Mountain Valley Pipeline Boost Project

Docket No. CP26-__-000

Resource Report 6 – Geologic Resources

October 2025

Mountain Valley Pipeline Boost Project
Resource Report 6 – Geologic Resources

Resource Report 6 Filing Requirements per 18 CFR § 380.12	
Information	**Location in Resource Report**
Minimum Filing Requirements	
1. Describe, by milepost, mineral resources that are currently or potentially exploitable. (§ 380.12(h)(1))	Section 6.3
2. Describe, by milepost, existing and potential geological hazards and areas of nonroutine geotechnical concern, such as high seismicity areas, active faults, and areas susceptible to soil liquefaction; planned, active, and abandoned mines; karst terrain; and areas of potential ground failure, such as subsidence, slumping, and landsliding. Discuss the hazards posed to the facility from each one. (§ 380.12(h)(2))	Section 6.4
3. Describe how the project would be located or designed to avoid or minimize adverse effects to the resources or risk to itself, including geotechnical investigations and monitoring that would be conducted before, during, and after construction. Discuss also the potential for blasting to affect structures, and the measures to be taken to remedy such effects. (§ 380.12(h)(3))	Sections 6.6 and 6.6.1.1
4. Specify methods to be used to prevent project-induced contamination from surface mines or from mine and whether the project would hinder mine reclamation or expansion efforts. (§ 380.12(h)(4))	Sections 6.3.3 and 6.6
5. If the application is for underground storage facilities: (i) Describe how the applicant would control and monitor the drilling activity of others within the field and buffer zone; (ii) (ii) Describe how the applicant would monitor potential effects of the operation of adjacent storage or production facilities on the proposed facility, and vice versa; (iii) (iii) Describe measures taken to locate and determine the condition of old wells within the field and buffer zone and how the applicant would reduce risk from failure of known and undiscovered wells; and (iv) (iv) Identify and discuss safety and environmental safeguards required by state and Federal drilling regulations. (§ 380.12(h)(5))	Not Applicable (no underground storage proposed)
Minimum Filing Requirements – Appendix A to Part 380 [Note: May overlap with requirements above.]	
1. Identify the location (by milepost) of mineral resources and any planned or active surface mines crossed by the proposed facilities. (§ 380.12(h)(1 & 2)).	Section 6.3
2. Identify any geologic hazards to the proposed facilities. (§ 380.12(h)(2))	Section 6.4
3. Discuss the need for and locations where blasting may be necessary in order to construct the proposed facilities. (§ 380.12(h)(3))	Section 6.6.1.1
4. For underground storage facilities, how drilling activity by others within or adjacent to the facilities would be monitored, and how old wells would be located and monitored within the facility boundaries. (§380.12(h)(5))	Not Applicable (no underground storage proposed)

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LIST OF ACRONYMS AND ABBREVIATIONS

FERC	Federal Energy Regulatory Commission
LiDAR	Light Detection and Ranging
M	earthquake magnitude
MMI	Modified Mercalli Intensity
MVP	Mountain Valley Pipeline, LLC
MVP Mainline	existing Mountain Valley Pipeline mainline
MYA	million years ago
PFZ	Pembroke Fault Zone
Project	Mountain Valley Pipeline Boost Project
SSURGO	USDA Soil Survey Geographic database
USGS	United States Geological Survey

RESOURCE REPORT 6
GEOLOGIC RESOURCES

Introduction

Mountain Valley Pipeline, LLC (MVP) is seeking a Certificate of Public Convenience and Necessity from the Federal Energy Regulatory Commission (FERC) pursuant to Section 7(c) of the Natural Gas Act authorizing MVP to construct and operate the proposed Mountain Valley Pipeline Boost Project (Project) located in Wetzel, Braxton and Fayette Counties, West Virginia and Montgomery County, Virginia. MVP plans to expand three existing compressor stations and construct one new compressor station to provide timely and cost-effective access to the growing demand for natural gas for use by local distribution companies, industrial users, and power generation in the Mid-Atlantic and Southeastern markets, as well as potential markets in the Appalachian region.

The Project will include a total addition of approximately 265,750 horsepower of compression at isometric conditions from the proposed modifications and operation at the existing Bradshaw, Harris, and Stallworth Compressor Stations, and the construction of the new Swann Compressor Station, including ancillary facilities required for safe and reliable operations. The Project will create approximately 600,000 dekatherms per day of incremental natural gas capacity on the existing Mountain Valley Pipeline mainline (MVP Mainline).

Resource Report 1 provides a complete summary of the Project facilities (Table 1.2-1) and a general location map of the Project facilities (Figure 1.2-1). For purposes of this Resource Report, the Project area is defined to be the limits of disturbance for construction at the Bradshaw, Harris, Stallworth, and Swann Compressor Station sites, including ancillary facilities and offsite laydown yards.

Environmental Resource Report Organization

Resource Report 6 is prepared and organized according to the FERC *Guidance Manual for Environmental Report Preparation* (FERC 2017). This report is organized by each Project component and describes the existing geologic setting and resources, potential impacts, and mitigation in relation to the Project components. Section 6.1 describes the geologic setting; Section 6.2 describes locations with blasting potential; Section 6.3 describes mineral resources; Section 6.4 discusses geologic hazards; Section 6.5 discusses paleontological resources; Section 6.6 discusses impacts and mitigation; and Section 6.7 presents the list of references that formed the basis for Resource Report 6.

6.1 GEOLOGIC SETTING

The Project area is located in Wetzel, Braxton and Fayette Counties, West Virginia, and Montgomery County, Virginia. Resource Report 1 Appendix 1-A1, Appendix 1-A2, and Appendix 1-B include plot plans and topographic maps of the Project.

6.1.1 Regional Physiographic Setting

The physiographic provinces of the United States are regions characterized by distinct topography, geology, and climate with their own unique features. The Project is located in the Appalachian Plateau and Valley and Ridge physiographic provinces (Figure 6.1-1) (USGS 2025a). Geologic hazards in these provinces include steep slopes, the potential for landslides, areas of karst terrain, and a seismic zone within the Valley

and Ridge province. The existing Bradshaw, Harris, and Stallworth Compressor Stations are located within the Appalachian Plateau province. Although some parts of the Plateau exhibit a low relief plateau-like morphology, much of the Appalachian Plateau is strongly dissected by stream erosion and the topography is rugged. Regional scale folds in the Plateau formed in response to shortening on thrust faults that do not reach the present surface and are rooted to the east/southeast in the Valley and Ridge province.

The Appalachian Plateau province is on a dissected plateau that is underlain mainly by horizontally bedded sedimentary rocks. The narrow, level valleys and narrow, sloping ridgetops are separated by long, steep, and very steep side slopes. In general, this plateau is underlain mostly by horizontal layers of Pennsylvanian-age sandstone, siltstone, shale, coal, and some limestone (WVGES 2025a; USGS 1997). The rocks exposed in the northern part of the Plateau are younger than those exposed in the southern part. The boundary between the Appalachian Plateau province and the Valley and Ridge province is characterized by a complex and rather abrupt change in the topography, stratigraphy, and structure called the Allegheny Front.

The proposed Swann Compressor Station is located in the Valley and Ridge province in Montgomery County, Virginia. The Valley and Ridge province is a long belt of parallel mountain ridges and valleys trending in a northeast direction. Geologic forces squeezed the originally flat-lying sedimentary layers and folded them into a series of arches (anticlines) and troughs (synclines). Erosion of these folds over geologic time has produced a distinctive repeating landscape of ridges and valleys. Resistant sandstone or conglomerate forms the top of strike ridges and the mid-to-upper area of the dip slopes. In contrast, the lower flanks of the ridges are underlain by shale, and in some areas, by carbonate bedrock (limestone and dolomite). The valleys are underlain by shale and carbonate bedrock. Some limestone areas contain caves, sinkholes, and other karst features (William and Mary 2025a; USGS 1997; WVGES 2025a).

6.1.2 Regional Geology

The Project area is located within several geologic periods and corresponding rock types. Each site is summarized in Section 6.1.3 below. The regional and site-specific geology is available at West Virginia (WVGES 2025a) and Virginia (Virginia DE 2025a).

During the late Cambrian Period (541 to 485 million years ago [MYA]) a shallow sea covered most of the Project area. Marine deposition took place throughout most of this and the succeeding Ordovician Period (485 to 443 MYA) (USGS 1997).

The mountain building period near the end of Ordovician time formed a high mountainous area east of the Project area. These highlands formed the main source of sediments for the succeeding Silurian Period (443 to 419 MYA) and part of the Devonian Period (419 to 358 MYA). Both clastics and carbonates were deposited in a mixed marine and nonmarine environment.

At the close of Mississippian Period (358 to 323 MYA), the Project area was essentially a land area, subject to erosion. Early in the succeeding Pennsylvanian Period (323 to 298 MYA), the area was eroded and subsided to near sea level, and for more than 50 million years continued to subside at about the same rate that deposition was taking place. Swamp conditions prevailed, resulting in the deposition of thousands of feet of nonmarine sandstone and shale and the many economically important coal seams that are known today.

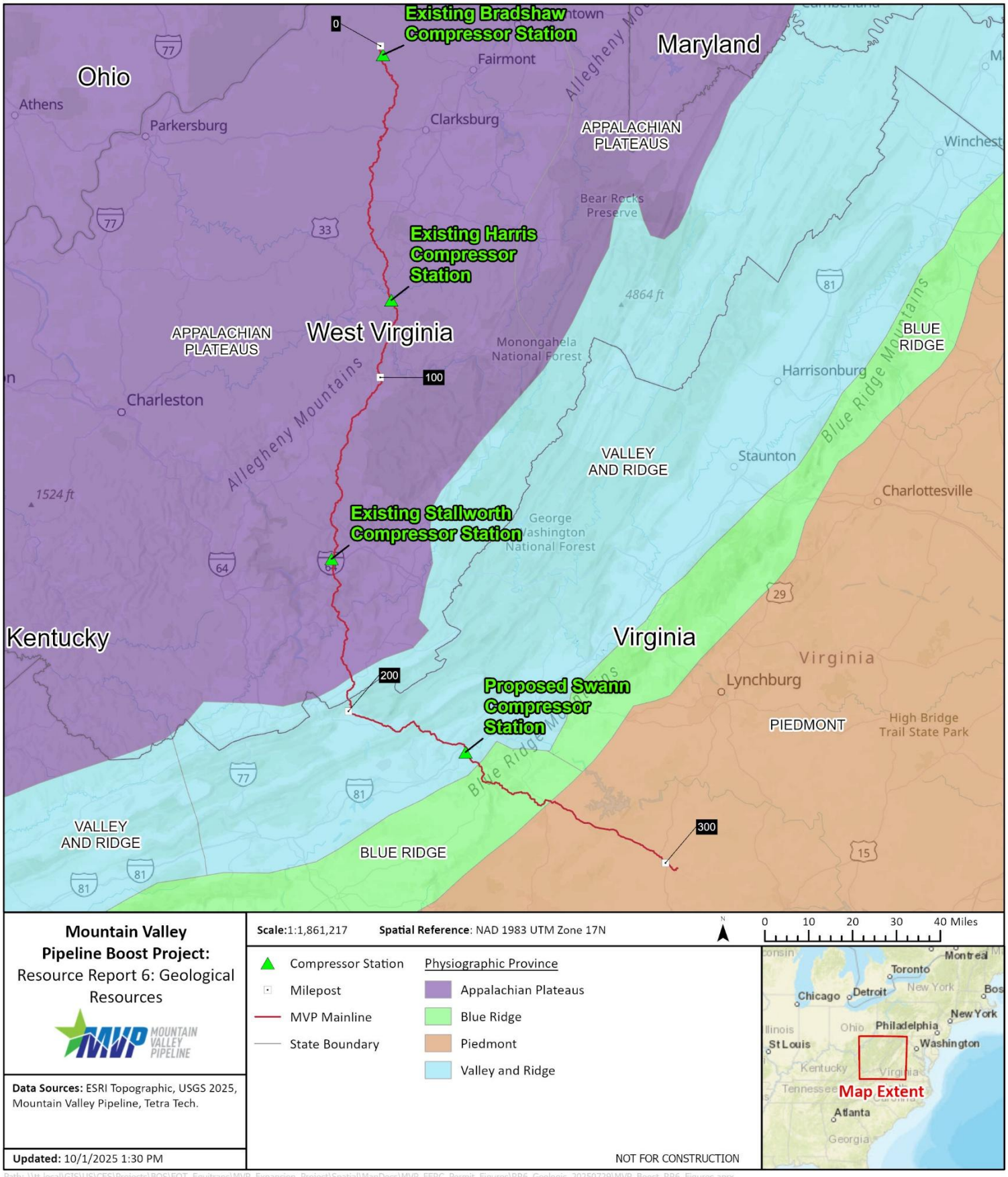

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Figure 6.1-1 Physiographic Provinces

Sometime during the Permian Period, (298 to 251 MYA), the Appalachian Orogeny began. Compressive tectonic forces folded, uplifted and thrust faulted bedrock to the west-northwest, underlying what is now identified as the Project area. Sediment deposition and basin filling ceased in what is now identified as the Project area, and erosion began taking place to change the landform to what is observed today. This orogeny played a major part in the formation of the Appalachian Mountains as they are today.

6.1.3 Site Specific Geology

The site-specific geology for each of the Project sites is described below.

6.1.3.1 Bradshaw Compressor Station

The existing Bradshaw Compressor Station is located within the Dunkard Group of Permian/Pennsylvanian Age (WVGES 2025a). Bedrock in this group is composed primarily of non-marine red and green/grey cyclic sequences of sandstone, siltstone, shale, limestone, and impure coal. The base of the formation contains thick-bedded, white conglomeratic sandstone.

A site-specific geotechnical evaluation was conducted prior to construction of the original station (Tetra Tech 2017) and consisted of test pits and borings. The test pits encountered topsoil ranging in thickness from 0.6 to 2 feet. Below the topsoil the soils encountered generally ranged from clayey gravel (mixture of silty clay and rock fragments) to silty clay with trace to some gravel, ranging in depth from 5.5 feet to 8.5 feet.

