.5-minute topographic quadrangle maps illustrating the new route, and updated environmental information associated with the route change. (*section 3.5.1.10*)
12. Mountain Valley shall adopt the Mayapple School Route Alternative into its proposed pipeline route and file with the Secretary alignment sheets and copies of USGS 7.5-minute topographic quadrangle maps illustrating the new route, and updated environmental information associated with the route change. (*section 3.5.3.1*)
13. Mountain Valley shall adopt the Sunshine Valley School Route Alternative into its proposed pipeline route and file with the Secretary alignment sheets and copies of USGS 7.5-minute topographic quadrangle maps illustrating the new route, and updated environmental information associated with the route change. (*section 3.5.3.1*)

**Recommendations 14 through 20 apply only to Mountain Valley and shall be addressed before the end of the comment period on the draft EIS.**

14. **Prior to the end of the draft EIS comment period**, Mountain Valley shall file with the Secretary documentation of continued coordination with the FS and other ANST stakeholders (NPS, ATC, and local ATC chapters) regarding the newly adopted pipeline crossing of the ANST, including visual simulations modeling both “leaf-on” and “leaf-off” scenarios at the crossing. (*section 3.5.1.6*)
15. **Prior to the end of the draft EIS comment period**, Mountain Valley shall file with the Secretary the results of on-site surveys for the Mount Tabor Route Alternative to assess constructability and identify karst features that shall be avoided if the alternative is adopted into the proposed pipeline route. (*section 3.5.1.7*)
16. **Prior to the end of the draft EIS comment period**, Mountain Valley shall file with the Secretary additional information on the tracts identified as requiring further action in table 3.5.3-1 of this EIS. If landowners refuse coordination and/or access, Mountain Valley shall utilize available desktop data to evaluate the landowners’ stated concerns. (*section 3.5.3.1*)
17. **Prior to the end of the draft EIS comment period**, Mountain Valley shall file with the Secretary a complete list of any locations not already found acceptable by FERC staff where the pipeline route or access road parallels a waterbody within 15 feet or travels linearly within the waterbody channel. Mountain Valley should either re-align the route/road to avoid locating the pipeline trench and/or access roads along or within a waterbody channel; or, provide site-specific justifications and proposed mitigation for locations Mountain Valley believes cannot be realigned. (*section 4.3.2.2*)

18. **Prior to the end of the draft EIS comment period**, Mountain Valley shall file with the Secretary site plans and maps that illustrate how permanent impacts on wetlands would be avoided at the WB Interconnect. If permanent wetland impacts cannot be avoided, Mountain Valley shall propose a new upland location for the facility and include new site plans and maps. (*section 4.3.3.2*)
19. **Prior to the end of the draft EIS comment period**, Mountain Valley shall file with the Secretary site-specific justifications for each of the wetlands for which Mountain Valley requests a right-of-way width greater than 75 feet. (*section 4.3.3.3*)
20. **Prior to the end of the draft EIS comment period**, Mountain Valley shall file with the Secretary a plan that describes how long-term and permanent impacts on migratory bird habitat would be minimized. This plan shall include an emphasis on high quality and/or larger intact core interior forest areas. This plan should also document consultations with the FWS, FS, WVDNR, and VDGIF. (*section 4.5.2.6*)

**Recommendations 21 and 22 apply only to Equitrans and shall be addressed before the end of the comment period on the draft EIS.**

21. **Prior to the end of the draft EIS comment period**, Equitrans shall file with the Secretary the current status of its easement negotiations for the Redhook Compressor Station. If Equitrans has been unable to negotiate an acceptable easement or purchase agreement, Equitrans should identify alternative compressor station sites and provide an analysis which includes any relevant environmental, engineering, economic factors, and status of landowner negotiations associated with use of the alternative sites. The analysis should include a table that compares/contrasts the alternative sites' characteristics (environmental, engineering, economic) with the proposed aboveground facility site. (*section 4.8.2.2*)
22. **Prior to the end of the draft EIS comment period**, Equitrans shall file with the Secretary additional information regarding the potential construction feasibility of the Cline Route Alternative, including more detailed analysis of potential issues associated with either an open-cut or road bore crossing at Raccoon Creek and Raccoon Run Road. (*section 3.5.3.2*)

**Recommendations 23 through 37 apply only to Mountain Valley and shall be addressed before construction is allowed to commence.**

23. **Prior to construction**, Mountain Valley shall file with the Secretary either a plan for the avoidance of active mines, or copies of agreements with coal companies regarding compensation for loss of coal resources. (*section 4.1.1.4*)
24. **Prior to construction**, Mountain Valley shall file with the Secretary, for review and approval by the Director of OEP, a revised *Landslide Mitigation Plan* which includes:
  - a. an analysis of the potential landslide hazards at the GCSZ, Peters Mountain, Sinking Creek Mountain, and Brush Mountain based on the results of investigations conducted by Schultz and Southworth (1989), and further identified and discussed in USGS Bulletin 1839-E;

