

EXECUTIVE SUMMARY

The staff of the Federal Energy Regulatory Commission (FERC or Commission) has prepared this draft Environmental Impact Statement (EIS) to fulfill requirements of the National Environmental Policy Act (NEPA) and the Commission's implementing regulations under Title 18 of the Code of Federal Regulations (CFR) Part 380. On October 23, 2015, Mountain Valley Pipeline, LLC (Mountain Valley),¹ filed an application with the FERC under Section 7(c) of the Natural Gas Act (NGA) and Part 157 of the Commission's regulations to construct and operate certain interstate natural gas pipeline facilities in West Virginia and Virginia. In the same month, Equitrans, L.P. (Equitrans)² filed its application with the FERC to construct and operate certain interstate natural gas pipeline facilities in Pennsylvania and West Virginia.

The FERC is the federal agency responsible for authorizing interstate natural gas transmission facilities under the NGA and is the lead federal agency for preparation of this EIS in compliance with the requirements of NEPA. The United States (U.S.) Department of Agriculture (USDA) Forest Service (FS), the U.S. Environmental Protection Agency (EPA), the U.S. Army Corps of Engineers (COE), the U.S. Department of Interior (USDO I) Bureau of Land Management (BLM); the Pipeline and Hazardous Materials Safety Administration (PHMSA) within the U.S. Department of Transportation (DOT), the West Virginia Department of Environmental Protection (WVDEP), and the West Virginia Division of Natural Resources (WVDNR) participated as cooperating agencies in preparation of the EIS. A cooperating agency has jurisdiction by law or has special expertise with respect to environmental resource issues associated with a project.

PROPOSED ACTION

Mountain Valley's proposal (the Mountain Valley Project [MVP]) would involve construction and operation of about 301 miles of new 42-inch-diameter natural gas pipeline and associated facilities in West Virginia and Virginia. Mountain Valley also proposes to construct and operate 3 new compressor stations, 4 new meter stations and interconnects, 2 taps, 36 mainline valves, 5 pig³ launchers/receivers, and 31 cathodic protection beds.

Equitrans' proposal (the Equitrans Expansion Project [EEP]) would involve construction and operation of a total of about 8 miles of various diameter natural gas pipelines (H-158, H-305, H-316, H-318, H-319, and M-80), 1 new compressor station, 2 interconnects, 3 pig launcher and receiver sites, and cathodic protection beds, and the decommissioning of an existing compressor station. No meter stations or mainline valves are associated with the EEP.

¹ Mountain Valley is a joint venture between affiliates of EQT Midstream Partners, LP; NextEra Energy US Gas Assets, LLC; WGL Midstream, Inc.; Vega Energy Midstream MVP, LLC; RGC Midstream, LLC; and Con Edison Gas Midstream, LLC.

² Equitrans is a limited partnership, with about 97.25 percent owned by Equitrans Investments, LLC and 2.75 percent owned by Equitrans Services, LLC, both subsidiaries of EQT Midstream Partners LP.

³ A pig is an internal tool that can be used to clean and dry a pipeline and/or to inspect it for damage or corrosion.

In this document, Mountain Valley and Equitrans are collectively referred to as the “Applicants.” As described by the Applicants, the purpose of both the MVP and the EEP is to transport natural gas produced in the Appalachian Basin to markets in the Northeast, Mid-Atlantic, and Southeastern United States. The MVP is designed to transport about 2.0 million dekatherms per day (Dth/d, equivalent to about 2.0 billion cubic feet per day [Bcf/d]) of contracted volumes of natural gas. The EEP would transport up to 400,000 Dth/d (about 0.4 Bcf/d) of contracted firm capacity of natural gas.

On October 27, 2014, Mountain Valley filed a request with the FERC to initiate the Commission’s pre-filing environmental review process for the MVP. On October 31, 2014, the FERC granted Mountain Valley’s request and established temporary pre-filing docket number PF15-3-000 to place information related to the MVP into the public record. The intent of our⁴ pre-filing process is to encourage the early involvement of interested stakeholders, facilitate interagency cooperation, and identify and resolve issues before an application is filed.

