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Appendix

LIST OF ACRONYMS AND ABBREVIATIONS

ACRONYM	MEANING
1987 Manual	US Army Corps of Engineers Wetland Delineation Manual
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
GIS	Geographic Information Systems
GPS	Global Positioning System
HGM	Hydrogeomorphic
MVP	Mountain Valley Pipeline, Inc.
NHD	National Hydrography Dataset
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OBL	Obligate
PEM	Palustrine Emergent
PFO	Palustrine Forested
Project	Mountain Valley Pipeline Project
PSS	Palustrine Scrub-Shrub
Regional Supplement	Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region
ROW	Right-of-Way
Tetra Tech	Tetra Tech, Inc.
Transco	Transcontinental Gas Pipeline Company, LLC
UNT	Unnamed Tributary
UPL	Upland
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USFS	United States Forest Service
USGS	United States Geological Survey
VA	Virginia
WV	West Virginia

1.0 PROJECT INTRODUCTION

Mountain Valley Pipeline, Inc. (MVP), a joint venture between EQT Midstream Partners, LP and affiliates of NextEra Energy, Inc., WGL Holdings, Inc., Consolidated Edison Gas Midstream, LLC., and RGC Midstream, LLC, is proposing to construct and operate the Mountain Valley Pipeline Project (Project) located within 11 counties in West Virginia (WV) and six counties in Virginia (VA). MVP plans to construct an approximately 303-mile, 42-inch-diameter natural gas pipeline to provide timely, 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 proposed pipeline will extend from the existing Equitrans, L.P. transmission system and other natural gas facilities in Wetzel County, WV to the Transcontinental Gas Pipe Line Company, LLC's (Transco) Zone 5 Compressor Station 165 in Pittsylvania County, VA. In addition to the pipeline, the Project will include approximately 171,600 horsepower of compression at three compressor stations currently planned along the route, as well as measurement, regulation, and other ancillary facilities required for the safe and reliable operation of the pipeline.

This Aquatic Resource Report for the proposed Project has been prepared by Tetra Tech, Inc. (Tetra Tech) on behalf of MVP. The proposed Project route on United States Forest Service (USFS) property in Monroe county, WV, Giles county, VA, and Montgomery county, VA is shown on United States Geological Survey (USGS) Project Location Maps (Figures 1-1 to 1-2). The content of this report presents the methodology, results, and conclusions of wetland delineation and stream identification activities completed for the proposed Project on USFS property in Monroe, Giles, and Montgomery counties.

2.0 METHODOLOGY

2.1 Wetland Delineation

United States Army Corps of Engineers (USACE) requires the use of the procedures enumerated in the *USACE Wetland Delineation Manual* (*1987 Manual*; Environmental Laboratory, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region* (*USACE Regional Supplement*; Environmental Laboratory, 2012) for making jurisdictional determinations. According to the *1987 Manual* (Environmental Laboratory, 1987), an area is defined as a wetland if, under normal circumstances, it meets all three of the following criteria:

1. Predominance of hydrophytic vegetation (plants adapted for life in saturated soil conditions);
2. Hydric soils (soils formed under water, or in saturated conditions); and
3. Wetland hydrology (presence of inundated or saturated soils at some time during the growing season).

Wetlands identified in the field were classified in accordance with the U.S. Fish and Wildlife Service's (USFWS) *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979), *A Hydrogeomorphic (HGM) Classification for Wetlands (*Brinson, 1993) and USACE Waters Type (USACE, 2007). Cowardin wetland classifications (Cowardin et al., 1979) are as follows:

Palustrine emergent (PEM) – emergent, herbaceous (non-woody) plants are the tallest life form with at least 30 percent aerial coverage

Palustrine scrub-shrub (PSS) –woody plants less than six meters (20 feet) in height are the tallest life form with at least 30 percent aerial coverage, or, when trees or shrubs alone cover less than 30 percent of an area but in combination cover 30 percent or more. Trees are defined as woody plants at least six meters (20 feet) in height and shrubs are defined as woody plants less than six meters (20 feet) in height

Palustrine forested (PFO) - woody plants at least six meters (20 feet) in height are the tallest life form with at least 30 percent aerial coverage

Dominant vegetation was identified and classified according to *The National Wetland Plant List: 2016 wetland ratings* (Lichvar, 2016). Plant classifications are as follows:

Obligate (OBL) - essentially always found in wetlands; estimated probability >99%
Facultative Wetland (FACW) - usually found in wetlands; estimated probability 67%-99%
Facultative (FAC) - equally likely to occur in wetlands and non-wetlands; estimated probability 34%-66%
Facultative Upland (FACU) - sometimes occurs in wetlands; estimated probability 1%-33%
Upland (UPL) – rarely occurs in wetlands; estimated probability <1%

2.2 Stream Identification

Streams identified in the field were classified by Flow Regime, USACE Water Type (USACE, 2007), and Cowardin Classification (Cowardin et al., 1979).

Streams were designated in the field as ephemeral if they exhibited the following characteristics: ephemeral streams typically exhibit short duration flow derived from precipitation and precipitation driven run-off from the localized surrounding landscape. Ephemeral streams are located above the groundwater table and are not augmented by groundwater sources. Ephemeral streams are often dry. Therefore, no permanent fish species persistently reside in streams exhibiting this flow regime. Aquatic macroinvertebrates are also not common within this flow regime and the absence is often used to support the determination of a stream being ephemeral. As practical, the source of hydrology for a stream was identified. If the stream received no groundwater contributions then it was designated as ephemeral.

Streams were designated in the field as intermittent if they exhibited the following characteristics: intermittent streams exhibit periods of flowing water during the wet season (winter through spring), but normally flow does not persist year-round. Intermittent streams derive at least a portion of their hydrology

from ground water sources. Precipitation and precipitation driven run-off from the surrounding landscape serve as supplemental hydrologic contributors. Only pioneer fish species potentially occupy streams of this flow regime when conditions are optimal. Aquatic macroinvertebrate populations in intermittent streams differ from season to season depending on stream flow fluctuations. As practical, the source of hydrology for a stream was identified. If the stream received groundwater contributions then it was designated as either an intermittent or perennial.

Streams were designated in the field as perennial if they exhibited the following characteristics: perennial streams have continuous flow year-round during years of normal rainfall. Perennial streams, like intermittent streams, derive hydrology from ground water sources. Precipitation and precipitation driven run-off from the surrounding landscape serve as supplemental hydrologic contributors. Usually numerous ephemeral and intermittent streams are tributaries to perennial streams. These tributaries allow for a large enough drainage area and groundwater inflow to allow for continuous flow year-round. Various fish and macroinvertebrate species may be present if suitable water quality parameters are present.

2.3 Field Surveys

The field investigations for the proposed Project were performed on September 11 & 14, 2015; October 16 – 17, 2015; and June 17 & 28, 2016. The study area was at least 300-feet wide along the proposed pipeline right-of-way (ROW) and 100-feet wide along proposed access roads, in addition to specific areas identified for proposed workspaces. Study areas were investigated for the presence of potential wetlands and streams. The final study area is illustrated on Figures 1-1 to 1-2.

Preliminary site reconnaissance of the study area was conducted through a review of available Geographic Information Systems (GIS) resources. Existing information reviewed included the following:

- USGS topographic mapping (Figures 1-1 to 1-2; USGS, 2009)
- Natural Resources Conservation Service (NRCS) National Cooperative Soil Survey (Figures 2-1 to 2-2; NRCS, 2014)
- USFWS National Wetland Inventory (NWI) Mapping (Figures 3-1 to 3-2; USFWS, 2009)

Wetland delineation in the field involved the establishment of the wetland/upland margin with flagging hung at intervals that accurately depicted the outline of the boundary. The individual flags were then located using a Global Positioning System (GPS) receiver with sub-meter accuracy and later added to the Project area mapping. Wetland flagging was limited to the bounds of the investigated study area and wetlands are shown as closed or partially closed systems on the detail maps (Figures 4-1 to 4-22).

All wetlands and streams identified were given unique identification names (i.e. Wetland ID, Stream ID). For streams, the National Hydrography Dataset (NHD) mapped stream names (USGS, 2015) are also provided in the results. For identified streams without a NHD name, the identified stream was given the name, “Unnamed Tributary (UNT)”, of the first named receiving waterbody.