- b. an identification of landslide hazards where the pipeline routes through areas comprised of both steep slopes and red shale bedrock of the Conemaugh, Monongahela, Dunkard, and Mauch Chunk Groups;
  - c. an analysis of a potential debris flow zone within the Jefferson National Forest from MP 195.5 along the Kimballton Branch to the junction of Stoney Creek; and
  - d. minor route adjustments as a method to avoid areas of potential slides and debris flows. (*section 4.1.2.4*)
25. **Prior to construction**, Mountain Valley should file with the Secretary the results of its fracture trace/lineament analysis for the MVP. (*section 4.3.1.2*)
26. **Prior to construction**, Mountain Valley shall file with the Secretary site-specific plans, including details regarding materials to be used and installation methods, for the use of permanent culverts and permanent fill in waterbodies and wetlands for access roads. Mountain Valley shall include a detailed analysis of all reasonable alternatives to the use of culverts and permanent fill. (*section 4.3.1.2*)
27. **Prior to construction**, Mountain Valley shall file with the Secretary the results of quantitative modeling for turbidity and sedimentation associated with wet open-cut crossings of the Elk River, Gauley River, and Greenbrier River. The analysis shall address the duration, extent, and magnitude of turbidity levels and assess the potential impacts on resident biota. The analysis should also include a discussion on the physical and chemical characteristics of the sediments, the estimated area affected by the transport and redistribution of the sediments, and the effect of the suspension and resettlement on water quality; as well as an assessment of the effectiveness of the proposed turbidity curtains. (*section 4.3.2.2*)
28. **Prior to construction**, Mountain Valley shall file with the Secretary HDD feasibility and geotechnical studies for the alternative alignments identified for the Pigg River crossing at MP 286.8 and the Blackwater River crossing at MP 262.8. (*section 4.3.2.1*)
29. **Prior to construction**, Mountain Valley shall file with the Secretary contingency plans outlining measures that would be taken to minimize and mitigate potential impacts on public surface water supplies with intakes within 3 miles downstream of the crossing of the MVP pipeline, and ZCC within 0.25-mile of the pipeline. The measures should include, but not be limited to, providing advance notification to water supply owners prior to the commencement of pipeline construction. (*section 4.3.2.2*)
30. **Prior to construction**, Mountain Valley shall file with the Secretary, for the review and approval of the Director of OEP, the results of all remaining environmental surveys (water resources, wetlands, cultural resources, and threatened and endangered species) for all cathodic protection groundbeds. (*section 4.8.1.2*)
31. **Prior to construction**, Mountain Valley shall file with the Secretary evidence of landowner concurrence with the site-specific residential construction plans for all locations where construction work areas would be within 10 feet of a residence, as indicated in bold in table 4.8.2-1. (*section 4.8.2.2*)

32. **Prior to construction**, Mountain Valley shall file with the Secretary documentation that the Weston and Gauley Bridge Turnpike Crossing Plan was reviewed by the COE. *(section 4.8.2.4)*
33. **Prior to construction**, Mountain Valley shall file with the Secretary documentation that the Blue Ridge Parkway Crossing Plan was reviewed by the NPS. *(section 4.8.2.4)*
34. **Prior to construction**, Mountain Valley shall file with the Secretary documentation that the U.S. Highway 50 and North Bend Rail Trail Crossing Plan was reviewed by the WVDOT and WVDNR. *(section 4.8.2.4)*
35. **Prior to construction**, Mountain Valley shall file with the Secretary documentation of further coordination with the TNC and VDCR regarding the crossing of the Mill Creek Springs Natural Area Preserve and include any impact avoidance, minimization, or mitigation measures developed. *(section 4.8.2.4)*
36. **Prior to construction**, Mountain Valley shall file with the Secretary documentation that its VOF parcels crossing plans were reviewed by the VOF. *(section 4.8.2.4)*
37. **Prior to construction**, Mountain Valley shall file with the Secretary documentation that the TNC Property Crossing Plan was reviewed by TNC. *(section 4.8.2.4)*

**Recommendation 38 applies only to Equitrans and shall be addressed before construction is allowed to commence.**

38. **Prior to construction** of the South Fork Tenmile Creek and Monongahela River crossings, Equitrans shall file with the Secretary, for the review and written approval by the Director of OEP, a HDD noise mitigation plan to reduce the projected noise level increase attributable to the proposed drilling operations at the NSAs. **During drilling operations**, Equitrans shall implement the approved plan, monitor noise levels, include noise levels in weekly reports to the FERC, and make all reasonable efforts to restrict the noise attributable to the drilling operations to no more than a 10 dBA increase over ambient noise levels at the NSAs. *(section 4.11.2.3)*

**Recommendations 39 and 40 apply to both Mountain Valley and Equitrans and shall be addressed before construction is allowed to commence.**

39. **Prior to construction**, Mountain Valley and Equitrans shall file with the Secretary the location of all water wells, springs, swallets, and other drinking water sources within 150 feet (500 feet in karst terrain) of the pipeline and aboveground facilities. *(section 4.3.1.2)*
40. **Prior to construction**, Mountain Valley and Equitrans should each file with the Secretary copies of their environmental complaint resolution procedures. The procedures should provide landowners with clear directions for identifying and resolving concerns resulting from construction and restoration of the projects. Mountain Valley and Equitrans should mail copies of their complaint procedures to each landowner whose property would be crossed by the projects.