On April 1, 2015, Equitrans requested to use our pre-filing environmental review process for the EEP, and the FERC accepted that request on April 9, 2015. The Commission established the pre-filing temporary docket number of PF15-22-000 for the EEP.

PUBLIC INVOLVEMENT

During pre-filing, the Applicants sponsored 18 open house meetings held at various locations throughout the project areas to explain their projects to the public. Representatives of the FERC staff also attended those open house meetings to answer questions from the public about our environmental review process. We estimate that about 1,100 people attended all the open houses combined.

On April 17, 2015, the Commission issued a *Notice of Intent (NOI) to Prepare an Environmental Impact Statement for the Planned Mountain Valley Pipeline Project, Request for Comments on Environmental Issues, and Notice of Public Scoping Meetings*. The NOI was published in the *Federal Register* on April 28, 2015, and mailed to more than 2,800 interested parties on our environmental list. The NOI briefly described the MVP, summarized the FERC’s environmental review process, provided a preliminary list of issues identified by us, invited comments on the environmental issues that should be addressed in the draft EIS, listed the date and location of six public scoping meetings to be held in the area of the MVP, and established a closing date for receipt of comments of June 16, 2015.

We issued our NOI for the EEP on August 11, 2015, that was published in the *Federal Register* on August 17, 2015. The scoping period for the EEP ended on September 14, 2015.

In response to our notices and at our public meetings, we received over 1,500 comments; almost exclusively focused on the MVP. The majority of the scoping comments raised concerns about geology, water resources, vegetation, land use, socioeconomics, and safety. These concerns are addressed in this draft EIS.

⁴ “We,” “us,” and “our” refer to the environmental staff of the FERC’s Office of Energy Projects.

Mountain Valley and Equitrans assessed numerous route alternatives over the course of project development, and as of July 2016 Mountain Valley had adopted 11 route alternative segments and 572 minor route variations into its proposed project design for various reasons including landowner requests, avoidance of sensitive resources, or engineering considerations.

Copies of this draft EIS were mailed to our environmental list, including elected officials, government agencies, interested Native Americans and Indian tribes, regional environmental groups and non-governmental organizations, affected landowners, intervenors, local newspapers and libraries, and individuals who attended meetings or submitted written comments on the projects. The draft EIS has been filed with the EPA, and a formal Notice of Availability (NOA) will be issued in the *Federal Register*. The public has 90 days after the date of publication of the EPA's notice in the *Federal Register* to comment on the draft EIS either in the form of written comments to the FERC, or at public comment sessions to be held in the area of the projects. The NOA also listed the locations, dates, and times for the public comment sessions. All comments received on the draft EIS related to environmental issues will be addressed in the final EIS.

PROJECT IMPACTS AND MITIGATION

Construction and operation of the projects could result in impacts on environmental resources, including on geology, soils, groundwater, surface water, wetlands, vegetation, wildlife, fisheries, special-status species, land use, visual resources, socioeconomics, cultural resources, air quality, noise, and safety. In section 3 of this EIS, we include an evaluation of alternatives to the projects, including the no-action alternative, system alternatives, and route alternatives. In section 4.13, we assess the cumulative impacts of the projects added to other known actions within the same area geographic scope and in the same timeframe.

We evaluated the impacts of the projects, taking into consideration the Applicants' proposed avoidance, minimization, and mitigation measures. Our analysis of impacts on environmental resources is summarized below and is discussed in detail in section 4 of this EIS. Where necessary, we are recommending additional mitigation measures to reduce impacts on specific resources. Section 5.2 of this EIS contains a compilation of our recommended mitigation measures.

Geology and Soils

The MVP pipeline route would be within 0.25-mile of 62 mines and 233 oil and gas wells. The EEP would be in proximity to 19 inactive mines and 42 active oil and gas wells. Mountain Valley developed a *Mining Area Construction Plan*. We are also recommending that Mountain Valley file a plan to avoid or compensate for impacts on active mines. Equitrans developed a *Mine Subsidence Plan*. The Applicants would flag and install safety fence around oil and gas wells near the construction right-of-way.