Data concerning soils, hydrology, and vegetation were collected and recorded on USACE Wetland Determination Data Forms at wetlands and at upland point locations associated with each wetland. USACE Wetland Determination Forms are provided in Appendix A. Photographs depicting wetland topography and vegetation are included in Appendix B. Stream data sheets detailing stream characteristics are provided in Appendix C. Appendix D contains photographs of streams identified within the study area. A matrix of Project field personnel, summarizing professional experience, qualifications, and education, is included in Appendix E.

The proposed Project pipeline ROW is approximately 3.4 miles long on USFS property in Monroe, Giles, and Montgomery counties, with approximately 6.8 miles of existing access roads proposed for Project use. As of December 2016 MVP has conducted field surveys for wetlands and waterbodies on all of the proposed pipeline ROW and access roads proposed for Project use on USFS land in Monroe, Giles, and Montgomery counties.

3.0 RESULTS

The field investigations identified 5 areas within the Project study area on USFS land in Monroe, Giles, and Montgomery counties that met the wetland criteria outlined in the *1987 Manual* (Environmental Laboratory, 1987), as amended by the *USACE Regional Supplement* (Environmental Laboratory, 2012). Additionally, 21 streams were identified within the Project study area on USFS land in Monroe, Giles, and Montgomery counties.

The detail maps provided as Figures 4-1 to 4-22 illustrates the wetland and stream locations in relation to the study area. Tables 1 and 2 summarize wetland and stream information for all wetlands and streams identified within the Project study area.

3.1 Wetland Identification and Delineation

A review of the NRCS Soil Survey and hydric soil list indicates that there is one soil mapped within the study area classified as hydric or containing hydric components (Table 3). Hydric soils and soils with hydric components are often associated with wetlands. The NRCS soil survey mapping units are shown on Figures 2-1 to 2-2. Confirmation of the soil mapping units was not performed during this site evaluation.

A review of the USFWS NWI database indicates that there are no NWI mapped wetlands identified in the Project study area (Figures 3-1 to 3-2).

Based on our review of available GIS mapping data, evidence collected during field surveys, and best professional judgment, 5 wetlands were identified and delineated within the study area. These areas demonstrated the presence of all three wetland parameters required by the *1987 Manual* (Environmental Laboratory, 1987) and the *USACE Regional Supplement* (Environmental Laboratory, 2012):

1. Predominance of hydrophytic vegetation (plants adapted for life in saturated soil conditions);
2. Hydric soils (soils formed under water, or in saturated conditions); and
3. Wetland hydrology (presence of inundated or saturated soils at some time during the growing season).

A summary of each wetland identified and delineated within the Project study area is provided in Table 1. Table 1 shows the location of each wetland, Cowardin classification, HGM classification, Waters Type classification, the identity of any associated (i.e. abutting or adjacent) waterbodies, wetland size within the study area (in acres and square feet), whether the wetland boundary is open or closed (open wetland boundaries indicate that delineated wetlands continue beyond the Project study area), and dominant vegetation identified within the wetland. Wetlands with multiple habitat types (e.g. PEM and PSS) are considered a single wetland system and are counted as one wetland. The wetland size provided in Table 1 represents the size of the wetland delineated within the Project study area. Open boundary wetlands continue beyond the survey area; therefore, the size of open boundary wetlands may be larger than the size provided in Table 1.

USACE wetland determination data forms detailing the existing vegetation, soil characteristics, and hydrology for each wetland and its associated upland point are provided in Appendix A. Photographs of each delineated wetland are provided in Appendix B.

3.2 Stream Identification and Evaluation

Based on our review of available GIS mapping data, evidence collected during field surveys, and best professional judgment, 21 streams were identified and evaluated within the study area. Streams with braided channels, streams that have different flow regimes (e.g. ephemeral and intermittent) within the surveyed reach, and named streams with different field identification names are counted as single streams. A summary of each stream identified and evaluated within the Project study area is provided in Table 2. Table 2 shows the stream field identification name (Stream ID), the NHD mapped stream name (NHD

Stream Name), stream location, Flow Regime classification, Water Type classification, and top of bank width.

Stream data sheets detailing the bank and channel measurements, substrate composition, aquatic habitat, and hydrology are provided for each stream in Appendix C. Photographs of each identified stream are provided in Appendix D.

4.0 CONCLUSION

During the field investigations of the Project study area on USFS land in Monroe, Giles, and Montgomery counties, 5 locations were identified and delineated as wetlands in accordance with the *1987 Manual* (Environmental Laboratory, 1987) and the *USACE Regional Supplement* (Environmental Laboratory, 2012). In addition, 21 streams were identified and evaluated within the Project study area on USFS land in Monroe, Giles, and Montgomery counties. A summary of wetland and stream data is provided in Tables 1 and 2 and locations of all identified wetlands and streams are shown on Figures 4-1 to 4-22.

5.0 REFERENCES

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Figures

Legend

- Alignment Centerline
- Study Area
- Appalachian National Scenic Trail
- USDA FS Surface Ownership Boundary

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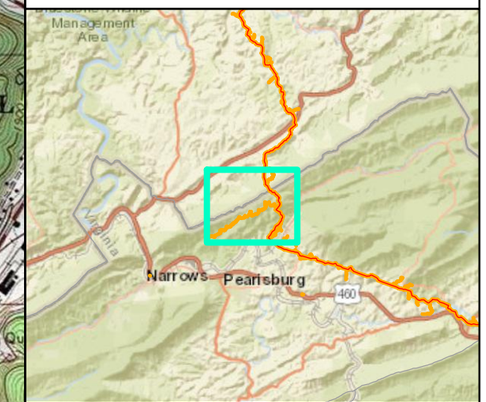

Mountain Valley Pipeline Project

Mountain Valley PIPELINE

USGS Project Location Map
US National Forest Service (National Forest) Lands

Figure 1-1
Monroe County, West Virginia and Giles County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014. USDA Forest Service surface ownership, https://data.fs.usda.gov/geodata.

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- Alignment Centerline
- Study Area
- USDA FS Surface Ownership Boundary

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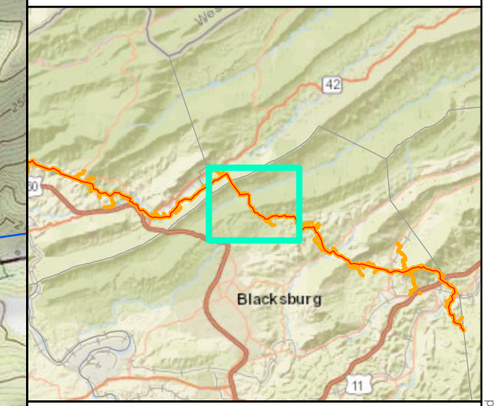

Mountain Valley Pipeline Project

Mountain Valley PIPELINE

USGS Project Location Map
US National Forest Service (National Forest) Lands

Figure 1-2
Montgomery County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014. USDA Forest Service surface ownership, https://data.fs.usda.gov/geodata.

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Legend

- Alignment Centerline
- Study Area
- Appalachian National Scenic Trail
- USDA FS Surface Ownership Boundary
- NRCS Soils and Codes

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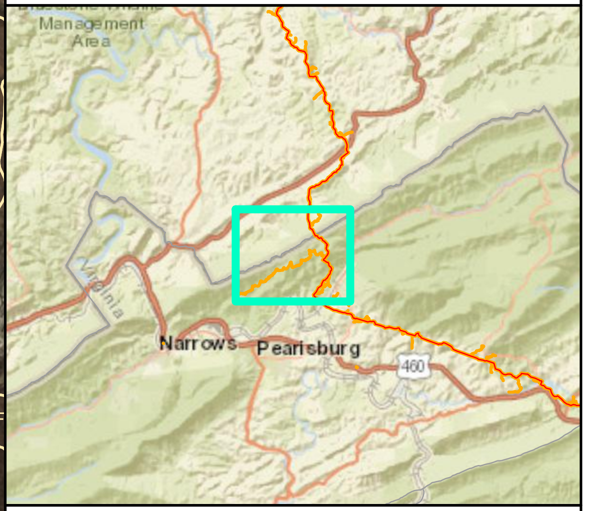

Mountain Valley Pipeline Project

Mountain Valley PIPELINE

NRCS Soils and Codes Map US National Forest Service (National Forest) Lands

Figure 2-1
Monroe County, West Virginia and Giles County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014, Gridded Soil Survey Geographic Database for West Virginia (2014), Geospatial Gateway. USDA Forest Service surface ownership, https://data.fs.usda.gov/geodata.