Bedrock cores for the geotechnical evaluation indicated alternating claystone, siltstone, sandstone, and shale, which were classified as soft to hard.

6.1.3.2 Harris Compressor Station

The existing Harris Compressor Station is located within the Allegheny Formation and is of Pennsylvanian Age. Bedrock in this group is composed primarily of sandstone, siltstone, shale, limestone, and coal, including the Freeport, Kittanning, and Clarion coals.

The site-specific geotechnical evaluation that was conducted prior to construction of the original station (Triad 2016a) consisted of test pits and test borings. The overburden at the Project site consisted of both colluvium and residual soils (Triad 2016a) from depths of 2.5 to approximately 35 feet. A small area of alluvial material was noted in one boring. These overburden soils consisted of clay, silt, silty clay, sand, and gravels.

Bedrock cored for the geotechnical evaluation consisted of sandstone classified as soft to hard, weathered to highly weathered, and slightly to highly fractured. Claystone encountered in several borings was classified as very soft, highly weathered, and highly fractured.

6.1.3.3 Stallworth Compressor Station

The existing Stallworth Compressor Station is located within the Bluestone and Princeton Formations of the Mauch Chunk Group, which is of Mississippian Age. The thickness of the formations range from approximately 450 to 800 feet thick. The Bluestone Formation is composed of mostly red, green, and medium-gray shale and sandstone, underlain by the Princeton Sandstone (USGS 2025b).

Overburden was evaluated in the site-specific geotechnical evaluation that was conducted prior to the original construction of the station (Triad 2016b) and consists of colluvium and residual soils to depths of

4.5 to approximately 33 feet. These overburden deposits consisted of clay, silt, sand, gravel, completely weathered rock fragments, and red beds.

Bedrock cored in the geotechnical evaluation consisted of claystone and sandstone classified as soft, weathered to highly weathered, and highly fractured.

6.1.3.4 Swann Compressor Station

The Swann Compressor Station is underlain by the Rome Formation. The Rome Formation is of Cambrian Age. The Rome Formation in the Project area is comprised of moderately to steeply dipping, varicolored, yellowish green, phyllitic mudstone and quartzose slaty-cleaved argillite interbedded with dark gray dolostone. The Rome Formation is in fault contact with the Cambrian (younger) Elbrook Formation. The Rome Formation is approximately 1,137 to 1,170 feet thick (Henika 2011).

A Phase I environmental site assessment conducted for the property (Schnabel Engineering 2019) indicates that the residual rock materials present at the site were quarried from the 1950s to approximately 2015. Additionally, MVP conducted site-specific geotechnical sampling of the Swann Compressor Station site in September 2025. This geotechnical investigation indicated that the overburden consists primarily of residual soils and rock fragments characterized as silt, sand and clay with varying amounts of gravel to a depth of about 2 to 29 ft (Schnabel 2025).

Bedrock cored in the geotechnical evaluation generally consisted of argillite and phyllitic mudstone classified as very weak to strong, variably weathered, and generally highly fractured (Schnabel 2025).

6.2 SHALLOW BEDROCK

The potential for shallow depth to bedrock was evaluated through the USDA Soil Survey Geographic (SSURGO) database's shallow bedrock attribute (USDA 2025) and site-specific geotechnical evaluations for each site within the Project area. This information assists in the identification of potential areas where bedrock could be encountered during excavation and where blasting or other methods of mechanical rock removal might be required. The SSURGO data indicates that some of the soil types at the four compressor station sites are located in areas of bedrock with depths of less than five feet. This is confirmed by MVP's experience constructing at the existing compressor station sites, the site-specific geotechnical reports for the Bradshaw, Harris, Stallworth and Swann Compressor Stations, and the Phase I Environmental Site Assessment for the Swann Compressor Station site.

Based on the presence of shallow bedrock, blasting or other methods of mechanical rock removal may be required for the Project. Mitigation proposed for blasting is discussed in Section 6.6.1.1, and a Blasting Plan is provided in Appendix 6-A.

6.3 MINERAL RESOURCES

Mineral resources within 0.25 mile of the Project were identified from a review of topographic maps, United States Geological Survey (USGS) and state database searches (USGS 2025c; Virginia DE 2025b; WVGS 2025a), and field studies (Draper Aden Associates 2015a). There are no surface mines or quarries located within 0.25 mile of the Bradshaw, Harris or Stallworth Compressor Stations.

The Swann Compressor Station site was formerly used as a surface/strip mine for shale and/or clay in support of the brick manufacturing by the Old Virginia Brick Company in Salem, Virginia. Currently, there are an upper and a lower quarry located in the north portion of the site. The site was used from about the

1950s until the property was sold in June 2015 after Old Virginia Brick Company ceased operations (Schnabel Engineering 2019).

6.3.1 Oil and Gas

Oil and gas well information was obtained from the West Virginia Geologic and Economic Survey (WVGES 2025b), the West Virginia Department of Environmental Protection (WVDEP 2025), and the Virginia Department of Energy oil and gas well location database (Virginia DE 2025c). There are two abandoned/plugged wells located near the temporary laydown yard along Shortline Highway in Pine Grove, West Virginia, which is proposed to support the construction of the Bradshaw Compressor Station expansion. There are no other oil and gas wells within 0.25 mile of the Project area in West Virginia (WVGES 2025b). No oil and gas wells were identified in Virginia within this search area.

6.3.2 Coal

Significant underground mining has taken place in West Virginia's mineable coal seams. The production potential, based on economic considerations and the thickness of the coal deposit of these seams is apparently not significant through a majority of the near surface of the Project area (WVGES 2025a). However, the Turniphole Auger Mine surface coal mine is located approximately 0.8 mile to the north of the Stallworth Compressor Station and the Harrison County Mine is located adjacent to the Bradshaw Compressor Station as described below.

The Pittsburgh Coal Seam is the thickest and most extensive coal bed in the Appalachian Basin (Tewalt et al. 2000). The Harrison County Mine is a large-scale longwall coal mining operation in the Pittsburgh Seam. The seam is located approximately 1,230 feet below the Bradshaw Compressor Station. The Harrison County Mine longwall panels are adjacent but offset from the eastern portion of the Bradshaw Compressor Station, but mains accessing the panels will be located beneath the station. Longwall mining of the panels adjacent to the Bradshaw Compressor Station is scheduled to commence in November 2027 (J.T. Boyd 2024). The mined coal from this area is transported to the surface at the mine's Margaret Portal, which is located approximately eight miles southeast of the Bradshaw Compressor Station.

MVP conducted a study that evaluated potential undermining effects to the compressor station with detailed numerical modeling. Potential effects from the longwall mining associated with the Harrison County Mine were found to be minimal (J.T. Boyd 2024). Additional review and modeling of potential mine subsidence due to the additional loading from construction at the proposed Bradshaw Compressor Station site has been conducted (Tetra Tech 2025) and found to be minimal.

There are no surface coal mines located within 0.25 mile of the Bradshaw, Harris, or Stallworth Compressor Stations. No coal mines were identified in Virginia within 0.25 mile of the Swann Compressor Station (Virginia DE 2025).

6.3.3 Impacts to Geologic Resources and Mitigation

Based on the above analysis, impacts to mineral resources, oil, gas, and coal, would be minimal. Because all Project facilities are surficial, the impacts on oil and gas resource recovery are expected to be negligible. The Harris, Stallworth, and Swann Compressor Station sites are not located in close proximity to extraction of mineral resources, oil, gas, or coal. As discussed above, although the Pittsburgh Coal Seam lies beneath the Bradshaw Compressor Station, MVP evaluated the potential effects of longwall mining on the station

and determined that potential impacts would be minimal (J.T. Boyd 2024; Tetra Tech 2025). Therefore, the Project is not anticipated to result in impacts to the recovery of aggregates and coal.

6.4 GEOLOGIC HAZARDS

6.4.1 Seismic Hazards

6.4.1.1 Earthquakes

Seismic hazards are characterized in terms of the severity of ground shaking, typically expressed as peak ground acceleration, and permanent ground displacement resulting from surface faulting or triggered by ground shaking. The United States Geologic Society (USGS) currently determines earthquake magnitude (M) using the Moment Magnitude method (USGS 2025d). This method is based on physical properties of the earthquake derived from an analysis of all the waveforms recorded from the shaking. First the seismic moment is computed, and then it is converted to a magnitude designed to be roughly equal to the older and more widely known Richter Scale in the magnitude range where these two methods overlap. The intensity of a seismic event is measured using the Modified Mercalli Intensity (MMI) scale. MMI provides a measure of the intensity of ground movement felt in a given area based on damage assessments and eyewitness reports. MMI ranges from an earthquake intensity value of I, in which the earthquake is not felt, to an intensity value of XII, in which damage is nearly total, large rock masses are displaced, and objects thrown about. The USGS uses the MMI to report the effects of historic earthquakes based on observed damage and human perception.

Earthquakes have occurred in the vicinity of the Project, largely due to trailing edge tectonics and residual stress release from past orogenic (i.e., mountain building) events. There have been five seismic events with magnitudes of 4 or greater recorded since 1976 (USGS 2025d), as shown in Table 6.4-1. The largest earthquake recorded for Virginia is a magnitude 5.8 earthquake that occurred on August 23, 2011, near Mineral, Virginia (USGS 2025d). This epicenter was greater than 100 miles from the Project area.

Table 6.4-1

Earthquakes Epicenters (magnitude 4 and greater) within 100 miles of the Project Area Since 1976

State / Lat/Long (UTC)	Date and Time (UTC)	Magnitude (M)	Depth
West Virginia			
37.362°N 81.624°W	1976-06-19 05:54:13	4.7	5.0 km
Virginia			
36.424°N -81.087°W	2020-08-09 12:07:37	5.1	4.1 km
37.238°N -81.987°W	1988-04-14 23:37:31	4.1	0.0 km
37.200°N -81.920°W	2006-11-02 17:53:02	4.3	1.0 km
37.157°N -81.975°W	2006-11-23 10:42:57	4.3	0.0 km
37.136°N -82.068°W	1989-04-10 18:12:16	4.3	0.0 km

Source: USGS 2025d
UTC = lat/long as based on universal time zone coordinated
km = kilometer

Previous to 1976, historical information was identified from USGS earthquake history information for West Virginia and Virginia (USGS 2025e). The largest earthquake recorded for West Virginia is an apparent

(i.e., preceded modern seismic networks) magnitude 5.9 earthquake that occurred in 1897 in Giles County, Virginia. A strong earthquake (MM-V to MM-VI) in the Charles Town/Martinsburg, West Virginia area occurred on April 2, 1909.

6.4.1.2 Seismicity

The level of ground shaking that results from an earthquake is primarily a function of earthquake magnitude and distance from the center of earthquake energy release. A probabilistic estimate of ground shaking hazards considers the statistical variability in earthquake magnitude and distance from the site of interest. Potential seismic hazards related to ground shaking near the Project are based upon a 2 percent annual probability of exceedance over a 50-year period. The annual probability is the same approximate frequency of exceedance specified in U.S. building codes for the design of new buildings. The annual probability of exceedance is a very conservative hazard definition for the Project considering the much greater direct safety and damage consequences typically associated with building collapse. For this reason, it is judged reasonable and appropriate to screen from further consideration those seismic hazards with an annual likelihood of occurrence less than 2 percent over a 50-year period (D.G. Honegger 2015). Figure 6.4-1 depicts peak ground acceleration with a 2 percent probability of exceedance over a 50-year period. Peak ground acceleration estimates were 0.08g (expressed as a fraction of gravitational acceleration, g) for Bradshaw, 0.11g for Harris, 0.18g for Stallworth and 0.17g for Swann, with a 2 percent probability of occurring in 50 years (i.e., mean return period of approximately 2,500 years) (USGS 2025e).

The Pembroke Fault Zone (PFZ) is located to the south and west of the Stallworth and Swann Compressor Station sites. The PFZ is a geographically defined area in Giles County, Virginia associated with a relatively high density of earthquake epicenters. The PFZ is primarily known for being the epicenter of a strong May 31, 1897, earthquake that was subsequently characterized under modern standards of MM-VIII, magnitude 5.8.

Another recognized seismic zone in the region is the Central Virginia Seismic Zone (see Figure 6.4-1), located more than 100 miles east of the Project area, and due to this distance, it is not considered a factor in relation to the Project.

6.4.1.3 Active Faults

The Project area was evaluated for the presence of potential active faults (Quaternary age faulting) and the potential for ground movement and failure. In 2015, prior to the construction of MVP Mainline, a study of active faults and seismic hazards was conducted by Draper Aden Associates (2015b). Activation of faults (i.e., fractures in rock where there has been displacement) can cause seismic events. Faults that demonstrate evidence of movement within the Quaternary age (1.8 million years ago to present), and particularly faults showing movement in the Holocene Epoch (11,500 years to present), are generally considered to present a potential risk for seismic hazards to structures.

The USGS (2006) compiled geological information on Quaternary faults throughout the United States. The faults have been categorized into four classes (Class A, B, C, and D) based on what is known about the feature's Quaternary activity. The Project area is not located within any Class A feature (where there is convincing evidence of Quaternary activity).