About 30 percent of the MVP pipeline route, and 48 percent of the EEP pipelines would cross topography with slopes greater than 15 percent grade. About 67 percent of the MVP pipeline route, and all of the EEP pipelines, would cross areas susceptible to landslides. The Applicants would implement specific construction methods for crossing steep topography. Mountain Valley developed a *Landslide Mitigation Plan*, and we are recommending that the plan

should be revised to include an analysis of the potential landslide hazards at the Giles County Seismic Zone, Peters Mountain, Sinking Creek Mountain, and Brush Mountain.

The MVP pipeline route would cross about 51 miles of karst terrain. The EEP pipelines would cross no karst terrain. Mountain Valley developed a *Karst Mitigation Plan*. In addition, we are recommending that Mountain Valley investigate route variations to avoid or reduce impacts on Canoe Cave and the Mount Tabor Sinkhole Plain.

The projects would traverse a variety of soil types and conditions. Permanent impacts on soils would occur only at the aboveground facilities, where the sites would be covered with gravel and converted to industrial use. Most impacts on soils would be temporary or short-term during pipeline construction. After pipeline installation the right-of-way would be restored and revegetated, in accordance with the FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan) for MVP, and Equitrans' project-specific Plan for the EEP.

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. Mountain Valley would reduce erosion by installing the sediment controls outlined in its project-specific *Erosion and Sediment Control Plan* and following the measures outlined in the FERC Plan. Equitrans would reduce erosion by following the measures outlined in its *Erosion and Sediment Control Plan for the Redhook Compressor Station*, its project-specific Plan. Mountain Valley would revegetate the right-of-way after pipeline installation using seed mixes recommended by the Wildlife Habitat Council, while Equitrans would follow the Pennsylvania Department of Environmental Protection's (PADEP) *Erosion and Sediment Pollution Control Program Manual*.

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. Further, Mountain Valley developed an *Organic Farm Protection Plan*.

The MVP pipeline route would traverse about 118 miles of shallow bedrock. About 1 mile along the routes of the EEP pipelines has been identified as having shallow depth to bedrock. If bedrock is encountered during trenching, the Applicants would first attempt to rip the bedrock using standard trenching techniques. If the bedrock is unrippable, the Applicants would consider using rock trenching machines, rock saws, hydraulic rams, jack hammers and the like. If blasting becomes necessary, it would be done in accordance with Mountain Valley's project-specific *Draft Blasting Plan*.

Groundwater, Surface Waterbody Crossings, and Wetlands

Neither of the projects would cross any designated sole source aquifers, and no state-designated aquifers have been identified in the project area. The MVP would cross one Source Water Protection Area (SWPA); however, the EEP would not cross any SWPAs.

Because the Applicants, in part due to lack of access, have not completed field surveys to identify water wells and springs within 150 feet of construction workspaces (500 feet in karst terrain), we are recommending that Mountain Valley and Equitrans provide the location of all water wells, springs, and other drinking water sources identified during pre-construction surveys after access is obtained. The Applicants have agreed to perform pre-construction monitoring of water quality and yield for drinking water resources, and would evaluate any complaints or damage associated with construction of the projects and identify suitable settlements with landowners, including providing alternative sources of potable water during repair or replacement of the damaged water supply. In addition, the Applicants have developed *Spill Prevention, Containment, and Counter Measure Plans* (SPCCP) to protect water resources from accidental spills of hazardous materials, such as fuel and oil, during construction and operation.

The MVP would result in 986 waterbody crossings and the EEP would result in 35 waterbody crossings. Of these crossings, 377 would be perennial waterbodies that could support fisheries. Equitrans would use horizontal directional drills (HDD) to cross under two waterbodies; the others would be crossed using dry crossing methods (such as flumes or dam-and-pump). In the event of a release of drilling mud during an HDD, Equitrans developed a *HDD Contingency Plan*. Mountain Valley would cross almost all waterbodies using dry crossing construction methods. These measures should reduce downstream turbidity and sedimentation. Impacts on streams should be temporary or short-term, as typical crossings would be completed in less than 48 hours, and sediment controls would be in place.