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- Alignment Centerline
- Study Area
- USDA FS Surface Ownership Boundary
- NRCS Soils and Codes

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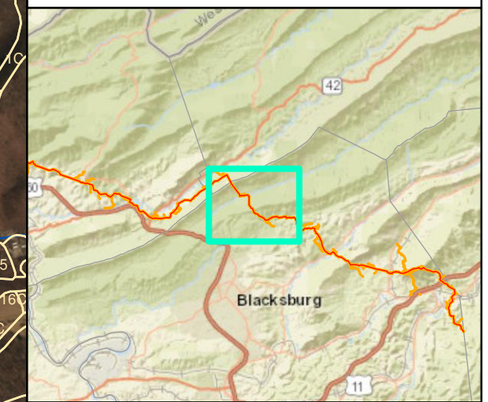

Mountain Valley Pipeline Project

Mountain Valley PIPELINE

NRCS Soils and Codes Map
US National Forest Service (National Forest) Lands

Figure 2-2
Montgomery County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014, Gridded Soil Survey Geographic Database for West Virginia (2014), Geospatial Gateway. USDA Forest Service surface ownership, https://data.fs.usda.gov/geodata.

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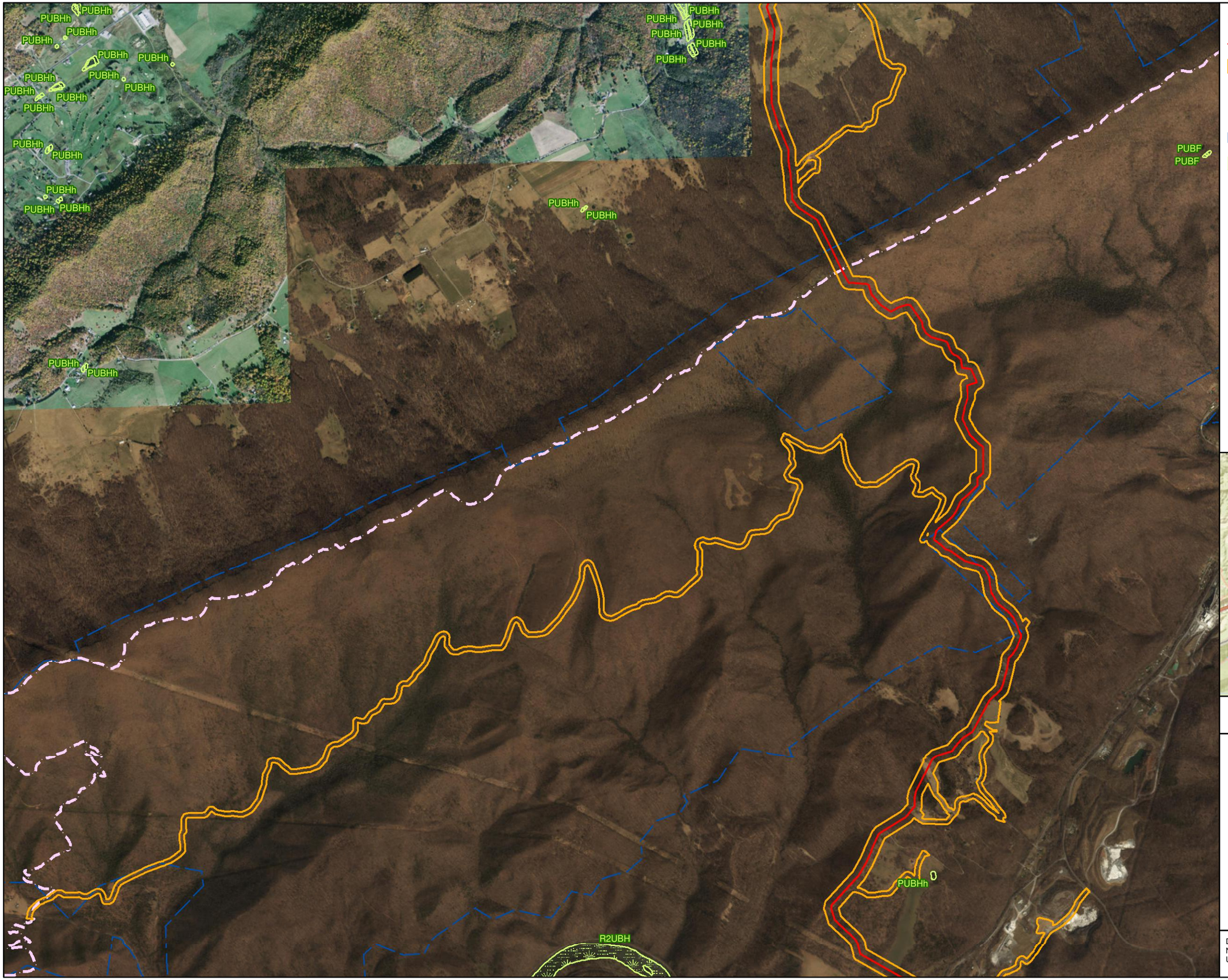

Legend

- Alignment Centerline
- Study Area
- Appalachian National Scenic Trail
- USDA FS Surface Ownership Boundary
- NWI Wetlands and Codes

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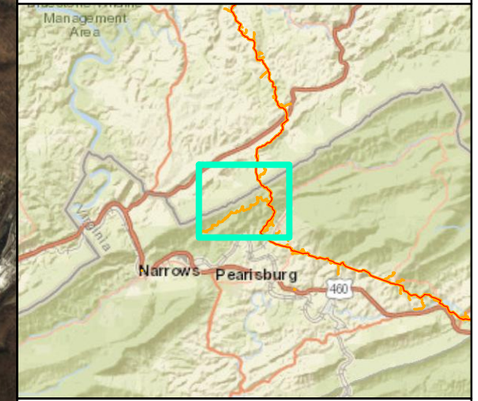

Mountain Valley Pipeline Project

Mountain Valley PIPELINE

NWI Wetlands and Codes Map
US National Forest Service (National Forest) Lands

Figure 3-1
Monroe County, West Virginia and
Giles County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014. National Wetlands Inventory, National Hydrography Dataset for West Virginia (2014), Geospatial Gateway. USDA Forest Service surface ownership, https://data.fs.usda.gov/geodata.

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- Alignment Centerline
- Study Area
- USDA FS Surface Ownership Boundary
- NWI Wetlands and Codes

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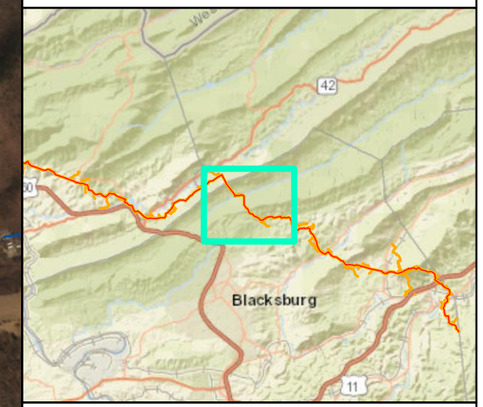

Mountain Valley Pipeline Project

Mountain Valley PIPELINE

NWI Wetlands and Codes Map
US National Forest Service (National Forest) Lands

Figure 3-2
Montgomery County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014. National Wetlands Inventory, National Hydrography Dataset for West Virginia (2014), Geospatial Gateway. USDA Forest Service surface ownership, https://data.fs.usda.gov/geodata.