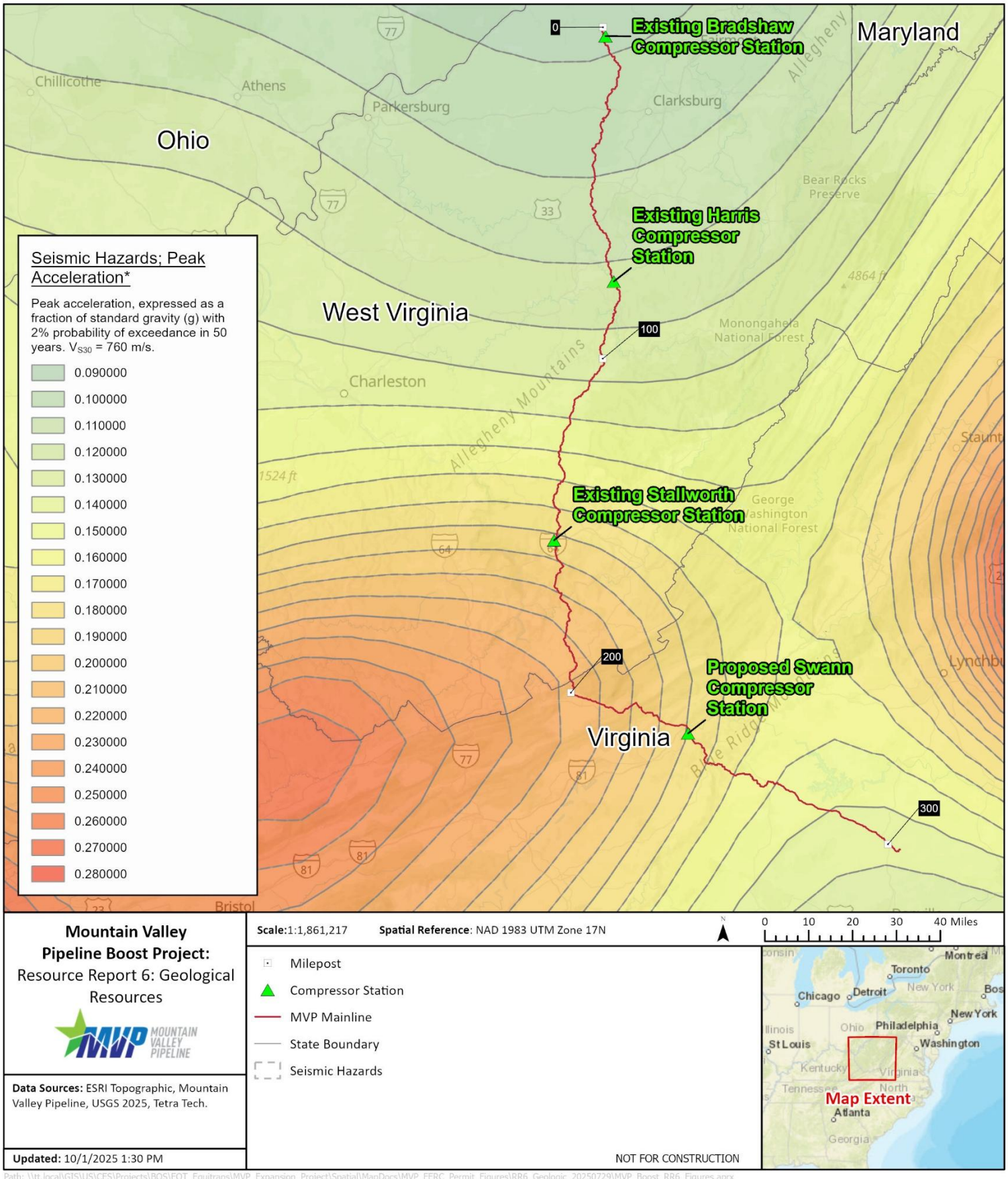

Figure 6.4-1 Seismic Hazards

The PFZ was identified by the USGS (2006) and is considered a Class B fault zone because the origin is not clearly identified as crustal faulting or subsurface karst collapse. Thrust faults associated with the Allegheny structural front, PFZ, and Valley and Ridge province include the St. Clair fault, the Narrows fault, the Pulaski fault, and the Blue Ridge fault. These faults generally fall within the area of the PFZ, which has been studied by the USGS (2006).

The Project area is not located above known faults with recent (Quaternary) movement. Therefore, permanent ground deformation from fault rupture is negligible.

6.4.1.4 Soil Liquefaction and Lateral Spreading

Soil liquefaction is a phenomenon often associated with seismic activity in which saturated, non-cohesive soils temporarily lose their strength and liquefy (i.e., behave like viscous liquid) when subjected to forces such as intense and prolonged ground shaking. Areas susceptible to liquefaction may include soils that are generally sandy or silty and are generally located along rivers, streams, lakes, and shorelines or in areas with shallow groundwater. There have been no documented occurrences of soil liquefaction from seismicity in the Project area (USGS 2025e).

The site-specific geotechnical evaluations for the four Project compressor station sites indicate based on results from the test borings, regional geological information, local hydrogeologic information and the probable maximum strength of earthquake, that liquefaction potential for the on-site soils during seismic activity is low (Triad 2016a, 2016b; Tetra Tech 2017 Schnabel 2025)

6.4.2 Karst Potential / Ground Subsidence

Karst terrain is characterized by dissolution of the soluble rock formations, such as limestone and dolostone, to form sinkholes, caves, and underground waterways. Karst terrain often has unique hydrology and highly productive aquifers, which can be highly susceptible to contamination.

Based on the site-specific geology identified in Section 6.1.3 for each station, the region within which the Swann Compressor Station is located is known to include karst terrain. However, the Project area itself is not underlain by karst-forming rock types.

6.4.3 Landslide Potential

Landslides in the vicinity of the Project area occur primarily in weathered bedrock or colluvium located on steep slopes. Numerous landslides on the Appalachian Plateau have developed in soils derived from Pennsylvanian and Permian sedimentary rocks (Watt 1982). Shale, especially red beds and shale-limestone sequences, disintegrate rapidly into clayey soil upon exposure. Most landslides involving soil and weathered bedrock consist of smooth, integrated, thin earth-flow slabs, which may be many square meters in area but generally are less than about eight feet thick.

The USGS (2014) has identified the Project area around both Bradshaw and Harris Compressor Stations as being in an area of high incidence (greater than 15 percent) of landslides. MVP has designed the Project to avoid areas of landslide concern near these stations, based on prior experience working at each site. A previously stabilized landslide adjacent to the Bradshaw Compressor Station will not be disturbed by the proposed Project. At the Harris Compressor Station, a highwall area experienced erosion-related sluffing north of the station. That area has been stabilized, and no work will occur in this area as part of the proposed Project.

The Stallworth Compressor Station area is rated as high susceptibility with low incidence, and the Swann Compressor Station area is rated as an area of moderate susceptibility with low incidence of landslides.

Rockfalls are not anticipated near Bradshaw, Harris, Stallworth, and Swann Compressor Stations.

6.5 PALEONTOLOGICAL RESOURCES

Fossils were present in the Cambrian, Ordovician, Silurian, and Devonian sedimentary rocks that crop out in the Valley and Ridge and Appalachian Plateau provinces. These rocks preserve abundant marine fossils that are an indication of the presence of extensive, shallow seas. Cambrian and Ordovician seas were home to creatures including corals, eurypterids, graptolites, nautiloids, trilobites, stromatolites, and worms. Silurian evaporites, left by extremely salty seawater during a dry climate, preserved eurypterids. Other Silurian life forms included nautiloids with straight shells and an abundance of ostracods. Corals were present during the transition from the Silurian to Early Devonian. By the Carboniferous (includes Mississippian and Pennsylvanian rocks), the Project area was covered in lush, dense forests of "scale trees" (lycophytes), horsetails, and ferns. The accumulation of organic material in these large coastal swamps eventually produced coal seams (Cardwell 1977).

There are no Triassic, Jurassic, or Cretaceous rocks present in the Project area. As such, no dinosaur fossils have ever been discovered in the Project area (William and Mary 2025b). The Project area was never the site of glacial activity during the Ice Age, but was home to creatures like mammoths, mastodons, and giant ground sloths. The remains of these creatures are sometimes discovered in local caves.

Significant paleontological resources are not anticipated in the Project area. Environmental Inspectors will be trained regarding response if suspected paleontological resources are identified during construction.

6.6 IMPACTS AND MITIGATION

6.6.1 Construction Impacts and Mitigation

The Project will be designed and constructed to provide adequate protection from washouts, unstable soils, landslides, or other geological hazards. The overall effects of construction and operation of the Project facilities on topography and geology will be minimal. Primary impacts will be limited to construction activities and will include temporary disturbance resulting from grading and excavation operations. MVP will minimize impacts by returning contours in areas used temporarily to construct the Project to preconstruction conditions to the maximum extent practicable. However, this may not be the case within the compressor station sites, where grading and filling will be required to create a safe and stable land surface to support the facility.

6.6.1.1 Blasting

MVP will minimize the amount of blasting required to the extent practicable. However, blasting may be required in certain areas of shallow bedrock. MVP has identified shallow bedrock that may require blasting in areas of the Harris and Swann Compressor Station sites. All blasting for the proposed Project, if necessary, is anticipated to be limited to locations within MVP-owned property.

MVP's preferred procedure for consolidated rock will be to fracture and excavate the bedrock using standard construction equipment. Blasting of bedrock may be required if hard, massive bedrock is identified that is not easily removed by conventional excavation methods. Where unrippable subsurface rock is encountered, approved alternative methods of excavation will be explored, including rock trenching

machines, rock saws, hydraulic rams, jack hammers, or blasting. The alternative method to be used will be dependent on the proximity to structures, pipelines, wells, utilities, water resources, etc., and the capabilities of the alternative excavation method.

Since potential blasting would be limited to MVP's property, blasting is not anticipated to occur in close proximity to homes, outbuildings, wells, or other structures. However, areas where blasting may be required will be surveyed for features such as structures and utilities and the pre-construction condition of structures and utilities will be documented. In the event there are concerns of nearby or affected landowners, MVP will evaluate landowner complaints or damage associated with blasting to wells, homes, or outbuildings. If damage is substantiated, MVP will negotiate a settlement with the landowner that may include repair or replacement.

If blasting is required, the contractor will prepare a detailed Blasting Plan consistent with MVP's Blasting Plan (Appendix 6-A) and submit it to MVP for approval prior to commencing any blasting activities. The contractor will also be required to apply for and comply with any state or local permitting regulations. No blasting shall be done without prior approval of MVP and proper permitting. In no event shall explosives be used where, in the opinion of MVP, such use will endanger existing facilities.

In the event blasting is required, blasting mats or padding will be used as necessary to prevent the scattering of fly rock. All blasting will be conducted during daylight hours and will not begin until occupants of nearby buildings, stores, residences, places of business, and farms have been notified. All blasting will be in accordance with the MVP Blasting Plan, prepared in consultation with appropriate agencies. A Blasting Plan is presented in Appendix 6-A.

6.6.1.2 Landslides and Slope Stability

The topography and geology at Bradshaw, Harris, and Stallworth sites indicate areas with a high susceptibility for landslides. However, these locations have been graded to accommodate construction and operation of the existing compressor station facilities and have achieved long-term slope stability. Temporary workspace for the additional construction associated with the Project has been chosen to minimize any landslide potential. At the proposed Swann Compressor Station, grading and filling will be used as needed to create a safe and stable land surface to support the permanent aboveground facility.

MVP utilizes a monitoring program to monitor slope stability in landslide-susceptible areas along the MVP Mainline. The monitoring program utilizes aerial Light Detection and Ranging (LiDAR) surveys on a prescribed periodic basis to monitor the MVP Mainline for changes in ground topography that could indicate potential slope movement. LiDAR works by emitting multiple laser pulses over the same area, such that some pulses are reflected off intermediate surfaces (i.e. variable height vegetation, buildings, power lines, etc.) and some of the pulses find the underlying ground surface. The resulting data are processed to classify data that represent the ground surface (i.e., generate a bare earth model), providing a detailed topographic and geomorphic landform model to detect subtle ground morphologies that define natural and human-triggered landslide and erosion hazards (i.e. scarps, settlement, hummocky terrain, depletion zones, accumulation zones, sag ponds, disrupted drainage, etc.). If subtle ground movement is detected, MVP initiates a post-construction slope evaluation and mitigation. Specific mitigation measures depend upon the results of the monitoring program and the landslide inspection team's field observations on actual conditions.

The existing Bradshaw, Harris, and Stallworth Compressor Station sites are included in the monitoring program. Following construction of the proposed Project, MVP plans to include the Swann Compressor Station -in its monitoring program.

MVP will minimize impacts to slope stability by returning contours to pre-construction conditions to the extent practicable, except where modification of contours is necessary to stabilize slopes, in any temporary workspaces outside of the final grade of compressor station sites, in accordance with the FERC May 2013 version of the Upland Erosion Control, Revegetation, and Maintenance Plan and FERC May 2013 version of the Wetland and Waterbody Construction and Mitigation Procedures.

On slopes, various measures will be taken to properly control erosion and sedimentation as needed. MVP's design specifications will incorporate measures such as silt fence, sock filtration, temporary mulch, and erosion control blankets, based on slope and evaluation of erosion control needs.

6.6.1.3 Earthquakes and Liquefaction

There are no active faults in the Project area of construction. The only significant seismic source zone is the Central Virginia seismic zone, which is not associated with faults that rupture the ground surface.

Overall, compared to more seismically active regions of the United States, the relative risk presented by earthquake-induced ground motion in the Project area is moderate to low. The Project is not near a known or inferred Class A fault or fault zone with evidence of tectonic origin and Quaternary movement. The Class B Pembroke faults are mapped within the general vicinity of the Project, but these features are questionable as to whether they are fault-related, or subsidence related, and in any case, they appear to present negligible risk to Project construction and operation. Inactive ancient thrust faults in the Valley and Ridge province (e.g., St. Clair fault) do not pose a specific hazard to the Project.

The site-specific geotechnical evaluations for the four Project compressor station sites indicate that based on results from the test borings, regional geological information, and the probable maximum strength of earthquake, that liquefaction potential for the on-site soils during seismic activity is low (Triad 2016a, 2016b; Tetra Tech 2017, Schnabel 2025). These results are supported by local hydrogeologic conditions that indicate relatively low water tables and unsaturated conditions beneath the Project sites.

Based on the low probability of localized earth movements or geological hazards in the vicinity of the Project, MVP does not anticipate any problems attributable to such movements or hazards associated with the four compressor station facilities. Due to the limited potential for large, seismically induced ground movements in the Project area, there is limited risk of earthquake-related impacts.