Mountain Valley is proposing to use the wet open-cut method to cross three major waterbodies. Therefore, we are recommending that Mountain Valley should file the results of modeling for turbidity and sedimentation associated with the construction of these three wet open-cut crossings.

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 emergent wetlands, and 2.1 acres of shrub-scrub 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 *Wetland and Waterbody Construction and Mitigation Procedures* (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 Clean Water Act. Impacts on wetlands from pipeline construction would involve a conversion of vegetation type but would not involve a conversion from wetland to upland; thus, there would be no net wetland losses. However, to compensate for conversions of wetland types, especially the permanent conversion of about 3 acres of forested wetlands to shrub or emergent wetlands within the pipeline operational easement and along permanent access roads, the Applicants propose to purchase credits from approved wetland mitigation banks in the respective states.

Vegetation, Wildlife, Fisheries, and Federally Listed and State-sensitive Species

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. Operation of the aboveground facilities for the MVP and EEP combined would impact 25 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. 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.

A variety of wildlife species occupy the habitats crossed by Mountain Valley's and Equitrans' pipelines. Construction of the MVP and the EEP may result in mortality for less mobile animals, such as small rodents, reptiles, amphibians, and invertebrates, which are unable to escape equipment. More mobile animals would likely be displaced to adjacent similar habitats during construction and restoration. Additionally, constructing the projects could disrupt bird courting, breeding, or nesting behaviors. In shrublands and grasslands, impacts would be short-term. Once the right-of-way is revegetated, it would be reoccupied by animals.

Impacts on forest-dwelling species would be greater because forest would take a long time to regenerate in temporary workspaces and trees would be permanently removed from the operational pipeline easement. The removal of forest would contribute to edge effects and habitat fragmentation within core forest tracts. In West Virginia, the MVP would pass through 24 core forest areas, and result in permanent impacts on about 865 acres within those forest core tracts. In Virginia, the MVP would pass through 17 high to outstanding ecological core areas, with permanent impacts on about 195 acres of forest within those core tracts. Construction of the EEP H-318 pipeline in Pennsylvania would affect one tract of interior forest of about 50 acres. The MVP and the EEP would collocate their pipeline facilities adjacent to existing rights-of-way for about 29 percent and 20 percent of the routes, respectively, which would reduce forest fragmentation and new edges.

Migratory birds, including Birds of Conservation Concern, are associated with the habitats that would be affected by the MVP and the EEP. The proposed MVP would impact two Important Bird Areas. Both Mountain Valley and Equitrans developed *Migratory Bird Habitat Conservation Plans* to minimize impacts on bird species. In addition, Equitrans has agreed to conduct tree clearing outside of the migratory bird nesting season (i.e., from August 2 to April 14). Mountain Valley would conduct tree clearing in select areas during the migratory bird nesting season (limited to the timeframe of April 15 to April 30). Mountain Valley had indicated it would extend clearing into the first two weeks of the nesting period due to logistical constraints. However, Mountain Valley has agreed to conduct nest searches in these select areas prior to tree-clearing, would protect active nests until the hatchlings have fledged, and would coordinate with the USDO I U.S. Fish and Wildlife Service (FWS) regarding additional mitigation. We conclude that the projects would adequately minimize effects on migratory birds.

The MVP 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 indicated that it would cross all waterbodies classified as fisheries of special concern within state-designated construction windows. In addition, Mountain Valley would follow the measures outlined in its project-specific Procedures; using dry techniques to cross all but three major waterbodies.

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 the MVP 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 have concluded that the EEP would be *not likely to adversely affect* 2 species. In the near future, the FERC staff would produce a Biological Assessment for the projects, and enter into formal consultations with the FWS. Section 4.7 summarizes the findings that would be included in our BA. We are recommending that construction cannot begin until after the FERC completes the process of complying with Section 7 of the Endangered Species Act.