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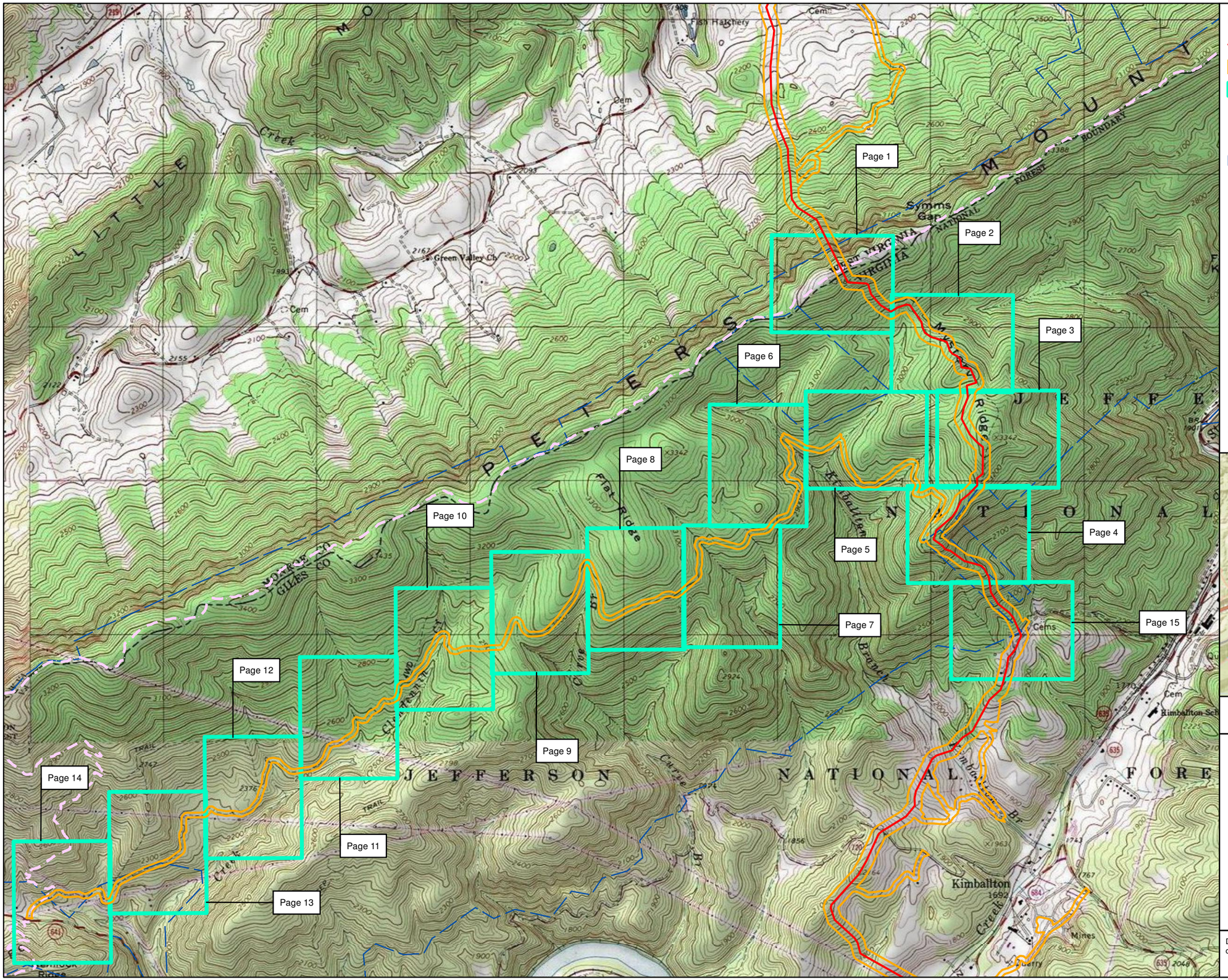

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- Alignment Centerline
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- Index
- Appalachian National Scenic Trail
- USDA FS Surface Ownership Boundary

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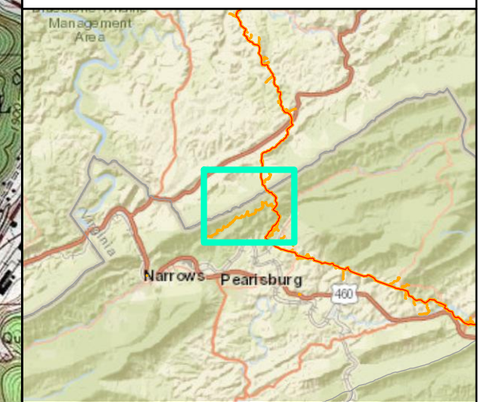

Mountain Valley Pipeline Project

Mountain Valley PIPELINE

USGS Project Location Map
US National Forest Service (National Forest) Lands

Figure 4-INDEX-1
Monroe County, West Virginia and
Giles County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014. USDA Forest Service surface ownership. http://data.fs.usda.gov/geodata.

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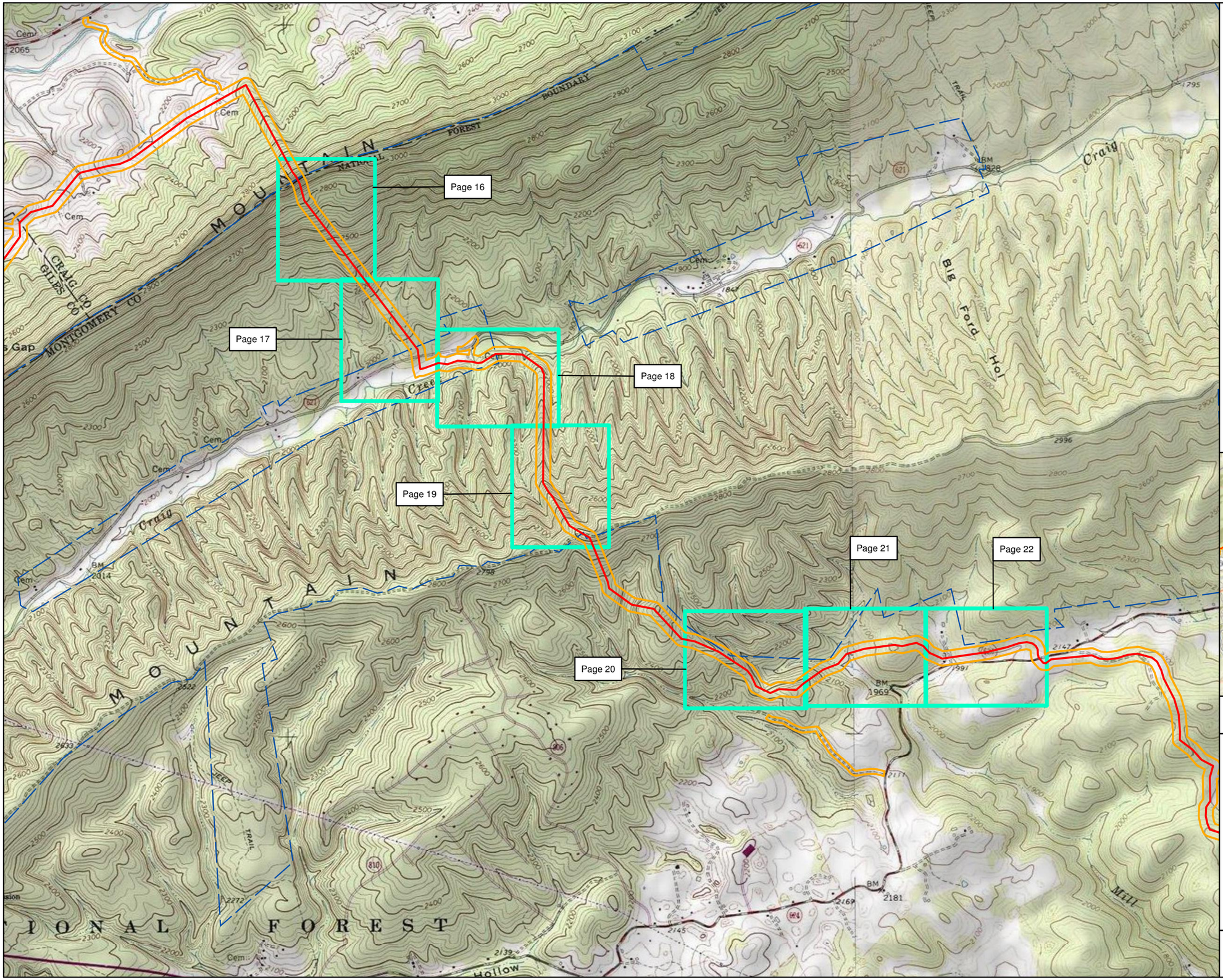