6.6.1.4 Rock Disposal

Shallow bedrock is expected in portions of the Project area, and in these areas some excess rock may be generated. To the extent practicable, MVP anticipates rock material generated from blasting or other rock removal techniques will be reused or disposed of on site. Reuse or disposal of excess rock debris on site will be within the approved construction areas in accordance with regulatory requirements. Otherwise, where on-site reuse or disposal is not possible, MVP will dispose of excess rock off site at an approved landfill.

6.6.2 Operational Impacts and Mitigation

Operational impacts on geologic resources are expected to be minimal. Inspection of aboveground facilities will be conducted in accordance with U.S. Department of Transportation requirements in 49 Code of Federal Regulations Part 192, whenever earthquakes or other natural hazards occur. Mitigation of damage caused by geologic hazards will be completed in a timely fashion in accordance with U.S. Department of Transportation requirements.

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Mountain Valley Pipeline Boost Project

Docket No. CP26-__-000

Resource Report 6

Appendix 6-A

Blasting Plan

Mountain Valley Pipeline Boost Project

General Blasting Plan

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LIST OF APPENDICES

1 INTRODUCTION

The Mountain Valley Pipeline Boost Project (Project) General Blasting Plan (Plan) outlines the procedures and safety measures that the Contractor(s) for Mountain Valley Pipeline, LLC (MVP) will adhere to while implementing blasting activities during the construction of the Project. This Plan addresses blasting for the proposed compression facilities to be developed and/or expanded as part of the Project. The Project will be located in Wetzel, Braxton and Fayette Counties in West Virginia (WV), and Montgomery County in Virginia (VA).

This plan includes a brief description of the Project and overall physio-geographic setting and bedrock geology in the vicinity of the proposed facilities. Information on shallow bedrock soils and bedrock outcroppings is taken from the Project's Resource Report 6. A map that depicts the location of the Project's sites is provided in Figure 1.2-1 in Resource Report 1.

Information for blast and rip characteristics of the bedrock may be evaluated, at least in a general sense, and applied toward an appropriate bedrock excavating method. The hard and intact nature of the unweathered bedrock (sandstones, limestones, and shales) dictates what blasting methods will be utilized. Soft bedrock, such as weathered sandstones, limestones, and shales may possibly be removed by ripping or mechanical means.

Other geologic features may control the effects of blasting. Rock fabric, or the arrangement of minerals, determines intrinsic rock strength, and thus influences rock excavation. Joint spacing, bedding, and foliation also influence rock excavation.

2 PROPOSED FACILITIES

The proposed Federal Energy Regulatory Commission (FERC) jurisdictional facilities described in this plan will consist of the expansion of three existing compressor stations (Bradshaw, Harris, and Stallworth) and the construction of a new compressor station (Swann), including associated aboveground sites, mainline block valves, launchers and receivers, control systems, and other facilities. These facilities are described further in Resource Report 1.

3 GEOLOGIC SETTING

The Project area is located in Wetzel, Braxton and Fayette Counties, West Virginia, and Montgomery County, Virginia. Resource Report 1 Appendix 1-A1, Appendix 1-A2 and Appendix 1-B include plot plans and topographic maps of the Project.

3.1 Regional Physiographic Setting

The Project is located in the Appalachian Plateau and Valley and Ridge physiographic provinces. The Project's physiographic settings are discussed in detail in Resource Report 6, Section 6.1.1.

3.2 Regional Geology

The Project area is located within several geologic periods and corresponding rock types, as discussed in detail in Resource Report 6, Section 6.1.2.

3.3 Active Faults

The Project was evaluated for the presence of Quaternary-age faulting and the potential for ground movement and failure. The findings of the evaluation are discussed in detail in Resource Report 6, Section

6.4.1.3.

3.4 Areas of Shallow Bedrock

The Project area was evaluated for areas where bedrock might be encountered above a depth of five feet. This is discussed in more detail in Resource Report 6, Section 6.2.

3.5 Mineral Resources

Mineral resources, quarries, and other mineral extraction near the Project are discussed in detail in Resource Report 6, Section 6.3.1.

No blasting is foreseen to occur within the limits of active mining areas or past mining areas, both surface and deep, nor within 0.25 miles of any active or plugged oil or gas wells.

4 BLASTING SPECIFICATIONS

Blasting will be considered only after all other reasonable means of excavation have been evaluated and determined to be unlikely to achieve the required results. MVP may specify locations (foreign line crossings, nearby structures, etc.) where consolidated rock will be removed by approved mechanical equipment, such as rock trenching machines, rock saws, hydraulic rams, or jackhammers, instead of blasting. Areas where blasting may be required will be surveyed for features such as structures, utilities, and wells. In the event blasting is required, blasting mats or padding will be used as necessary to prevent the scattering of fly rock. All blasting will be conducted during daylight hours and will not begin until occupants of nearby buildings, stores, residences, places of business, and farms have been notified.

For each blast a defined inspection radius (DIR) will be defined, depending on the type of pattern used. Pad, or area, shots will be used for large-scale earthwork and station pad development. Line, or localized, shots will be confined to narrower excavations such as utility trenches. The DIR will be 1,000 feet for pad shots, and 250 feet for line shots. Occupied buildings and their condition within the DIR will be documented as to their pre-blast condition, as set forth in the Pre-Blast Survey (Appendix 6A-A), and their condition after blasting, as set forth the Post-Blast Survey.

The Contractor will provide verbal notification, followed by written documentation, to the buildings' occupant(s) of any blasting activity during both preconstruction and post-construction within the DIR.

The Contractor will evaluate, on a timely basis, landowner complaints regarding damage resulting from blasting to wells, homes, or outbuildings. If the damage is substantiated, the Contractor will negotiate a settlement with the landowner that may include repair or replacement. MVP will monitor these negotiations.

Before any blasting occurs, the Contractor will complete a project/site-specific blasting plan and provide it to MVP for review. No blasting shall be done without prior approval of MVP. In no event shall explosives be used where, in the opinion of MVP, such use will endanger existing facilities and/or structures. The Contractor shall obtain MVP approval and provide forty-eight

(48) hours' notice prior to the use of any explosives. Contractor will provide at least a twenty-four hours' notice to occupants of nearby buildings, stores, residences, businesses, farms, and other occupied areas prior to initiating blasting operations. These notices will be verbal, followed by written documentation of the twenty-four hours' notice.

4.1 Specifications

Blasting shall adhere to the following federal, state, county, township, local, and MVP standards and

regulations. These standards and regulations are to be considered as the minimum requirements. Should there be a conflict between jurisdictions, standards, and regulations, the most stringent jurisdictions, standards, and regulations shall be followed.

The Project will adhere to the following standards and regulations:

- Project, Resource Report 3, Docket No. CP26-XX-000
- Project, Resource Report 6, Docket No. CP26-XX-000
- EQT, Design and Construction Manual, Design Standard, Pipeline, 4.11 Blasting Proximate to Buried Pipelines
- EQT, Design and Construction Manual, Design Standard, Pipeline, 4.17 Blasting Activities During Construction
- ATF P5400.7 – Federal Explosives Laws and Regulations
- 29 CFR 1926 Subpart U – Blasting and the Use of Explosives
- 29 CFR Part 1910.109 – Explosives and Blasting Agents (Occupational Safety and Health Administration)
- 27 CFR 555 Subpart K, U.S. Bureau of Alcohol, Tobacco, and Firearms
- 27 CFR Part 181 – Commerce in Explosives
- 30 CFR 816.68 Mine Safety and Health Administration ("MSHA").
- 49 CFR Part 192 USDOT
- 49 CFR Part 177 – Carriage by Public Highway
- 27 CFR Part 55
- 30 CFR '715.19
- 18th or later version of the International Society of Explosives Engineers ("ISEE") – Blaster's Handbook
- National Fire Protection Association 495
- U.S. Bureau of Mines Report of Investigations 8507
- WV 199 CFR 1 Title 199 1
- Virginia 4 VAC25-130-816.11, 4 VAC25-130-816.64, 4 VAC25-110-210, and 3 VAC25-150-250

5 PRE-BLAST INSPECTIONS

The Contractor shall conduct pre-blast surveys, with landowner permission, to assess the conditions of structures within the DIR or wells and springs within 150 feet of the blast area. Should local or state ordinances require inspections at distances further from the work than those specified, the local or state ordinances shall prevail. The survey will include, at a minimum:

- Informal discussions to familiarize the adjacent property owners with blasting effects and planned precautions to be taken on this project;

- Determination of the existence and location of site-specific structures, utilities, septic systems, and wells;
- Detailed examination, photographs, and/or video records of adjacent structures and utilities; and
- Detailed mapping and measurement of large cracks, crack patterns, and other evidence of structural distress.

The pre-blast conditions, including photographs, will be documented with the information outlined by "Pre-Blast Survey, MVP Boost Project". This Pre-Blast Survey Form (Appendix 6A-A) is considered the minimum information needed. The completion of the Pre-Blast Survey Form is in addition to all other local, county, township, state, or federal reporting/survey data collection and reports.

6 MONITORING OF BLASTING ACTIVITIES

During blasting, MVP contractors will take precautions to minimize damage to adjacent areas and structures. Precautions include:

- Blast warning signals in the area of blasting.
- Blast warning in congested areas or near structures that could be damaged by fly-rock.
- Backfilling with subsoil (no topsoil to be used), blasting mats, or other approved methods to prevent fly-rock from damaging adjacent natural resources and structures and minimize noise and vibrations.
- Posting warning signals, flags, and/or barricades, and visually surveying the blast area access ways to prevent unauthorized entrance into the blast area by spectators and/or intruders.
- Following federal, state, local, and MVP procedures and regulations for safe storage, handling, loading, firing, and disposal of explosive materials.
- Manning adjacent pipelines at valves for emergency response, as appropriate.
- Maintain communications between all persons involved for the security of the blast zone during all blasting/firing.

Excessive vibration will be controlled by limiting the size of charges and by using charge delays, which stagger each charge in a series of explosions.

If the Contractor must blast near buildings, structures, or wells, a qualified independent Contractor will inspect structures within the DIR or wells or springs within the DIR, or farther if required by local or state regulations, of the construction area prior to blasting and with landowner permission. Post-blast inspections by the Company's representative will also be performed, as warranted. All blasting will be performed by registered blasters and monitored by experienced blasting inspectors or MVP designated representatives. Recording seismographs will be installed by the Contractor at selected monitoring stations under the observation of MVP personnel. During construction, the Contractor will submit blast reports (Appendix 6A-B) for each blast and keep detailed records as described in Section 7.11.

As appropriate, the effects of each discharge will be monitored at the outer limits of the construction right of way and closest adjacent facilities by seismographs.

If a charge greater than eight pounds per delay is used, the distance of monitoring will be in accordance with the U.S. Bureau of Mines Report of Investigations 8507.

To maximize its responsiveness to the concerns of affected landowners, MVP will evaluate all complaints of well or structural damage associated with construction activities, including blasting. A toll-free landowner hotline will be established by MVP for landowners to use in reporting complaints or concerns. In the unlikely event that blasting activities temporarily impair a water well, MVP will provide alternative sources of water or otherwise compensate the owner. If well or structural damage is substantiated, MVP will either compensate the owner for damages to the structure and/or well or arrange for a new well to be drilled.

6.1 Site-Specific Blasting Plans

For each area determined to require blasting, a site-specific Blasting Specification Plan will be created. The Contractor's Blasting Specification Plan shall include, at a minimum, the following information:

- Blaster's name, Company, copy of the license, and statement of qualifications;
- Seismograph company, names, equipment and sensor location;
- Site location (facility or stationing), applicable E&S plan references, and associated rock type and geological structure (solid, layered, or fractured);
- Copies of all required federal, state, and local permits;
- Methods and materials including explosive type, product name, and size, weight per unit, and density; stemming material; tamping method; blasting sequence; use of non-electrical initiation systems for all blasting operations; magazine type and locations and security for storage of explosives and detonating caps;
- Site dimensions including explosive depth, distribution, and maximum charge and weight per delay; hole depth, diameter, pattern, and number of holes per delay;
- Dates and hours of conducting blasting; distance and orientation to nearest aboveground and underground structures;
- Blasting procedures for:
    - Storing, handling, transporting, loading, and firing explosives;
    - Prevention of misfires, flying rock, fire prevention, noise, and stray current accidental detonation of explosives;
    - Signs, flagmen, and warning signals prior to each blast;
    - Locations where blasting:
        - Parallels or crosses an electrical transmission corridor, cable, or pipeline
        - Parallels or crosses a highway or road
        - Is within or adjacent to forested areas
        - Approaches within 150 feet of a water well or spring
        - Has a DIR that includes any residence, building, or occupied structure
    - Local notifications
    - Pre-blast inspections

- Inspections after each blast
- Disposal of waste blasting material

7 BLASTING REQUIREMENTS

MVP has standard practices for blasting operations, as outlined by Section 4.0 of this Blasting Plan. The potential for blasting at any of the facilities to affect any wetland, municipal water supply, waste disposal site, well, septic system, spring, or pipeline will be minimized by controlled blasting techniques and by using mechanical methods for rock excavation as much as possible. The following text presents details of procedures for blasting.