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 not counting those species already counted as federally listed. Based on our review, we have concluded that the MVP and EEP *would not significantly impact* 10 of these species. Determinations for the remaining 10 species are pending the results of 2016 surveys (which are not yet complete due in part to species-specific survey windows) or coordination with state agencies.

Land Use 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 identified 117 residences within 50 feet of its proposed construction right-of-way. Site-specific residential mitigation plans are included as appendix H of this EIS. Affected landowners should review and comment on those plans. In addition, we are recommending that Mountain Valley file landowner concurrence with the plans for all residences that would be within 10 feet of the construction work area.

Equitrans identified four residences within the boundary of the proposed Redhook Compressor Station. Equitrans has purchased one of the properties and has signed sales agreements for two of the properties. Because an agreement has not yet been made on the remaining property, we are recommending that Equitrans file the status of negotiations, and if they are unable to negotiate an acceptable agreement Equitrans identify alternative compressor station sites and provide environmental and engineering analyses for the sites.

Mountain Valley identified two Christmas tree farms and two farms that are potentially transitioning to organic farming. As part of its easement agreements, Mountain Valley would specify compensation for trees removed from orchards. To reduce impacts on organic farms, Mountain Valley developed an Organic Farm Protection Plan. No orchards, tree farms, specialty crops, or organic farms were identified along the EEP.

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 Blue Ridge Parkway (BRP), and the Jefferson National Forest. Within the Jefferson National Forest, the pipeline would cross the Appalachian National Scenic Trail (ANST) and the Brush Mountain Inventoried Roadless Area. Mountain Valley intends to cross under the ANST using a bore along an alternative route variation. We are recommending that Mountain Valley conduct additional visual simulations of the alternative crossing, and continue coordination with the FS and other ANST stakeholders (NPS, ATC, and local ATC chapters). Likewise, Mountain Valley is proposing to bore under the Weston and Gauley Bridge Turnpike and the BRP. Again, 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. On the Jefferson National Forest, construction of the MVP would impact a total of about 81 acres. Impacts on National Forest resources would be minimized by Mountain Valley following the measures outlined in its Plan of Development that must be approved by the FS and BLM. The FS developed a Land and Resource Management Plan (LRMP) for the National Forest. 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. In this EIS, 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.

Mountain Valley performed a visual resources analysis of its pipeline route. It identified nine key observation points (KOP) 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.

Compressor stations and meter stations would have high potential for visual impacts, as these are permanent aboveground structures. Operation of new aboveground facilities would result in conversion of 48.8 acres of forest, agricultural, and open land into industrial land. Most of the facilities are located in rural areas, some distance from residences. Visual impacts for the aboveground structures would generally be reduced by topography and vegetation surrounding the sites, which screen the facilities from most viewers.

Socioeconomics and Transportation

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 construction spread (construction spreads and discrete segments of the pipeline that are constructed concurrently or separately from other portions of the route. For MVP, they would range in length from 22.2 miles to 39.5 miles). 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 recreational vehicle (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 short-term impacts on population and local housing. 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.

We received comments regarding potential adverse effects of the projects 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 where an insurance company considered the presence of a pipeline when underwriting homeowner policies.

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.

Cultural Resources

We consulted with Indian tribes that may have an interest in the projects (20 tribes for the MVP and 18 tribes for the EEP). One tribe responded with no objections to the MVP; no tribes responded to the EEP.

Mountain Valley and Equitrans conducted archaeological and historic architectural surveys of the area of potential effect (APE). Mountain Valley defined its direct APE as a 300-foot-wide corridor. Surveys covered about 264 miles of the MVP pipeline route (88 percent). Within the direct APE, Mountain Valley identified 166 new archaeological sites and 94 new historic architectural sites. The entire APE for the EEP was inventoried, and seven new archaeological sites were identified.