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- Alignment Centerline
- Study Area
- Index
- USDA FS Surface Ownership Boundary

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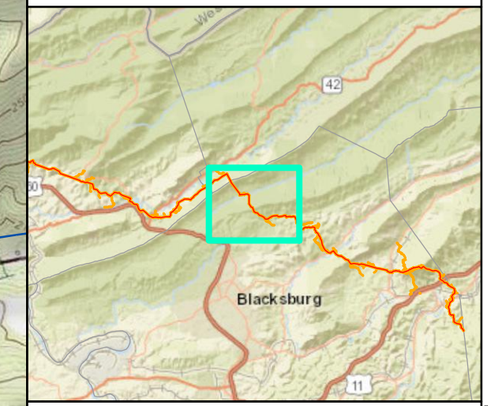

Mountain Valley Pipeline Project

Mountain Valley PIPELINE

USGS Project Location Map
US National Forest Service (National Forest) Lands

Figure 4-INDEX-2
Montgomery County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014. USDA Forest Service surface ownership. http://data.fs.usda.gov/geodata.

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Legend

- Alignment Centerline
- Study Area
- USDA FS Surface Ownership Boundary
- Appalachian National Scenic Trail
- County Boundary

Stream

- Ephemeral

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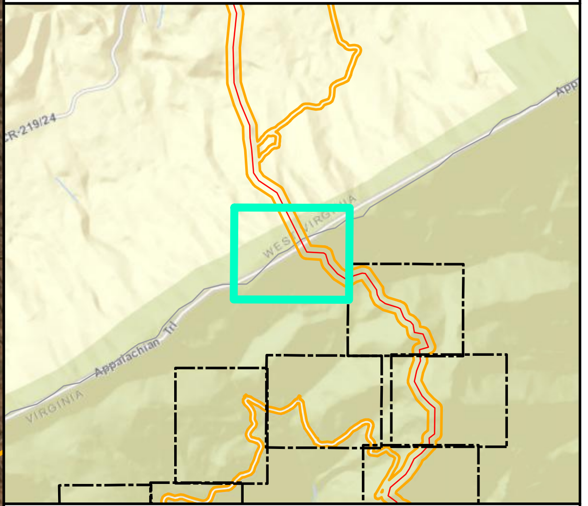

Mountain Valley Pipeline Project

Detail Map
US National Forest Service (National Forest) Lands

Figure 4-1
Giles/Monroe County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014. USDA Forest Service surface ownership, https://data.fs.usda.gov/geodata/edw. Note: Map insets are at a scale of 1 inch = 50 feet unless otherwise noted.

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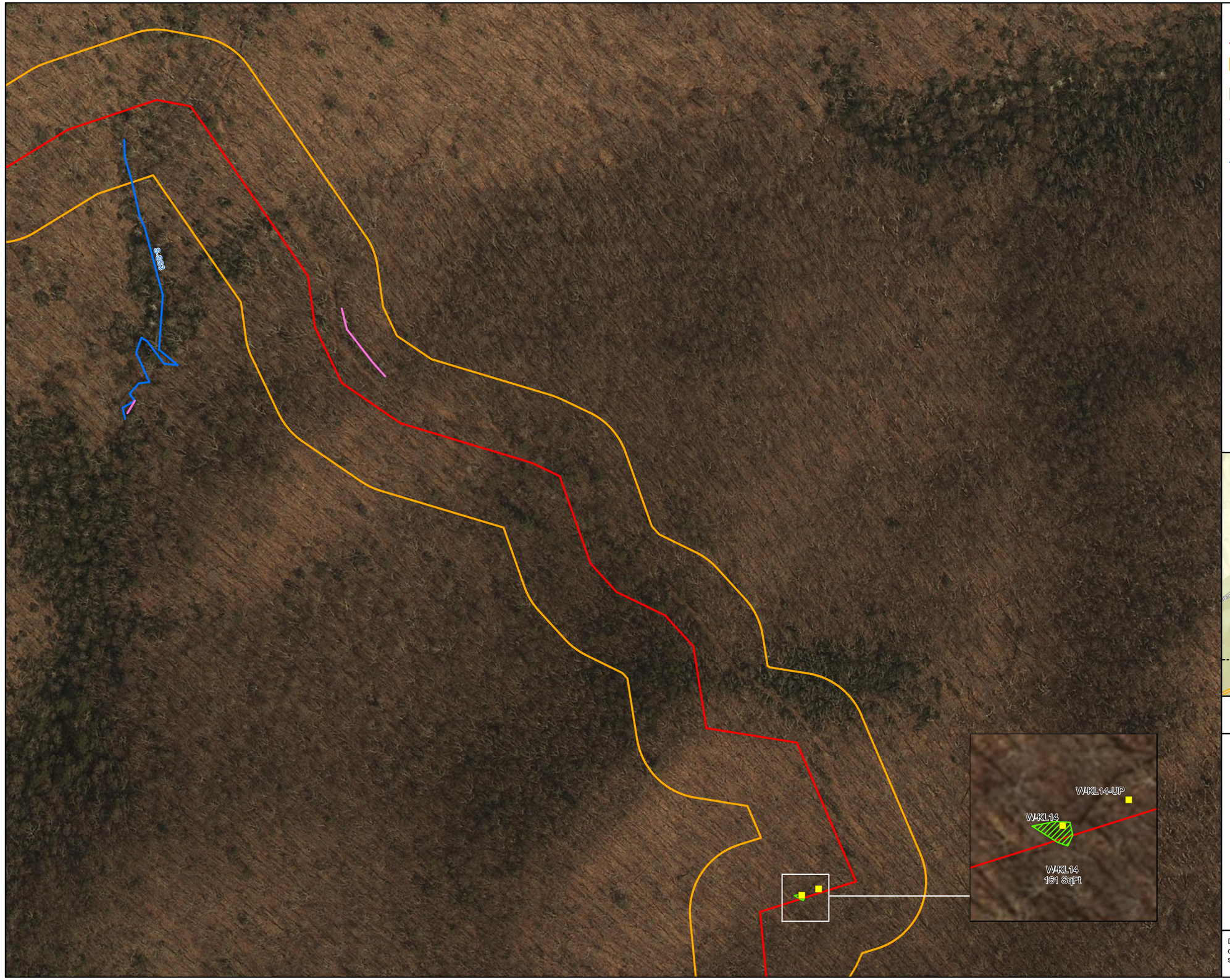

Legend

- Alignment Centerline
- Study Area
- USDA FS Surface Ownership Boundary
- Drainage Feature

Stream

- Ephemeral

- Sample Location

Wetland

- PSS

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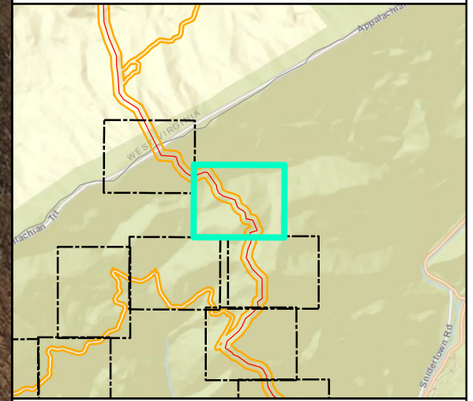

Mountain Valley Pipeline Project

Mountain Valley PIPELINE

Detail Map
US National Forest Service (National Forest) Lands

Figure 4-2
Giles County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014. USDA Forest Service surface ownership, https://data.fs.usda.gov/geodata/edw. Note: Map insets are at a scale of 1 inch = 50 feet unless otherwise noted.