7.1 General Provisions

- The Contractor will provide all personnel, labor, and equipment to perform necessary blasting operations related to the work. The Contractor will provide a permitted blaster possessing all permits required by the local, county, township, and states in which blasting is required during construction, and having a working knowledge of state and local laws and regulations that pertain to explosives.
- Project blasting will be done in accordance with 27 CFR Part 55, 30 CFR 715.19, National Fire Protection Association 495 – Explosive Materials Code; the above-referenced Specification; and all other state and local laws, when required; and regulations applicable to obtaining, transporting, storing, handling, blast initiation, ground motion monitoring, and disposal of explosive materials and/or blasting agents.
- The Contractor shall be responsible for supplying explosives and blasting materials that are perchlorate-free to eliminate the potential for perchlorate contamination of groundwater, except that detonators containing non-combined amounts of perchlorate, such as Dyno Nobel NONEL EZ Det or equivalent, are an industry standard and shall be permitted. Further, while the use of bulk ammonium nitrate as a standalone substance is prohibited, the use of emulsion-type explosives, including those having ammonium nitrate as a constituent, such as Dyna 1062 Bulk Emulsion, shall be permitted, as these types of explosives are considered the industry standard for area blasting related to large-scale earthwork construction.
- The Contractor shall be responsible for securing and complying with all necessary permits required for the transportation, storage, and use of explosives. The Contractor shall be responsible for all damages or liabilities occurring inside or outside the Project limits of disturbance resulting from the use of explosives. When the use of explosives is necessary to perform the work, the Contractor shall use utmost care not to endanger life or adjacent property and shall comply with all applicable laws, rules, and regulations governing the storage, handling, and use of such explosives. MVP will conduct a pre- and post-surficial leak survey along the centerline of each live pipeline adjacent to the planned blast area. The surficial leak survey will be conducted by MVP's employees and/or designated representatives, with the surficial leak survey extending a minimum of 150 feet (in both directions) past the limits of the planned blast area.
- Blasting activities will strictly adhere to all MVP, local, state, and federal regulations and requirements applying to controlled blasting and blast vibration limits regarding structures, underground gas pipelines, and underground utilities. In addition to following state and federal

blasting guidelines, MVP will contact each governmental agency along the proposed route to determine local ordinances or guidelines for blasting.

Table 7.1.1**: Project Contacts and Related Permitting Prior to Blasting**

Jurisdiction	Contact	Agency	Permit/Regulation
West Virginia	D. Vande Linde 304.926.0464	WVDEP Office of Explosives and Blasting	Permit and Notification
West Virginia	304.558.2191	WV Fire Marshall	Permit and Notification
Virginia	Tarah Kesterson 276.523.8146	Virginia Department of Mines, Minerals, and Energy	Permit and Notification
Virginia	Region 2 Forest Office 434.525.7522	DWR Virginia Department of Wildlife Resources	Notification: 48-hour notice
Virginia	Billy Hux State Fire Marshal 540.270.6617 Billy.hux@vdfp.virginia.gov	SFMO Virginia State Fire Marshal's Office	Permit and Notification: 24-hour notice

- Special blasting controls will be required if blasting is needed for waterbody crossings. The type of explosive, size of charges, sequence of firing, etc., will be selected to minimize shock wave stresses on aquatic life adjacent to the blasting area. If dry crossings are needed, matting will be used to control fly rock. In addition, where specified, the Contractor will furnish the necessary labor and equipment to employ air bubble curtains to protect nearby aquatic life from blasting shock waves. Air bubble curtains could be specified for both wet and dry crossings, depending on the aquatic life present. For wet crossings the air bubble curtains would be placed upstream and downstream of the blasting area. For dry crossings, the air bubble curtains would be in the dammed-off areas on either side of the pipe ditch.
- Drilling and blasting shall be performed with a Company Construction Inspector present. Approval is required to proceed prior to each blast. Approval does not relieve the Contractor from responsibility or full liability.
- The Construction Contractor will be made aware of all applicable procedures and local requirements, and it will ultimately be the Contractor's responsibility to notify officials and receive appropriate blasting permits and authorization.
- Typically, local regulations require copies of the blasting Contractor's Certificate of Insurance and License. In some jurisdictions, a Certificate of Bond will also be required, as well as a qualified person hired to oversee the blasting procedure. This qualified person is described in this document as MVP's Designated Representative or MVP Representative.
- The MVP Designated Representative shall have the opportunity to witness all rock excavations or other use of explosives. The Contractor shall conduct all blasting operations in a safe manner that will not cause harm to the existing pipelines and structures in the vicinity. If the MVP Representative determines that any project blasting operations have been conducted in an

unsafe manner, the MVP Representative will notify the Contractor of the unsafe activity. If any further unsafe actions occur on the part of the blasting firm, the MVP Representative will request the Contractor terminate the Contract of the blasting firm and hire another blasting company.

- Any failure to comply with the appropriate law and/or regulations is the sole liability of the Contractor. The Contractor and the Contractor's permitted blaster shall be responsible for the conduct of all blasting operations, which shall be subject to inspection requirements.
- A Blasting Fact Sheet will be distributed to landowners where blasting is proposed, and affected landowners will be contacted prior to any blasting activities.

7.2 Storage Use at Sites

Explosives and related materials shall be stored in approved facilities required under the applicable provisions contained in 27 CFR Part 55, Commerce in Explosives. The handling of explosives may be performed by the person holding a permit to use explosives or by other employees under their direct supervision, provided that such employees are at least 21 years of age. While explosives are being handled or used, smoking shall not be permitted, and no one near the explosives shall possess matches, open light, or other fire or flame within 50 feet of the explosives, in accordance with OSHA requirements. Suitable devices or lighting safety fuses are exempt from this requirement. No person shall handle explosives while under the influence of intoxicating liquors or narcotics at any time during the construction of the Project.

Original containers or Class II magazines shall be used for taking detonators and other explosives from storage magazines to the blasting area. Partial reels of detonating cord do not need to be in closed containers unless transported over public highways. Containers of explosives shall not be opened in any magazine or within 50 feet of any magazine. In opening kegs or wooden cases, no sparking metal tools shall be used; wooden wedges and either wood, fiber, or rubber mallets shall be used. Non-sparking metallic slitters may be used for opening fiberboard cases.

No explosive materials shall be located or stored where they may be exposed to flame, excessive heat, sparks, or impact.

Explosives or blasting equipment that are obviously deteriorated or damaged shall not be used. Explosive materials shall be protected from unauthorized possession and shall not be abandoned.

No attempt shall be made to fight a fire if it is determined the fire cannot be contained or controlled before it reaches explosive materials. In such cases, all personnel shall be immediately evacuated to a safe location, and the area shall be guarded from entry by spectators or intruders.

No firearms shall be discharged into or near a vehicle containing explosive materials or into or near a location where explosive material is being handled, used, or stored.

The Contractor shall maintain a daily blast inventory record of all explosive materials transported (to and from the blast area), used, and returned to off-site storage when no storage is located on the blast site.

7.3 Pre-Blast Operations

The Contractor is required to submit a planned schedule of blasting operations to the MVP Representative for approval prior to the commencement of any blasting or pre-blast operation, which indicates the maximum charge weight per delay, hole size, spacing, depth, and blast layout. If blasting is to be conducted adjacent to an existing pipeline, approval must be received from the pipeline operator's engineering

department. The Contractor shall provide this schedule to the MVP representative at least five working days prior to any pre-blast operation for approval and use. Where residences or other structures are within the DIR of the blasting operation, the MVP representative may require notification in excess of five days. The blasting schedule is to include the blast geometry, drill hole dimensions, type and size of charges, stemming, and delay patterns and should also include a location survey of any dwelling or structures that may be affected by the proposed operation. Face material shall be carefully examined before drilling to determine the possible presence of unfired explosive material. Drilling shall not be started until all remaining butts of old holes are examined for unexploded charges, and, if any are found, they shall be refired before work proceeds. No person shall be allowed to deepen the drill holes that have contained explosives.

Drill holes shall be large enough to permit the free insertion of cartridges of explosive materials. Drill holes shall not be collared in bootlegs or in holes that have previously contained explosive materials. Holes shall not be drilled where there is a danger of intersecting another hole containing explosive material. Charge loading shall be spread throughout the depth of the drill hole or at the depths of rock concentration in order to obtain the optimum breakage of rock.

Loading and firing shall be performed or supervised only by a person possessing an appropriate blasting permit and license. All drill holes shall be inspected and cleared of any obstruction before loading. No holes shall be loaded except those to be fired in the next round of blasting. After loading, all remaining explosives shall be immediately returned to an authorized magazine.

A maximum loading factor of 4.0 pounds of explosive per cubic yard of rock shall not be exceeded. However, should this loading fail to effectively break up the rock, a higher loading factor shall be allowed if the charge weight per delay is reduced by a proportional amount and approved by the MVP Representative. The minimum safe distance from the blasting area to a live buried pipeline is ten (10) feet, measured horizontally from the edge of the blasting area to the outer edge of the affected pipeline. The site-by-site minimum safe distance between blasting areas and adjacent live natural gas pipelines will be calculated each time blasting is to occur using PIPEBLAST computer modeling program or other recognized industrial standards and applying the measured site conditions. The minimum safe distance and supporting calculations and site measurements are to be submitted for approval to MVP's representative at least 48 hours before blasting is to occur.

All blasts will be monitored (Seismograph Monitoring-Transverse, Vertical, Longitudinal, PPV, and Acoustic) to ensure the peak particle velocity does not exceed two (2) inches per second.

PPV will be monitored at any adjacent pipelines, water wells, potable springs, or aboveground structure within 150 feet of the blasting area. If the measured PPV at an existing pipeline or other structure exceeds this limit, the Contractor shall stop blasting activities immediately and notify the Company Representative. The Blasting Plan must be modified to reduce the PPV prior to any further blasting. The MVP Engineering and Environmental Departments may approve higher PPV in writing, given site-specific conditions.

The frequency caused by the detonation of the explosive charge shall not drop below 25 hertz without the review and approval of the Company Representative. The maximum amplitude of the elastic wave created by any blast shall not exceed 0.0636 inches. The minimum time delay between the detonations of charges shall be 8 milliseconds.

Blasting shall not be permitted if any part of a live pipeline(s) lies within the perimeter of the crater zone, regardless of the size of the blast/shot. Crater zone shall be defined as a circle created by turning a radius along the ground surface equal to the length of the depth below the surfaces where the shot is placed.

7.4 Explosive and Initiation Systems

The types of explosive and initiation systems to be used are described in the following sections.

7.4.1 Dyno Nobel Unimax TM (or equivalent)

An extra-gelatin dynamite with a specific gravity of 1.51 g/cc, a detonation rate of 17,400 f/s (unconfined), and a calculated energy of 1,055 c/g. The cartridge size will generally be 2" x 8" (1.25 lbs/cartridge) or 2" x 16" (2.50 lbs/cartridge).

7.4.2 Dyno Nobel Unigel TM (or equivalent)

A semi-gelatin dynamite with a specific gravity of 1.30 g/cc, a detonation rate of 14,200 f/s (unconfined), and a calculated energy of 955 c/g. The cartridge size will generally be 2" x 8" (1.15 lbs/cartridge) or 2" x 26" (2.30 lbs/cartridge).

7.4.3 Dyno Nobel Dynomax ProTM (or equivalent)

A propagation-resistant dynamite with a specific gravity of 1.45 g/cc, a detonation rate of 19,700 f/s (unconfined), and a calculated energy of 1,055 c/g. The cartridge size will generally be 2" x 8" (1.225 lbs/cartridge) or 2" x 16" (24.45 lbs/cartridge).

7.4.4 Dyno Nobel NONEL TM 17 or 25 Millisecond Delay Connectors or Dyno Nobel NONEL EZ Det TM (or equivalent)

A nonelectric delay detonator with a 25/350, 25/500, or 25/700-millisecond delay.

7.4.5 Dyno Nobel NONEL TM Nonelectric Shock Tube System Detonator (or equivalent)

The Shock Tube will be used to initiate all shots. The Shock Tube will be attached at one point only for the initiation of the entire shot and will not be used for downhole priming.

7.4.6 Dyno Nobel 1062 Bulk Emulsion (or equivalent)

An emulsion/gel product commonly used for area blasting, such as road alignments or large pads. It contains the following major components: ammonium nitrate (30 to 80% w/w, calcium nitrate, sodium nitrate, and No. 2 diesel fuel (1 to 8% w/w).

Each borehole shall be primed with NONEL EZ DefTM system. The total grains of the detonator system should be limited to prevent blowing stemming out of the drill hole. Boreholes shall be delayed with a minimum of 25 milliseconds ("ms"). Primers shall not be assembled closer than 50 feet (15.25 m) from any magazine. Primers shall be made up only when and as required for immediate needs.

Tamping shall be done only with wood rods without exposed metal parts, but non-sparking metal connectors may be used for jointed poles. Plastic tamping poles may be used, provided the authority having jurisdiction has approved them. Violent tamping shall be avoided.

Recommended stemming material shall consist of clean crushed stone with a d50 value of 3/8 inch, which will not bridge over like dirt and will completely fill voids in the hole.

When a safety fuse is used, the burning rate shall be determined, and in no case shall fuse lengths less than 120 seconds be used. The blasting cap shall be securely attached to the safety fuse with a standard ring-type cap crimper.

Pneumatic loading of blasting agents in blast holes primed with electric blasting caps or other static-

sensitive initiation systems shall comply with the following requirements:

- A positive grounding device shall be used for the equipment to prevent the accumulation of static electricity.
- A semi-conductive discharge hose shall be used; and
- The MVP Designated Representative shall evaluate all systems to ensure they will adequately dissipate static charges under field conditions.

No blasting caps or other detonators shall be inserted in the explosives without first making a hole in the cartridge for the cap with a wooden punch of proper size or standard cap crimper.

After loading for a blast is completed, all excess blasting caps or electric blasting caps and other explosives shall immediately be removed from the area and returned to their separate storage magazines.