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

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 route are listed on the NRHP. Mountain Valley intends to bore under the BRP. However, we need additional information to assess the MVP's effects 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.

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.

To ensure that our responsibilities under the National Historic Preservation Act are met, we are recommending that the Applicants 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 parties, and we have provided written notification to proceed with either treatment or construction.

Air Quality and Noise

Air quality impacts associated with construction of the proposed projects would include emissions from construction equipment and fugitive dust. Such air quality impacts would generally be temporary and localized, and are not expected to cause or contribute to a violation of applicable air quality standards. Mountain Valley would implement the measures from its *Fugitive Dust Control Plan* to reduce construction impacts on air quality. 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.

Mountain Valley submitted applications for construction and operation of the Bradshaw, Harris, and Stallworth Compressor Stations to the West Virginia Department of Environmental Protection (WVDEP) and were issued Permits to Construct. The new Bradshaw Compressor Station would exceed the Title V major source threshold for NO_x and CO. Therefore, 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 Stations 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 under the Clean Air Act.

Minimization of air pollutant emissions, including greenhouse gases, would be achieved with normal engine maintenance and the use of natural gas fuel. The screening analyses conducted for Mountain Valley's and Equitrans' compressor stations show criteria air pollutant concentrations are below the applicable National Ambient Air Quality Standards. We conclude that emissions resulting from operation of the compressor stations would not result in significant impacts on local or regional air quality.

Noise Sensitive Areas (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 implemented during construction include the use of sound-muffling devices on engines and 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. Based on modeled noise levels, mitigation measures proposed, and the temporary nature of construction, we conclude that construction of the projects would not result in significant noise impacts on residents and the surrounding communities.

Noise impacts on NSAs due to operations of the pipeline facilities, compressor stations and meter stations would be negligible to barely perceptible. Noise from planned or unplanned blowdown events could exceed the noise criteria but would be infrequent and of relatively short duration. 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.

Reliability and Safety

The projects would be designed, constructed, operated, and maintained to meet the DOT's 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.

Mountain Valley and Equitrans would implement their own management plan for pipeline facilities. 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 vegetative 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 use data acquisition systems that would allow for continuous monitoring and control of the projects.

Mountain Valley and Equitrans would prepare project-specific emergency response plans that would provide procedures to be followed in the event of an emergency that would meet the requirements of 49 CFR 192.615. The plans 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. We conclude that the Applicants' implementation of the above measures would protect public safety and the integrity of the proposed facilities.

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.

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 wells, gathering lines, and related facilities; mining and other energy projects; other FERC-jurisdictional natural gas transportation projects (such as the Atlantic Coast Pipeline [ACP] Project and the Columbia WB XPress Project); residential or commercial developments; and road improvement projects.

We considered other projects within the geographic scope for cumulative impacts on water resources, wetlands, vegetation, land use, and wildlife using the hydrologic unit code (HUC) 10 sub-watersheds crossed by the MVP and EEP. Construction impacts on air quality were considered based on a 0.25-mile buffer and operational air quality impacts were considered at the air quality control region (AQCR) level where compressor stations would be located as well as any other AQCRs within 31.1 miles (50 km) of Mountain Valley's or Equitrans' proposed compressor stations. For cultural resources the county was the area of geographic scope.

The MVP pipeline would cross 31 HUC 10 watersheds and the EEP pipelines 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.

Alternatives Considered

The no-action alternative was considered for the projects. 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. 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 Transcontinental Gas Pipe Line Company LLC's 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).

We evaluated two major route alternatives for the MVP; collocation of the MVP along the ACP project route and a major route alternative largely collocated with an electric transmission line. Neither of the major route alternatives offers a significant environmental

advantage over the proposed pipeline route. 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.

Mountain Valley adopted into its proposed pipeline route 14 minor route alternatives to resolve issues raised by landowners or other stakeholders. There are 18 other minor route alternatives to be considered, where issues with landowners have not yet been resolved. We are recommending that Mountain Valley provide additional data for each variation. We also are recommending that Mountain Valley adopt three minor route variations into the proposed route.