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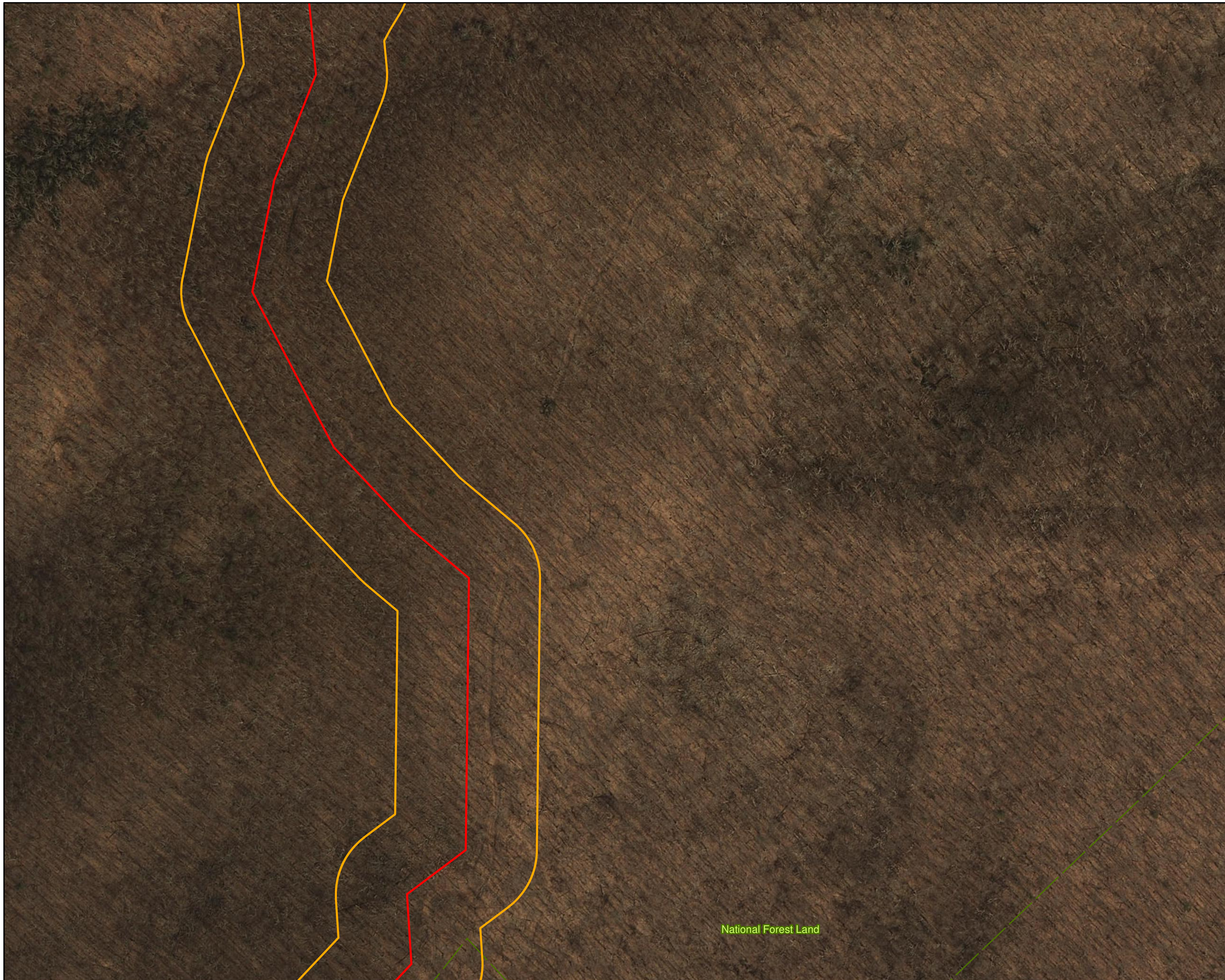

Legend

- Alignment Centerline
- Study Area
- USDA FS Surface Ownership Boundary

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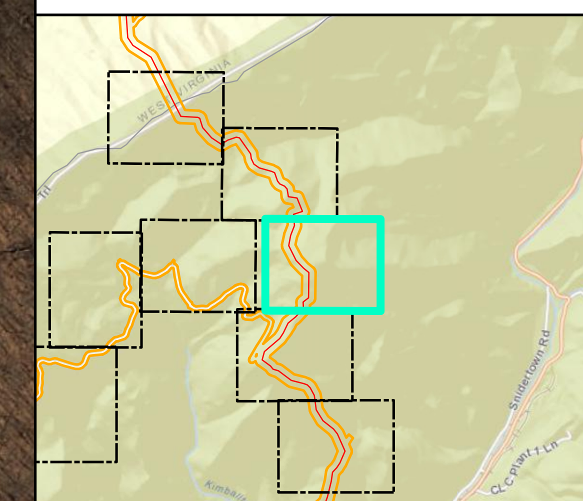
N W E S

0 520 Feet



Mountain Valley Pipeline Project

Mountain Valley PIPELINE

Detail Map
US National Forest Service
(National Forest) Lands

Figure 4-3
Giles County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014. USDA Forest Service surface ownership, https://data.fs.usda.gov/geodata/edw. Note: Map insets are at a scale of 1 inch = 50 feet unless otherwise noted.

Document Path: PGH Z:\EQT_MVP\Mapdocs\Wetlands\MVP_USFS_Detail.mxd

National Forest Land

National Forest Land

National Forest Land

Legend

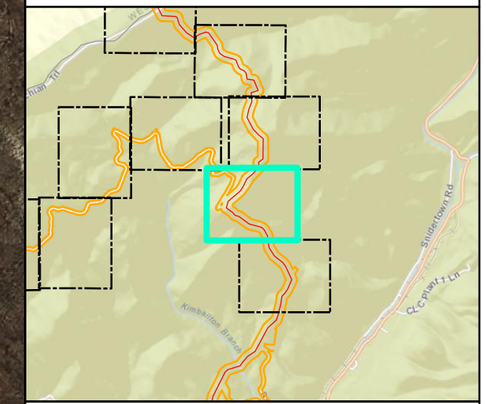
- Alignment Centerline
- Study Area
- USDA FS Surface Ownership Boundary

NAD 1983 UTM 17N

N
W E
S

1:2,400

0 520 Feet



Mountain Valley Pipeline Project

Mountain Valley PIPELINE

Detail Map
US National Forest Service (National Forest) Lands

Figure 4-4
Giles County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014. USDA Forest Service surface ownership, https://data.fs.usda.gov/geodata/edw. Note: Map insets are at a scale of 1 inch = 50 feet unless otherwise noted.

Document Path: PGH Z:\EQT_MVP\Mapdocs\Wetlands\MVP_USFS_Detail.mxd

Legend

- Study Area
- USDA FS Surface Ownership Boundary
- Culvert
- Drainage Feature

Stream

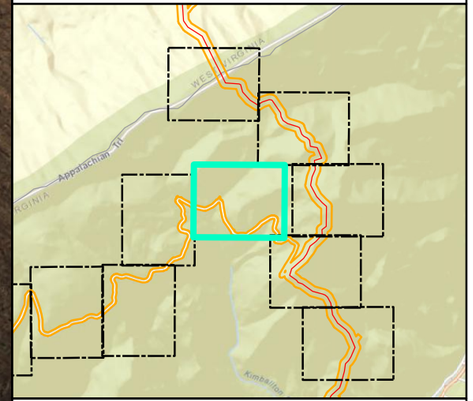
- Perennial

NAD 1983 UTM 17N

1:2,400

N
W E
S

0 520 Feet



Mountain Valley Pipeline Project

Mountain Valley PIPELINE

Detail Map
US National Forest Service (National Forest) Lands

Figure 4-5
Giles County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014. USDA Forest Service surface ownership, https://data.fs.usda.gov/geodata/edw. Note: Map insets are at a scale of 1 inch = 50 feet unless otherwise noted.

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Mountain Valley Pipeline Project

Detail Map
US National Forest Service (National Forest) Lands

Figure 4-6
Giles County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014. USDA Forest Service surface ownership, https://data.fs.usda.gov/geodata/edw. Note: Map insets are at a scale of 1 inch = 50 feet unless otherwise noted.