7.5 Protection of Aboveground and Underground Structures

The Contractor will exercise control to prevent damage to aboveground and underground structures, including buildings, pipelines, utilities, springs, and water wells. The Contractor will implement the following procedures:

- If blasting occurs within 150 feet of identified water well or potable springs, water flow performance and water quality testing will be conducted before blasting. If the water well or spring is damaged, the well or spring will be repaired or otherwise restored, or the well owner will be compensated for damages. The Company will provide an alternative potable water supply to the landowner at the Contractor's expense until repairs occur. Locations of known water wells or systems within 150 feet of the construction work area are indicated on the Company's construction alignment sheets or in other project-related documentation.
- If any aboveground structures are within the DIR of a blasting location, the Contractor and the Company representative will inspect structures before and after blasting. In the unlikely event that damage occurs to the aboveground structure, the owner will be compensated by the Contractor.
- The Contractor shall be responsible for the ultimate resolution of all damage claims resulting from blasting. Such liability is not restricted by the DIR inspection requirement cited above.
- The Contractor shall take sole liability for property damage, injury, or fatalities to people and livestock caused by blasting operations.
- Blasting will not be allowed within 15 feet of an existing pipeline unless specifically authorized by the Company.
- Holes that have contained explosive material shall not be re-drilled. Holes shall not be drilled where danger exists of intersecting another hole containing explosive material.
- Blasting mats or padding shall be used on all shots where necessary to prevent the scattering of fly-rock outside of the approved construction workspace areas and to prevent damage to nearby structures, resources, and overhead utilities.
- Blasting shall not begin until occupants of nearby buildings, residences, places of business, places of public gathering, and farmers/ranchers have been notified by the Contractor sufficiently in advance to protect personnel, property, and livestock. The Contractor shall

notify all such parties at least 24 hours (one (1) normal working day M to F, non-holiday) prior to blasting. The Company shall work with ranchers to relocate livestock and other animals to safe areas away from the blast zone to prevent injury to the livestock or to prevent stampeding of the livestock as a result of the blast.

7.6 Safety, Handling, and Discharging Explosives

The Contractor shall adhere to the following safety, handling, and procedural guidelines:

- Only authorized, qualified, and experienced personnel shall handle explosives.
- No explosive materials shall be located where they may be exposed to flame, excessive heat, sparks, or impact. Smoking, firearms, matches, open flames, and heat and spark-producing devices shall be prohibited in or near explosive magazines or while explosives are being handled, transported, or used.
- A code of blasting signals shall be established, posted in conspicuous places, and utilized during blasting operations. Contractor training, including those directly involved in the blasting operations and all other persons involved in the project (e.g., the Company and their authorized representatives and other Contractor personnel), shall be conducted on the use and implementation of the code.
- The Contractor shall use every reasonable precaution including, but not limited to, visual and audible warning signals, warning signs, flag person, and barricades to ensure personnel safety.
- Warning signs, with lettering a minimum of four inches in height on a contrasting background, will be erected and maintained at all approaches to the blast area. Contractor personnel may need to be in place at these locations just prior to the blast through the "ALL CLEAR" notification if there is a high likelihood of people entering the blast area.
- Flaggers will be stationed on all roadways passing within 1,000 feet of the blast area to stop all traffic during blasting operations.
- All personnel not involved in the actual detonation shall stand back at least 1,000 feet, and workers involved in the actual detonation shall stand back at least 650 feet from the time the blast signal is given until the "ALL CLEAR" has been sounded.
- No loaded holes shall be left unattended or unprotected at any time, including overnight.
- No explosives or blasting agent shall be abandoned.
- In the case of a misfire, the blaster shall provide proper safeguards for personnel until the misfire has been re-blasted or safely removed.
- The exposed areas of the blast will be matted wherever practicable. In cases where such a procedure is not deemed to be feasible, the Contractor will submit an alternative procedure for review by the Company, and the site in question must be visited and examined by the designated MVP representative before any approval is granted.
- The Company may employ two-way radios for communication between vehicles and office facilities. The Contractor shall advise the Company and other contractors of any need to cease the use of such equipment during blasting activities.
- All loading and blasting activity shall cease, and personnel in and around the blast area will

retreat to a position of safety during the approach and progress of an electrical storm, irrespective of the type of explosives or initiation system used. **THIS IS A MAJOR SAFETY PRECAUTION AND WILL ALWAYS BE OBSERVED.** All explosive materials, all electrical initiation systems, and all nonelectric initiation systems are susceptible to premature initiation by lightning.

- Previous blast areas must be inspected to verify the absence of misfires. No drilling may commence until such inspection occurs. If a misfire occurs adjacent to a hole to be drilled, the misfire will be cleared by the blaster using whatever techniques are called for by the situation prior to the commencement of drilling. If a misfire occurs at some distance from the drilling area, drilling may be stopped while clearing preparations are underway. When the misfire is to be cleared by re-shooting, drilling will be shut down, and personnel will be evacuated to a place of safety prior to detonation.
- All transportation of explosives will be conducted in accordance with applicable federal, state, and local laws and regulations. Vehicles used to transport explosives shall be in proper working condition and equipped with tight wooden or non-sparking metal floor and sides. If explosives are carried in an open-bodied truck, they will be covered with a waterproof and flame-resistant tarpaulin. Wiring will be fully insulated to prevent short-circuiting, and at least two fire extinguishers will be carried. The truck will be plainly marked to identify its cargo so that the public may be adequately warned. Metal, flammable, or corrosive substances will not be transported in the same vehicle with explosives. There will be no smoking, and unauthorized or unnecessary personnel will not be allowed in the vehicle. Competent, qualified personnel will load and unload explosives into or from the vehicle.
- No sparking metal tools will be used to open kegs or wooden cases of explosives. Metallic slitters will be used to open fiberboard cases, provided the metallic slitter does not come in contact with the metallic fasteners of the case. There will be no smoking, no matches, no open lights, or other fire or flame (including welding) nearby while handling or using explosives. Explosives will not be placed where they are subject to flame, excessive heat, sparks, or impact. Partial cases or packages of explosives will be re-closed after use. No explosives will be carried in the pockets or clothing of personnel. The wires of an electric blasting cap shall not be tampered with in any way. Wires will not be uncoiled. The use of electric blasting caps will not be permitted during dust storms or near any other source of large charges of static electricity. Uncoiling of the wires or use of electric caps will not be permitted near radio-frequency transmitters. The firing circuit will be completely insulated from the ground or other conductors.
- No blast will be fired without a positive signal from the person in charge. This person will have made certain that all surplus explosives are in a safe place, all persons and/or vehicles are at a safe distance, and adequate warning has been given. Adequate warning of a blast will consist of, but is not limited to, the following:
    - Notification to nearby homeowners and local agencies, if necessary
    - Stop vehicular and/or pedestrian traffic near the blast site
    - Signals shall be given by an air horn, whistle, or similar device using standard warning signals.

- Only authorized and necessary personnel will be present where explosives are being handled or used.
- Condition of the hole will be checked with a wooden tamping pole prior to loading. Surplus explosives will not be stacked near working areas during loading. Detonating fans will be cut from spool before loading the balance of the charge into the hole. No explosives will be forced into a bore hole past an obstruction. Loading will be done by a blaster holding a valid license or by personnel under his direct supervision.
- A risk of accidental detonation caused by lightning strikes exists at any time the workplace is experiencing an electrical storm, and there are loaded holes on site. If this hazard is judged to exist by the contractor or Company representative, work shall discontinue at all operations, and workers will be moved to secure positions away from the loaded holes. Furthermore, workers shall not return to the work site until the storm has passed and the Company representative has indicated it is clear to return.
- The Company's Contractor shall have on-site and use approved lightning detectors capable of measuring the degree of electrical activity as a storm approaches and the distance to the storm front from the instrument in the limits of disturbance, such as:
    - SD-2508 manufactured by Electronics Division
    - S.D.I. International Model 350 manufactured by Thomas Instruments Inc.
    - Skyscan Lighting Detector manufactured by Skyscan Technologies
    - Or approved equivalent

7.7 Waterbody Crossing Blasting Procedures

Blasting should not be conducted within or near a stream channel without prior consultation and approval from the appropriate federal, state, and local authorities having jurisdiction to determine what protective measures must be taken to minimize damage to the environment and aquatic life of the stream. At a minimum, a five-work day notice must be provided to the appropriate federal, state, and/or local authorities. In addition to the blasting permits, a separate permit and approvals are required for blasting within the waters of the states of West Virginia and Virginia.

Rock drill or test excavation will occur within the limits of a flowing stream only after the streamflow has been redirected and maintained via dam and pump or flume crossing. For those streams that have no flow at the time of rock drill or test excavation activities, the rock testing will be conducted in the streambed and the streambed disturbance created by the rock testing will be restored within the same day of disturbance.

To facilitate planning for blasting activities for waterbody crossings, rock drilled, or test excavations may be used in waterbodies to test the ditch-line during mainline blasting operations to evaluate the presence of rock in the trench-line. The excavation of the test pit or rock drilling is not included in the time window requirements for completing the crossing. For testing and any subsequent blasting operations, streamflow will be maintained through the site.

When blasting is required, the FERC timeframes for completing in-stream construction begin when the removal of blast rock from the waterbody is started. If, after removing the blast rock, additional blasting is required, a new timing window will be determined in consultation with the Environmental Inspector. If blasting impedes the flow of the waterbody, the Contractor can use a backhoe to restore the stream flow

without triggering the timing window. The complete waterbody crossing procedures are included in MVP's Erosion Sediment Control Plan.

MVP will immediately halt all construction activities if the loss of streamflow occurs after a blasting event. The construction contractor and MVP's Environmental Inspector will immediately evaluate the loss of water and develop a Contingency Plan to restore streamflow. This Contingency Plan will be provided to the local, state, and federal agencies having jurisdiction over the stream impacted for their review and approval. Congruent with the contractor's and MVP Environmental Inspector's evaluation, temporary emergency contingency measures will be employed to halt the loss of streamflow. Immediately upon the agencies' approval of the Contingency Plan, the Contractor will implement the measures outlined in the agency-approved Contingency Plan.

7.8 Wetland Crossing Blasting Procedures

Blasting for site development that includes a wetland will only be considered after all other reasonable means of excavating have been evaluated and determined to be unlikely to achieve the required trench grade.

Blasting should not be conducted within or near a wetland without MVP's Environmental Inspector review and development of a Wetland Crossing Blasting Plan that includes protective measures to minimize damage to wetlands. At a minimum, the individual Wetland Crossing Blasting Plan will be provided to the appropriate federal, state, and local authorities for review and approval five working days prior to conducting the blasting.

Blasting will be conducted in a manner that will not compromise the structural integrity of the wetland hydrology of known wetlands. If rock is required to be blasted, then the following parameters will be adhered to:

- The excavation will be carefully inspected for any voids, openings, fractures, or other tell-tale signs of dewatering activity by MVP's Environmental Inspector.
- If the rock removal intercepts an open void, channel, or fracture, the work in that area will be stopped until a remedial assessment can be carried out by MVP's Environmental Inspector.
- All use of explosives will be limited to low-force charges that are designed to transfer the explosive force only to the rock that is designated for removal (e.g., maximum charge of 2 inches per second ground acceleration).

7.9 Rock Disposal Due to Blasting

Excess rock fragments not suitable for reburial at the point of origin will be considered construction debris and disposed of in accordance with the FERC Upland Erosion Control, Revegetation, and Maintenance Plan (FERC Plan) at Sections III.E and V.A.3, incorporated below for reference.

FERC Plan Section III.E (Disposal Planning) – Determine methods and locations for the regular collection, containment, and disposal of excess construction materials and debris (e.g., timber, slash, mats, garbage, drill cuttings, and fluids, excess rock) throughout the construction process. Disposal of materials for beneficial reuse must not result in adverse environmental impact and is subject to compliance with all applicable survey, landowner or land management agency approval, and permit requirements.

FERC Plan Section V.A.3 (Cleanup) –Rock that is not returned to its point of origin shall be considered construction debris, unless approved for use as mulch or some other use on the construction work areas by

the landowner or land managing agency.

If the excess rock is to be removed from the construction area, it is to be hauled to an approved local- and state-permitted disposal site. This disposal facility will need to demonstrate that it is permitted to accept and dispose of the excess rock from the blasting operations. MVP will obtain a copy of the disposal facility's permit, as issued by the local jurisdiction having authority over the disposal facility and the disposal site within.

7.10 Disposal of Explosive Materials

All explosive materials that are obviously deteriorated or damaged shall not be used and shall be destroyed according to applicable local, state, and federal requirements.

Empty containers and packages and paper or fiberboard packing materials that have previously contained explosive materials shall not be reused for any purpose. Such packaging materials shall be destroyed by burning (outside of the construction limits of disturbance) at an approved outdoor location or by other approved methods. All personnel shall remain at a safe distance from the disposal area.

All other explosive materials will be transported from the job site in approved magazines per local and/or state regulations.

7.11 Blasting Records

A record of each blast shall be made and submitted, along with seismograph reports (Appendix 6A-C), to MVP's designated representative. The record shall contain the following minimum data for each blast:

- Name of Company or Contractor;
- Location, date, and time of blast;
- Name, signature, and license number of Contractor and blaster in charge;
- Blast location referenced to the relevant facility;
- Picture record of the blast area disturbance;
- Type of material blasted;
- Number of holes, depth of burden and stemming, and spacing;
- Diameter and depth of holes;
- Volume of rock in shot;
- Types of explosives used, specific gravity, energy release, pounds of explosive per delay, and total pounds of explosive per shot;
- Delay type, interval, total number of delays and holes per delay;
- Maximum amount of explosives per delay period of 17 milliseconds or greater;
- Power factor;
- Method of firing and type of circuit;
- Direction and distance in feet to nearest structure and utility neither owned or leased by the person conducting the blasting;

- Weather conditions;
- Type and height or length of stemming;
- If mats or other protection were used; and
- Type of detonators used and delay periods used.

Within 48 hours following a blast, a Blast Report (Appendix 6A-B) is to be provided to the MVP's Designated Representative. The Blast Report shall provide the information outlined by "Blast Report Project." This Blast Report form is considered the minimum information needed. In addition to the completed Blast Report, the blast design is to be attached and made part of the Blast Report. The Blast Report Project is in addition to all other local, county, township, state, or federal reporting requirements. Copies of these Blast Reports are to be provided to the MVP designated representative.

At the conclusion of each blasting event, the Blasting Contractor is to conduct and inventory blasting/explosive materials with a written inventory report attached to the Blast Report. All blasting/explosive materials are to be accounted for. Any discrepancies are to be immediately reported to the governing agencies and the MVP's designated representative.