MAJOR CONCLUSIONS

We determined that construction and operation of the projects would result in limited adverse environmental impacts, with the exception of impacts on forest. This determination is based on our review of the information provided by the Applicants and further developed from environmental information requests; field reconnaissance; scoping; literature research; alternatives analyses; and contacts with federal, state, and local agencies, and other stakeholders.

We conclude that approval of the projects would result in some adverse environmental impacts, but the majority of these impacts would be reduced to less-than-significant levels. Although many factors were considered in this determination, the principal reasons are:

- Mountain Valley would implement the measures outlined in our Plan, its project-specific *Erosion and Sediment Control Plan*, and its project-specific Procedures.
- In addition, Mountain Valley would implement the measures outlined in its various resource-specific mitigation plans filed with its application to the FERC, or included in various supplemental filings, including its *Karst Mitigation Plan* and *Karst-specific Erosion and Sediment Control Plan* to reduce impacts when crossing karst terrain; its *Landslide Mitigation Plan* for reducing impacts when crossing steep topography; its *Mining Area Construction Plan* to reduce impacts when crossing coal mine areas; its *Draft Blasting Plan* to reduce impacts when crossing areas of shallow bedrock; its *Organic Farm Protection Plan* to reduce impacts when crossing organic farms; its *Water Resources Identification and Testing Plan*, *SPCCP*, and *Unanticipated Discovery of Contamination Plan* to reduce impacts on water resources; its *Compensatory Wetland Mitigation Plan* to mitigate for the conversion of forested wetlands to shrub or herbaceous wetlands; its *Migratory Bird Habitat Conservation Plan* and *Exotic and Invasive Species Control Plan* to reduce impacts on birds, other animals, and plants; its *Fire Prevention and Suppression Plan* to reduce the chance of wildfires; its *Traffic and Transportation Management Plan* to reduce impacts on local road users; its *Fugitive Dust Control Plan* to reduce air quality impacts during construction; and its *Winter Construction Plan*.
- Equitrans would follow its project-specific Plan and Procedures, its *Erosion and Sediment Control Plan for the Redhook Compressor Station*, and the *PADEP Erosion and Sediment Pollution Control Program Manual*.
- In addition, Equitrans would implement the measures outlined in its various resource-specific mitigation plans filed with its application to the FERC, or included in various supplemental filings, including its *Mine Subsidence Plan* to protect its pipelines while

crossing abandoned coal mine areas; its project-specific *SPCCP* and *Preparedness, Prevention, and Contingency and Emergency Action Plan* to reduce potential impacts on water resources; its *HDD Contingency Plan* to handle a failure or frac-out while crossing under the Monongahela River and South Fork Tenmile Creek; its *Migratory Bird Conservation Plan* to minimize impacts on bird species of concern; and its *Traffic and Transportation Management Plan* to reduce impacts on other local road users.

- The Applicants would cross sensitive waterbodies and coldwater fisheries using mostly dry open-cut crossing methods during state-mandated construction windows.
- The Applicants would be required to obtain permits from the COE and applicable state resource agencies prior to crossing waterbodies and wetlands.
- For the portion of the MVP within the Jefferson National Forest, Mountain Valley would follow the measures outlined in its POD.
- We would complete formal consultations with the FWS under Section 7 of the Endangered Species Act prior to allowing any construction to begin that could adversely affect federally listed threatened or endangered species.
- We would complete the process of complying with the National Historic Preservation Act prior to allowing any construction to begin that could adversely affect historic properties.
- We would provide oversight for an environmental inspection and mitigation monitoring program that would ensure compliance with all mitigation measures that become conditions of the FERC authorizations.

In addition, we developed site-specific mitigation measures that Mountain Valley and Equitrans should implement to further reduce the environmental impacts that would otherwise result from construction of their projects. We determined that these measures are necessary to reduce the significant and adverse impacts associated with the projects, and in part, are basing our conclusions on implementation of these measures. These recommended mitigation measures are presented in section 5.2 of the draft EIS.

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