Document Path: PGH Z:\EOT_MVP\Mapdocs\Wetlands\MVP_USFS_Detail.mxd

Legend

- Study Area
- USDA FS Surface Ownership Boundary
- Culvert
- Drainage Feature

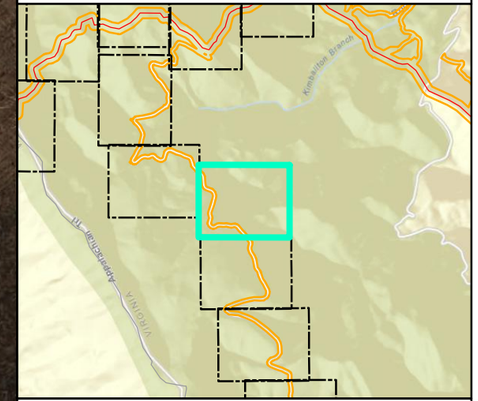
Stream

- Intermittent

NAD 1983 UTM 17N

1:2,400

0 520 Feet



Mountain Valley Pipeline Project

Mountain Valley PIPELINE

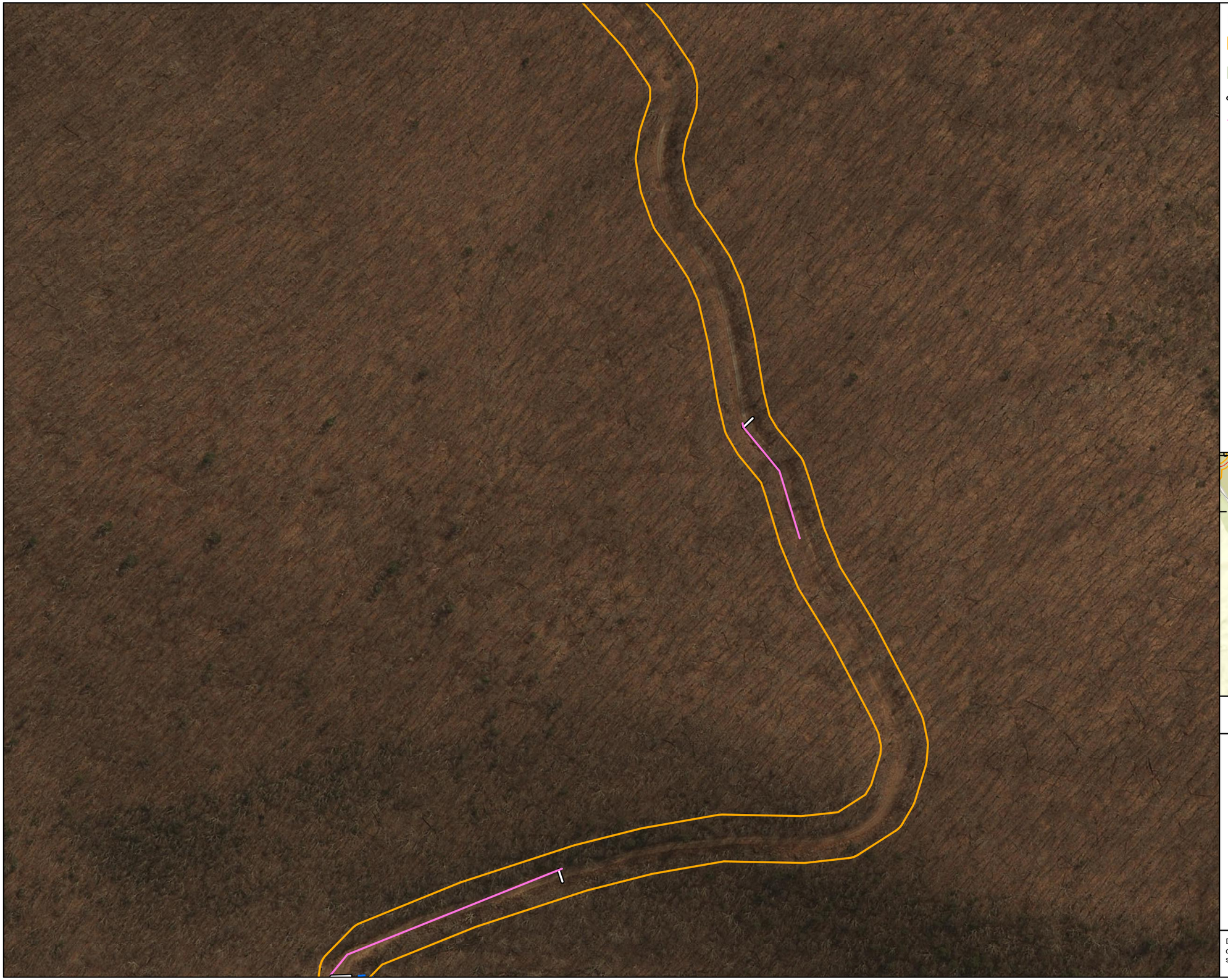
Detail Map
US National Forest Service (National Forest) Lands

Figure 4-7
Giles County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014. USDA Forest Service surface ownership, https://data.fs.usda.gov/geodata/edw. Note: Map insets are at a scale of 1 inch = 50 feet unless otherwise noted.

Document Path: P:\GH Z:\EOT_MVP\Mapdocs\Wetlands\MVP_USFS_Detail.mxd



Legend

- Study Area
- USDA FS Surface Ownership Boundary
- Culvert
- Drainage Feature

Stream

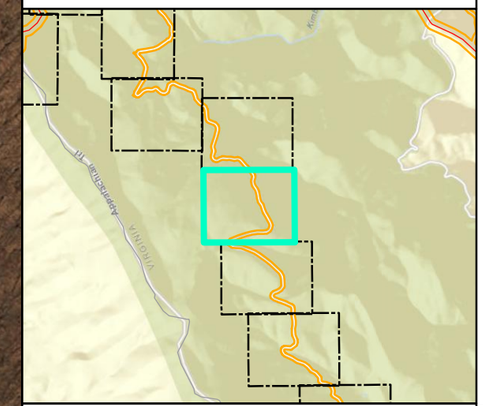
- Intermittent

NAD 1983 UTM 17N

N E S W

1:2,400

0 520 Feet



Mountain Valley Pipeline Project

Mountain Valley PIPELINE

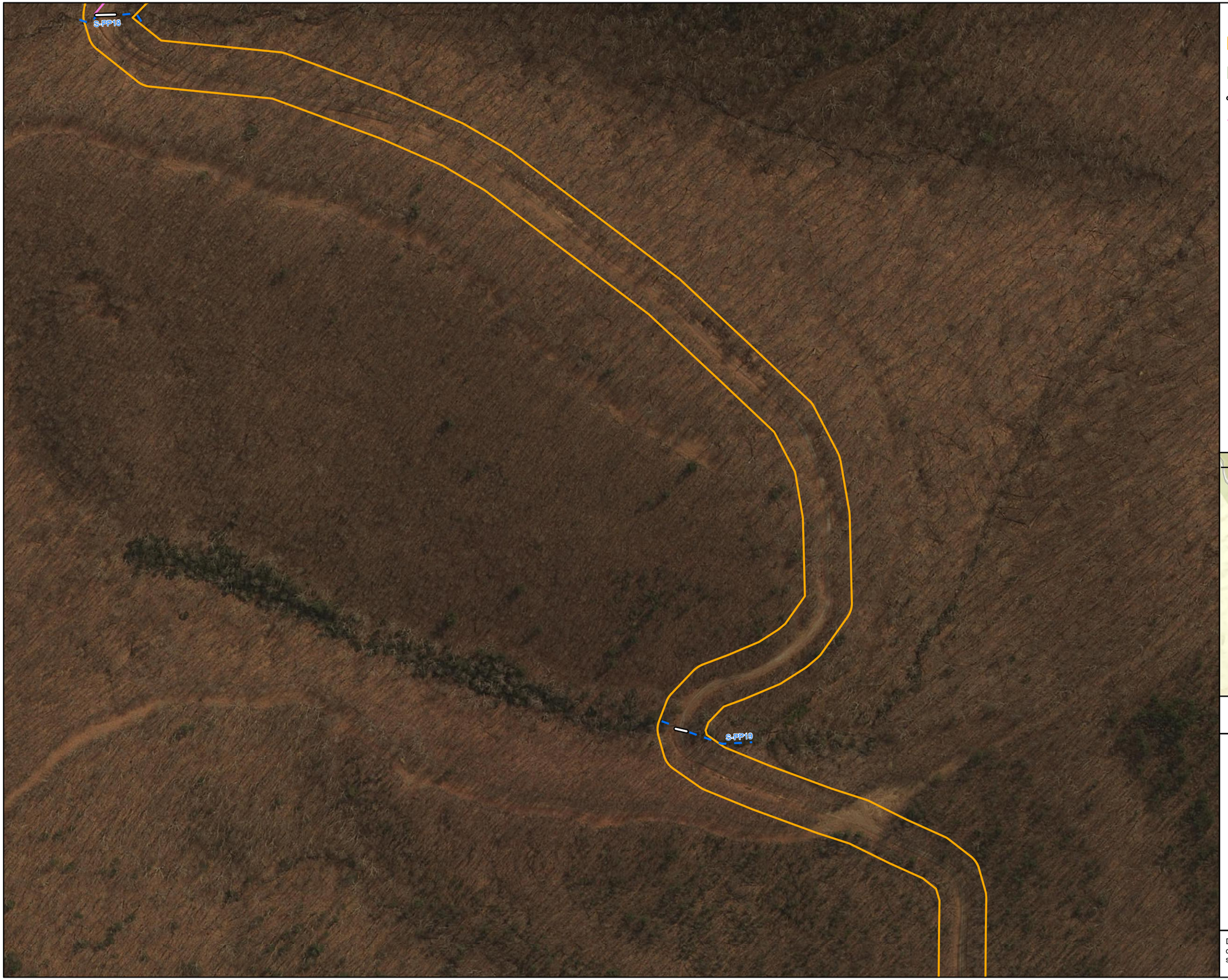
Detail Map
US National Forest Service (National Forest) Lands