The person taking the seismograph reading shall accurately indicate the exact location of the seismograph, if used, and shall also show the distance of the seismograph from the blast.

Seismograph records should include:

- Name of person and firm operating and analyzing the seismograph record;
- Seismograph serial number;
- Seismograph reading; and
- Maximum number of holes per delay period of 17 milliseconds or greater.

Within 72 hours following a blast, at sites monitored by a seismograph, a Seismograph Report (Appendix 6A-C) is to be provided to the MVP's designated representative. In addition to the completed Seismograph Report, the seismograph readings and written interpretations are to be attached to the report. This reporting is in addition to all other local, county, township, state, or federal reporting requirements. Copies of these Seismograph Reports are to be provided to the MVP designated representative.

8 POST-BLASTING INSPECTION

An approved independent contractor, with landowner permission, will examine the condition of structures within the defined radius of the blast area, or as required by state or local ordinances, of the construction area after completion of blasting operations to identify any changes in the conditions of these properties or confirm any damages noted by the landowner. The independent Contractor, with landowner approval, will conduct a resampling of wells as required by state or local ordinances, of the construction area. Should any damage or change occur during the blasting operations, an additional survey of the affected property may be made.

Upon receiving notice that a structure or other damages have possibly occurred due to the blasting operations, the blasting contractor is to conduct a post-blast conditions survey. The post-blast conditions survey shall be conducted within 48 hours after being notified or at the landowner's schedule and

permission. The post-blast conditions will be documented with the information outlined in the "Post-Blast Survey for the Project" (Appendix 6A-D). This post-blast form is considered the minimum information

needed.

9 STORAGE REQUIREMENTS

All explosives, blasting agents, and initiation devices shall be stored in locked magazines that have been located, constructed, approved, and licensed in accordance with local, state, and federal regulations.

- The storage of explosives, blasting agents and initiation devices is not permitted on the right-of-way and will only be stored at approved staging areas or construction yards.
- Magazines shall be dry, well-ventilated, reasonably cool (painting of the exterior with a reflective color), bullet and fire-resistant, and kept clean.
- Initiation devices shall not be stored in the same box, container, or magazine with other explosives. Explosives, blasting agents, or initiation devices shall not be stored in wet or damp areas, near oil, gasoline, cleaning solvents, near sources of heat radiators, steam pipes, stoves, etc. No metal or metal tools shall be stored in the magazine. There shall be no smoking, matches, open lights, or other fire or flame inside or within 50 feet of storage magazines or explosive materials. The loading and unloading of explosive materials into or out of the magazine shall be done in a business-like manner with no loitering, horseplay, or prank-playing.
- Magazines shall be kept locked at all times unless explosives are being delivered or removed by authorized personnel. Admittance shall be restricted to the magazine keeper, blasting supervisor, or licensed blaster. Magazine construction shall meet the requirements of Bureau of Alcohol, Tobacco and Firearms P5400.7 “Explosives Law and Regulations” and be in accordance with local, state, or federal regulations and the ISEE Blaster’s Handbook.
- Accurate and current records shall be kept of the explosive material inventory to ensure that the oldest stocks are utilized first, satisfy regulatory requirements, and for immediate notification of any loss or theft. Magazine records shall reflect the quantity of explosions removed, the amount returned, and the net quantity used at the blasting site. Copies of these records are to be supplied at the end of the project or at any time requested by the Company throughout the project.
- When explosive materials are taken from the storage magazine, they shall be kept in the original containers until used. Small quantities of explosive materials may be placed in day boxes, powder chests, or detonator boxes. Any explosive material not used at the blast site shall be returned to the storage magazine and replaced in the original container as soon as possible, but in any case, before the end of the workday.
- Magazine locations shall be in accordance with local, state, or federal regulations. Where no regulations apply, magazines shall be located in accordance with the latest edition of the 18th Anniversary Edition of the Blaster’s Handbook and ATF P5400-7 Explosives Law and Regulations. Magazines shall be marked in minimum three-inch high letters with the words “DANGER – EXPLOSIVES” prominently displayed on all sides and roof.

Mountain Valley Pipeline Boost Project

General Blasting Plan

Appendix 6A-A
Pre-Blast Survey

PRE-BLAST SURVEY

MOUNTAIN VALLEY PIPELINE BOOST PROJECT

STRUCTURE INFORMATION

Owner Name:	
Mailing Address:	
Telephone No.:	
Street Address or Physical Address:	
Latitude:	Longitude:
County/Township:	State:
Nearest Facility:	
Company Structure No.:	

OCCUPANT INFORMATION

Occupant Name:
Mailing Address:
Telephone No.:

SURVEYOR'S INFORMATION

Company Conducting Survey:
Mailing Address:
Telephone No.:
Contact Person to Discuss Survey:
Name of Approved Surveyor:
State of Approval:

STRUCTURE LOCATION MAP

Survey Map: 8 ½" x 11" copy of construction E&S Plan drawing sheet or site specific plan/drawing showing MOUNTAIN VALLEY PIPELINE Boost facility and structure surveyed. Attach map to survey.

SITE PLAN SKETCH

Site Plan: 8 ½" x 11" sketch showing all structures and relative locations, driveways, sidewalks, outbuildings, water wells, septic systems' components, and other man-made features as applicable. Use arrows to show site grade and slope. Include a North arrow and direction and distance to the MOUNTAIN VALLEY PIPELINE Boost facility. The site plan sketch shall show the distance from the blast's end points to any the adjacent natural gas pipeline(s).

Exterior Inspection

(*Check all that apply*)

Page 2

Age of Structure

_____years

- ❑ estimated
- ❑ provided by owner or occupant
- ❑ other (explain)

Use of Structure

- ❑ private dwelling
- ❑ commercial building
  - ❑ retail
  - ❑ factory
  - ❑ office
  - ❑ warehouse/storage
- ❑ multi-family dwelling
- ❑ single-family rental
- ❑ apartment building
- ❑ other (explain)

Type of Structure

- ❑ conventional dwelling
- ❑ mobile home
- ❑ mobile home with frame addition
- ❑ modular
- ❑ commercial (describe)
- ❑ other (explain)
- ❑ single story
- ❑ two story
- ❑ other (describe) _____

Frame Materials

- ❑ conventional wood frame
- ❑ timber frame
- ❑ steel
- ❑ masonry

Foundation Material

- ❑ poured concrete
- ❑ stone block
- ❑ cinder block
- ❑ concrete block
- ❑ other (explain)

_____

Foundation Type

- ❑ crawl space
- ❑ full basement
- ❑ partial basement
- ❑ block on footing with center piers
- ❑ piers/posts/pillars with underpinning
- ❑ piers/posts/pillars w/out underpinning
- ❑ other (describe) If dwelling is a mobile home, are tie-downs in use? ❑ yes ❑ no

Exterior Finish Materials

- ❑ brick
- ❑ concrete block
- ❑ cinder block
- ❑ stone
- ❑ stucco
- ❑ brick or stone laminate
- ❑ wood siding
- ❑ aluminum siding
- ❑ vinyl siding
- ❑ shingle (describe type)

_____

- ❑ other (explain)

_____

Exterior Inspection (cont.)
(Check all that apply)
Page 3

Roofing Material(s)

- ❑ shingles
  - ❑ asphalt
  - ❑ cedar or other wood
  - ❑ other (explain) _____
- ❑ slate
- ❑ tile
- ❑ tin or other metal
- ❑ tar & chip
- ❑ tarpaper
- ❑ other (explain) _____

Roof Configuration

- ❑ sloped
- ❑ flat

Chimney Material

- ❑ block
- ❑ gravel
- ❑ tar & chip ❑ other (explain)

Gutters installed ❑ yes ❑ no
Down spouts installed ❑ yes ❑ no
Routed away from foundation
❑ yes ❑ no

Sidewalk/Walkway Material(s)

- ❑ concrete
- ❑ wood
- ❑ brick
- ❑ pavers/patio blocks
- ❑ flagstone
- ❑ other (explain) _____
- ❑ brick
- ❑ stone
- ❑ metal ❑ other (explain)

Driveway Material(s)

- ❑ concrete
- ❑ asphalt

Exterior Photos Labeled to Match Checklist Items.

Comments (including a description of any substandard construction):

_____
_____
_____
_____
_____
_____
_____
_____
_____

Well/Water Supply System (check all that apply)

Page 4

❑ Public Service Water Supply (*if not checked, complete the remainder of this page, and include a water analysis of untreated water).*

❑ domestic
❑ irrigation domestic garden
❑ irrigation commercial crops
❑ livestock
❑ combined domestic and agricultural
❑ commercial (explain)

_____

❑ no water source at the site (explain)

_____

❑ cistern
Size ___gallons
Age ___years

Supplied by:
❑ rainwater
❑ spring
❑ runoff/stream

Location:
❑ aboveground
❑ buried

Material:
❑ concrete
❑ plastic
❑ metal
❑ other (explain) _____

❑ spring
❑ stream
❑ other (explain) _____
❑ dug well
Depth ____ft. age _____
❑ brick lining
❑ stone lining
❑ other (explain)
❑ Pump type & size_____

❑ drilled well
❑ steel casing
❑ plastic casing
❑ other (explain)
Casing depth _____ ft.
Casing diameter_____in.
Well screen/liner diameter _____ in.
Depth____ft. to ____ft.
Well screen type _____
Vent type/size _____
Well driller _____
Pump type & size _____

Water Quantity

Has well ever gone dry ❑yes ❑no
Has well capacity ever been measured ❑yes ❑no If yes, list data (recharge rate): _____ gpm
How many people use this water supply?

Water Quality

Does the water cause staining?
❑ yes ❑ no
Stain color: _____
Item stained: _____
Are there particulates (solids) in the water
❑ yes ❑ no
If yes describe the particles (color, texture):_____
Does the water have an odor?
❑ yes ❑ no If yes, describe the odor

_____

Water Well/Septic-Sewage System

Well/Water Supply (continued)

Is there a treatment system?

❑ yes ❑ no

Type of treatment: _____

Is the water sampling point prior to treatment?

❑ yes ❑ no

Sampling Information

May the well be unsealed to measure depth to and of water? ❑ yes ❑ no

Depth of water: ft
_____

Ground level to water: ft.
_____

May the well be pumped to measure other recharge characteristics? ❑ yes ❑ no

Recharge rate _____gpm

Date sampled:_____
Date measured:_____
Well sample no.:_____

Septic/Sewage Treatment System

- ❑ public service system
- ❑ aeration system
- ❑ package plant
- ❑ septic tank
  - ❑ concrete
  - ❑ plastic
  - ❑ metal
  - ❑ other (explain)
- ❑ drain field
- ❑ other (explain)

Location Information

- ❑ Water well
  - ❑ Latitude ❑ Longitude
- ❑ Springs
  - ❑ Latitude ❑ Longitude
- ❑ Septic/sewage
  - ❑ Latitude ❑ Longitude

Attach lab analysis of the pre-treatment water and any available written well documentation. Provide source of documentation. Photos of water well(s), water supply, water treatment system, and septic/sewage treatment system and area.

Interior Inspection

Provide written documentation of any defects. Written documentation must be accompanied by photos or room sketches for each interior room.

Each interior room sketch must include type of construction materials and covering for each wall, the floor and the ceiling.

Each wall that is found to be defect free must be labeled "room completely surveyed" or "no defects observed".

Show areas hidden from view (hidden by furniture, etc.).

Interior photos of a room should be appropriately labeled to match written documentation to the photo (i.e. room and wall number).

Include a key to abbreviations used.

Include a floor plan sketch with rooms labeled and indicate direction of progression of the inspection.

Comments (include any substandard construction):

Additional Buildings

Page 6

Additional Building (attach additional sheets for each additional building).
Type of building

- ❑ barn
- ❑ garage
- ❑ well house
- ❑ storage
- ❑ other (explain) _____
- ❑ Age _____
  - ❑ estimated
  - ❑ owner provided

Exterior finish material _____
Frame materials _____
Roof materials _____
Floor materials _____
Foundation materials _____

Is interior finished ❑ yes ❑ no

Interior finish _____

Provide written documentation and photos of exterior and interior with room sketches for each interior room of the additional building.