- a. In their letters to affected landowners, Mountain Valley and Equitrans should:
  - i. provide a local contact that the landowners should call first with their concerns; the letter should indicate how soon a landowner should expect a response;
  - ii. instruct the landowners that if they are not satisfied with the response, they should call the Mountain Valley or Equitrans Hotline, as appropriate. The letter should indicate how soon to expect a response from the company; and
  - iii. instruct the landowners that if they are still not satisfied with the response from the company Hotline, they should contact the Commission's Landowner Helpline at 877-337-2237 or at [LandownerHelp@ferc.gov](mailto:LandownerHelp@ferc.gov).
- b. In addition, Mountain Valley and Equitrans should include in their weekly status reports to the FERC a table that contains the following information for each problem/concern:
  - i. the identity of the caller and date of the call;
  - ii. the location by milepost and engineering station number from the alignment sheet(s) of the affected property;
  - iii. a description of the problem/concern; and
  - iv. an explanation of how and when the problem was resolved, will be resolved, or why it has not been resolved. (*section 4.8.2*)

**Recommendations 41 and 42 apply to Mountain Valley and shall be addressed before construction is allowed to commence.**

41. Mountain Valley shall not begin construction of the proposed facilities **until**:
  - a. all outstanding biological surveys for federally listed species (i.e., Ellett Valley millipede, bog turtle, and running buffalo clover) are completed and filed with the Secretary;
  - b. the FERC staff completes any necessary ESA Section 7 informal and formal consultation with the FWS; and
  - c. Mountain Valley has received written notification from the Director of OEP that construction and/or use of mitigation (including implementation of conservation measures) may begin. (*section 4.7.1.3*)
42. Mountain Valley **shall not begin construction** of facilities and/or use of staging, storage, or temporary work areas and new or to-be-improved access roads **until**:
  - a. Mountain Valley files with the Secretary:
    - i. remaining cultural resources survey reports;
    - ii. site evaluation reports, avoidance plans, or treatment plans, as required; and

- iii. comments on the reports and plans from the appropriate SHPOs, federal land managing agencies, interested Indian tribes, and other consulting parties.
- b. the ACHP has been afforded an opportunity to comment if historic properties would be adversely affected; and
- c. the FERC staff reviews and the Director of OEP approves all cultural resources reports and plans, and notifies Mountain Valley in writing that either treatment measures (including archaeological data recovery) may be implemented or construction may proceed.

All materials filed with the Commission containing **location, character, and ownership** information about cultural resources must have the cover and any relevant pages therein clearly labeled in bold lettering: “**CONTAINS PRIVILEGED INFORMATION - DO NOT RELEASE.**” (*section 4.10.9.3*)

**Recommendations 43 apply only to Mountain Valley and shall be addressed during operation of facilities.**

- 43. Mountain Valley shall file noise surveys with the Secretary **no later than 60 days** after placing the equipment at the Bradshaw, Harris, (including the WB Interconnect) and Stallworth Compressor Stations into service. If full load condition noise surveys are not possible, Mountain Valley shall provide interim surveys at the maximum possible horsepower load **within 60 days** of placing the equipment into service and provide the full load survey **within 6 months**. If the noise attributable to the operation of all of the equipment at each station under interim or full horsepower load exceeds an Ldn of 55 dBA at the nearest NSA, Mountain Valley shall file a report on what changes are needed and shall install the additional noise controls to meet the level within **1 year** of the in-service date. Mountain Valley shall confirm compliance with the above requirement by filing a second noise survey with the Secretary for each station **no later than 60 days** after it installs the additional noise controls. (*section 4.11.2.3*)

**Recommendation 44 applies only to Equitrans and shall be addressed during operation of facilities.**

- 44. Equitrans shall file a noise survey with the Secretary **no later than 60 days** after placing the Redhook Compressor Station, into service. If a full load condition noise survey is not possible, Equitrans shall provide an interim survey at the maximum possible horsepower load **within 60 days** of placing the Redhook Compressor Station into service and provide the full load survey **within 6 months**. If the noise attributable to operation of the equipment at the Redhook Compressor Station exceeds an Ldn of 55 dBA at the nearest NSA, Equitrans shall file a report on what changes are needed and shall install the additional noise controls to meet the level **within 1 year** of the in-service date. Equitrans shall confirm compliance with the above requirement by filing a second noise survey with the Secretary **no later than 60 days** after it installs the additional noise controls. (*section 4.11.2.3*)

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