Comments

Owner/resident:

_____
_____
_____
_____
_____

Surveyor:

_____
_____
_____
_____
_____
_____

Mountain Valley Pipeline Boost Project

General Blasting Plan

Appendix 6A-B
Blast Report

BLAST REPORT
MOUNTAIN VALLEY PIPELINE BOOST PROJECT

Blasting Company:_____

Address:_____

_____

_____

Blast Location:_____ _____ _____
Facility (Station/Milepost Start/Stop, if applicable) County/Township State

Blast Area: _____

_____
Picture(s) of Blast Area Disturbance

Blast Date and Time:_____

_____ _____
Date Military Time

Blaster:_____
Signature of Blaster

_____
Printed Name of Blaster

_____
Blaster's License Number

_____
Blasting Company Name

_____
Blasting Company License Number

_____
Signature of Blasting Company Person in Charge

_____
Printed Name of Person in Charge

Type of Material Blasted:_____
(Geologist Description)

_____

Blast Design:_____
Number of Holes and Diameter

_____
Depth of Burden

_____
Stemming and Spacing

_____
Depth of Holes

_____
Stemming Type and Height/Length

BLAST REPORT
MOUNTAIN VALLEY PIPELINE BOOST PROJECT

Page 2

Volume of Shot:_____
Rock Volume of Shot

Explosives and Delays:_____
Type of Explosives Used

_____
Specific Gravity and Energy Release

_____
Pounds of Explosive per Delay

_____
Total Pounds of Explosive per Shot

_____
Type of Delay and Interval

_____
Total Number of Delays and Holes per Delay

_____
Maximum Amount of Explosives per Delay Period of 17 Milliseconds or Greater

_____
Power Factor

Firing:_____
Method of Firing

_____
Type of Circuit

Nearest Structure:_____
Compass Direction and Distance in Feet to Nearest Structure

_____
Nearest Structure Description

Weather:_____
Temperature, Wind and Sky Conditions at Start of Hole Loading

_____
Temperature, Wind and Sky Conditions at Time of Blast

Protection:_____
Mats Description and Weight

_____
Other than Mats Blast Protection

Detonator/Delay:_____
Type of Detonator Used

_____
Delay Period(s) Used

BLAST REPORT

MOUNTAIN VALLEY PIPELINE BOOST PROJECT

Page 3

Safety Measures:_____

Safety Measures Implemented to Protect Blast Area from Unauthorized Personnel

Location of Measure

Dates Safety Measures Placed/Removed

Comments

Safety Measures Implemented to Protect Blast Area from Unauthorized Personnel

Location of Measure

Dates Safety Measures Placed/Removed

Comments

Safety Measures Implemented to Protect Blast Area from Unauthorized Personnel

Location of Measure

Dates Safety Measures Placed/Removed

Comments

Safety Measures Implemented to Protect Blast Area from Unauthorized Personnel

Location of Measure

Dates Safety Measures Placed/Removed

Comments

Safety Measures Implemented to Protect Blast Area from Unauthorized Personnel

Location of Measure

Dates Safety Measures Placed/Removed

Comments

BLAST REPORT

MOUNTAIN VALLEY PIPELINE BOOST PROJECT

Page 4

Safety Measures:_____

Safety Measures Implemented to Protect Blast Area from Unauthorized Personnel

Location of Measure

Dates Safety Measures Placed/Removed

Comments

Safety Measures Implemented to Protect Blast Area from Unauthorized Personnel

Location of Measure

Dates Safety Measures Placed/Removed

Comments

Communications Systems:_____

Used to Maintain Safe Blast Area

Location and Use

Comments

:_____

Used to Maintain Safe Blast Area

Location and Use

Comments

:_____

Used to Maintain Safe Blast Area

Location and Use

Comments

BLAST REPORT

MOUNTAIN VALLEY PIPELINE BOOST PROJECT

Page 5

Communications Systems:_____

Used to Maintain Safe Blast Area

Location and Use

Comments

:_____

Used to Maintain Safe Blast Area

Location and Use

Comments

:_____

Used to Maintain Safe Blast Area

Location and Use

Comments

:_____

Notices of Blast

Company/Person

Verbal Date Military Time

Written Notice Date

Written Notice Provided By

Company/Person

Verbal Date Military Time

Written Notice Date

Written Notice Provided By

BLAST REPORT

MOUNTAIN VALLEY PIPELINE BOOST PROJECT

Page 6

Notices of Blast: _____

Company/Person

_____

Verbal Date Military Time

_____

Written Notice Date

_____

Written Notice Provided By

_____

Company/Person

_____

Verbal Date Military Time

_____

Written Notice Date

_____

Written Notice Provided By

_____

Company/Person

_____

Verbal Date Military Time

_____

Written Notice Date

_____

Written Notice Provided By

_____

Company/Person

_____

Verbal Date Military Time

_____

Written Notice Date

_____

Written Notice Provided By

Mountain Valley Pipeline Boost Project

General Blasting Plan

Appendix 6A-C
Seismograph Report

SEISMOGRAPH REPORT
MOUNTAIN VALLEY PIPELINE BOOST PROJECT

Seismograph Company:_____

Address:_____

_____

Blast Location:_____ _____ _____
Facility (Station/Milepost Start/Stop, if applicable) County/Township State

Blast Date and Time:_____
Date Military Time

Blast Date and Time:_____
Seismograph Serial Number Location Description

_____
Distance from Blast in Feet and Location Compass Direction

_____
Seismograph Reading

_____
Seismograph Serial Number Location Description

_____
Distance from Blast in Feet and Location Compass Direction

_____
Seismograph Reading

_____
Seismograph Serial Number Location Description

_____
Distance from Blast in Feet and Location Compass Direction

_____
Seismograph Reading

_____
Seismograph Serial Number Location Description

_____
Distance from Blast in Feet and Location Compass Direction

_____
Seismograph Reading

Holes per Delay:_____
Maximum Number of Holes per Delay Period of 17 Milliseconds or Greater

Person Analyzing Readings:_____
Signature of Seismograph Reader

_____
Printed Name

_____
Name of Company/Firm Analyzing Readings

The seismograph report, copy of seismograph readings, and location sketch and description documenting the location of each seismograph are to be attached to the Blast Report for each blast where seismograph readings are required.

Mountain Valley Pipeline Boost Project

General Blasting Plan

Appendix 6A-D
Post-Blast Survey Report

POST-BLAST SURVEY

MOUNTAIN VALLEY PIPELINE BOOST PROJECT

STRUCTURE INFORMATION

Owner Name:	
Mailing Address:	
Telephone No.:	
Street Address or Physical Address:	
Latitude:	Longitude:
County/Township:	State:
Nearest Facility:	
Company Structure No.:	

OCCUPANT INFORMATION

Occupant Name:
Mailing Address:
Telephone No.:

SURVEYOR'S INFORMATION

Company Conducting Survey:
Mailing Address:
Telephone No.:
Contact Person to Discuss Survey:
Name of Approved Surveyor:
State of Approval:

REQUEST FOR POST-BLAST SURVEY

Name of Company/Person Requesting Post-Blasting Survey:
Mailing Address:
Telephone No.:
Physical Address:
Statement of Damage:

STRUCTURE LOCATION MAP

Survey Map: 8 ½" x 11" copy of construction E&S Plan drawing sheets or site specific plan/drawing showing MOUNTAIN VALLEY PIPELINE Boost facility and structure surveyed. Attach map to survey.

SITE PLAN SKETCH

Site Plan:
8 ½" x 11" sketch showing all structures and relative locations, driveways, sidewalks, outbuildings, water wells, septic systems' components, and other man-made features as applicable. Use arrows to show site grade and slope. Include a North arrow and direction and distance to MOUNTAIN VALLEY PIPELINE Boost facility. The site plan sketch shall show the distance from the blast's end points to any adjacent natural gas pipeline(s).

Exterior Inspection

(*Check all that apply*)

Page 2

Age of Structure

_____years

- ❑ estimated
- ❑ provided by owner or occupant
- ❑ other (explain)_____

Use of Structure

- ❑ private dwelling
- ❑ commercial building
  - ❑ retail
  - ❑ factory
  - ❑ office
  - ❑ warehouse/storage
- ❑ multi-family dwelling
- ❑ single-family rental
- ❑ apartment building
- ❑ other (explain)

Type of Structure

- ❑ conventional dwelling
- ❑ mobile home
- ❑ mobile home with frame addition
- ❑ modular
- ❑ commercial (describe)
- ❑ other (explain)
- ❑ single story
- ❑ two story
- ❑ other (describe) _____

Frame Materials

- ❑ conventional wood frame
- ❑ timber frame
- ❑ steel
- ❑ masonry

Foundation Material

- ❑ poured concrete
- ❑ stone block
- ❑ cinder block
- ❑ concrete block
- ❑ other (explain)

Foundation Type

- ❑ crawl space
- ❑ full basement
- ❑ partial basement
- ❑ block on footing with center piers
- ❑ piers/posts/pillars with underpinning
- ❑ piers/posts/pillars w/out underpinning
- ❑ other (describe) If dwelling is a mobile home, are tie-downs in use? ❑ yes ❑ no

Exterior Finish Materials

- ❑ brick
- ❑ concrete block
- ❑ cinder block
- ❑ stone
- ❑ stucco
- ❑ brick or stone laminate
- ❑ wood siding
- ❑ aluminum siding
- ❑ vinyl siding
- ❑ shingle (describe type)
- ❑ other (explain)

Exterior Inspection (cont.)
(Check all that apply)
Page 3

Roofing Material(s)

- ❑ shingles
- ❑ asphalt
- ❑ cedar or other wood
- ❑ other (explain)
- ❑ slate
- ❑ tile
- ❑ tin or other metal
- ❑ tar & chip
- ❑ tarpaper
- ❑ other (explain)

Gutters installed ❑ yes ❑ no
Down spouts installed ❑ yes ❑ no
Routed away from foundation
❑ yes ❑ no

Sidewalk/Walkway Material(s)

- ❑ concrete
- ❑ wood
- ❑ brick
- ❑ pavers/patio blocks
- ❑ flagstone
- ❑ other (explain)

Roof Configuration

- ❑ sloped
- ❑ flat

Chimney Material

- ❑ block
- ❑ gravel
- ❑ tar & chip ❑ other (explain)

Driveway Material(s)

- ❑ concrete
- ❑ asphalt
- ❑ gravel
- ❑ tar & chip
- ❑ other (explain)

Exterior Photos Labeled to Match Checklist Items.

Comments (including a description of any substandard construction):

Well/Water Supply System (*check all that apply*)

Page 4

❑ Public Service Water Supply (*if not checked, complete the remainder of this page, and include a water analysis of untreated water).*

Water Use

❑ domestic
❑ irrigation domestic garden
❑ irrigation commercial crops
❑ livestock
❑ combined domestic and agricultural
❑ commercial (explain)

_____

❑ no water source at the site (explain)

_____

❑ cistern
Size ___gallons
Age ___years

Supplied by:
❑ rainwater
❑ spring
❑ runoff/stream

Location:
❑ aboveground
❑ buried

Material:
❑ concrete
❑ plastic
❑ metal
❑ other (explain) _____

❑ spring
❑ stream
❑ other (explain) _____

❑ dug well
Depth ____ft. age _____
❑ brick lining
❑ stone lining
❑ other (explain)
❑ Pump type & size_____

❑ drilled well
❑ steel casing
❑ plastic casing
❑ other (explain)
Casing depth _____ ft.
Casing diameter_____in.
Well screen/liner diameter __ in.
Depth_____ft. to ____ft.
Well screen type _____
Vent type/size _____
Well driller _____
Pump type & size _____

Water Quantity

Has well ever gone dry ❑yes ❑no
Has well capacity ever been measured ❑yes ❑no If yes, list data (recharge rate): _____ gpm
How many people use this water supply?
_____

Water Quality

Does the water cause staining?
❑ yes ❑ no
Stain color: _____
Item stained: _____
Are there particulates (solids) in the water
❑ yes ❑ no
If yes describe the particles (color, texture):_____
Does the water have an odor?
❑ yes ❑ no If yes, describe the odor

Water Well/Septic-Sewage System

Well/Water Supply (continued)

Is there a treatment system?

❑ yes ❑ no

Type of treatment: _____

Is the water sampling point prior to treatment?

❑ yes ❑ no

Sampling Information

May the well be unsealed to measure depth to and of water? ❑ yes ❑ no

Depth of water: _____ ft.

Ground level to water: _____ft.

May the well be pumped to measure other recharge characteristics?

❑ yes ❑ no

Recharge rate ___gpm

Date sampled:_____
Date measured:_____
Well sample no.:_____

Septic/Sewage Treatment System

- ❑ public service system
- ❑ aeration system
- ❑ package plant
- ❑ septic tank
  - ❑ concrete
  - ❑ plastic
  - ❑ metal
  - ❑ other (explain)
- ❑ drain field
- ❑ other (explain)

Location Information

- ❑ Water well
  - ❑ Latitude ❑ Longitude
- ❑ Springs
  - ❑ Latitude ❑ Longitude
- ❑ Septic/sewage
  - ❑ Latitude ❑ Longitude

Attach lab analysis of the pre-treatment water and any available written well documentation. Provide source of documentation. Photos of water well(s), water supply, water treatment system, and septic/sewage treatment system and area.

Interior Inspection

Provide written documentation of any defects. Written documentation must be accompanied by photos or room sketches for each interior room.

Each interior room sketch must include type of construction materials and covering for each wall, the floor and the ceiling.
Each wall that is found to be defect free must be labeled "room completely surveyed" or "no defects observed".
Show areas hidden from view (hidden by furniture, etc.).
Interior photos of a room should be appropriately labeled to match written documentation to the photo (i.e. room and wall number).
Include a key to abbreviations used.
Include a floor plan sketch with rooms labeled and indicate direction of progression of the inspection.

Comments (include any substandard construction):

_____
_____
_____

Additional Buildings

Page 6

Additional Building (attach additional sheets for each additional building).

Type of building

- ❑ barn
- ❑ garage
- ❑ well house
- ❑ storage
- ❑ other (explain)_____Age _____
- ❑ estimated
- ❑ owner provided

Exterior finish material _____
Frame materials_____
Roof materials_____
Floor materials_____
Foundation materials_____
Is interior finished ❑ yes ❑ no
Interior finish_____

Provide written documentation and photos of exterior and interior with room sketches for each interior room of the additional building.

Comments

Owner/resident:_____

_____

_____

_____

Surveyor:_____

_____

_____

_____

DAMAGE SUMMARY

Page 7

Damaged Facility: _____
List Facility Damaged

Type of Damage: _____
(Attach sketch of damaged facility, facility location, and photograph)

Date of Blast and Time: _____
Date (Attach copy of blast design and blast report) Military Time

Facility Location: _____ _____ _____
Facility (Station/Milepost Start/Stop, if applicable) County/Township State

Facility to Damage Location: _____
Distance from Blasting Site (in Feet) and Location Compass Direction

Seismograph Report: _____
(Attach Seismograph Report)

Facility Blast Area Fracture Zone: _____
Length in Feet Width in Feet

Changes Implemented Blast Design: _____
Weight of Change

_____
Distribution of Change in Blast Hole

_____
Weight of Explosive per Delay

_____
Shot Hole Pattern

_____
Supplier/Manufacturer of Explosive

_____
Explosive Grade

Ground Geology: _____
List Changes Before Blast and After Blast

DAMAGE SUMMARY

Page 8

Provide Written Comments of:

Mountain Valley Pipeline
Representative
Blaster
Post-Blast Surveyor
Seismologist
Facility Owner

Provide written comments of suggested changes to future blast designs for the Mountain Valley Pipeline Boost project.

Provide written comments as to actions to be taken to correct the damages.