Figure 4-8
Giles County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014. USDA Forest Service surface ownership, https://data.fs.usda.gov/geodata/edw. Note: Map insets are at a scale of 1 inch = 50 feet unless otherwise noted.

Document Path: PGH Z:\EOT_MVP\Mapdocs\Wetlands\MVP_USFS_Detail.mxd



Legend

- Study Area
- USDA FS Surface Ownership Boundary
- Culvert
- Drainage Feature

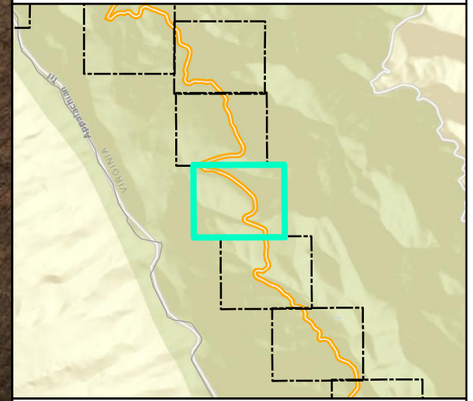
Stream

- Intermittent

NAD 1983 UTM 17N

1:2,400

0 520 Feet



Mountain Valley Pipeline Project

Mountain Valley PIPELINE

Detail Map
US National Forest Service (National Forest) Lands

Figure 4-9
Giles County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014. USDA Forest Service surface ownership, https://data.fs.usda.gov/geodata/edw. Note: Map insets are at a scale of 1 inch = 50 feet unless otherwise noted.

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S-UU8

S-UU8-Braid

S-UU9

W-UU11
736 SqFt

W-UU11

W-UU11-UP

W-UU12-UP

W-UU12

W-UU12
148 SqFt

Legend

- Study Area
- USDA FS Surface Ownership Boundary
- Culvert
- Drainage Feature

Stream

- Perennial

- Sample Location

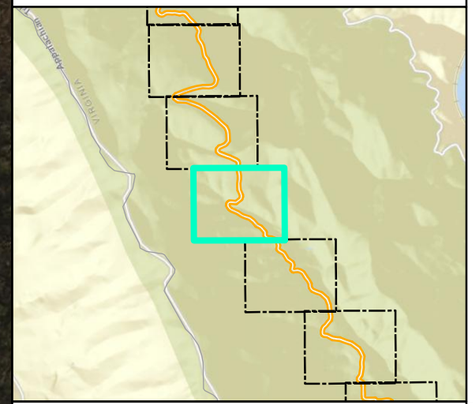
Wetland

- PEM

NAD 1983 UTM 17N

1:2,400

0 520 Feet



Mountain Valley Pipeline Project

Mountain Valley PIPELINE

Detail Map
US National Forest Service (National Forest) Lands

Figure 4-10
Giles County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014. USDA Forest Service surface ownership, https://data.fs.usda.gov/geodata/edw. Note: Map insets are at a scale of 1 inch = 50 feet unless otherwise noted.

Document Path: PGH Z:\EOT_MVP\Mapdocs\Wetlands\MVP_USFS_Detail.mxd

Legend

- Study Area
- USDA FS Surface Ownership Boundary
- Culvert
- Drainage Feature

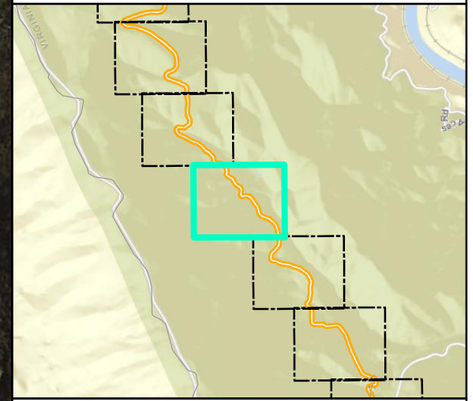
Stream

- Perennial

NAD 1983 UTM 17N

1:2,400

0 520 Feet



Mountain Valley Pipeline Project

Mountain Valley PIPELINE

Detail Map
US National Forest Service (National Forest) Lands

Figure 4-11
Giles County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014. USDA Forest Service surface ownership, https://data.fs.usda.gov/geodata/edw. Note: Map insets are at a scale of 1 inch = 50 feet unless otherwise noted.

Document Path: P:\GH Z:\EOT_MVP\Mapdocs\Wetlands\MVP_USFS_Detail.mxd

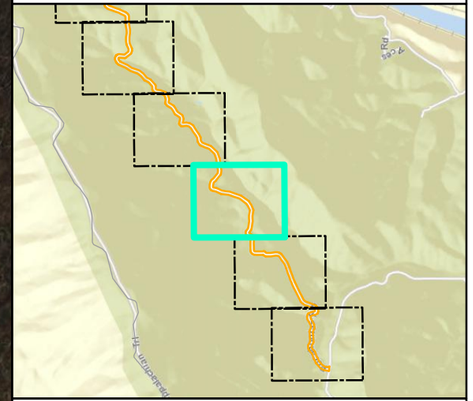
Legend

- Study Area
- USDA FS Surface Ownership Boundary
- Culvert
- Drainage Feature
- Sample Location
- Wetland
- PEM

NAD 1983 UTM 17N

1:2,400

0 520 Feet



Mountain Valley Pipeline Project

Mountain Valley PIPELINE

Detail Map
US National Forest Service (National Forest) Lands

Figure 4-12
Giles County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014. USDA Forest Service surface ownership, https://data.fs.usda.gov/geodata/edw. Note: Map insets are at a scale of 1 inch = 50 feet unless otherwise noted.

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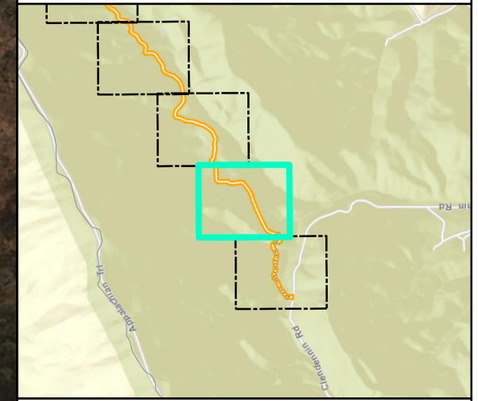
Legend

- Study Area
- USDA FS Surface Ownership Boundary
- Culvert
- Stream
  - Perennial
  - Ephemeral
- Sample Location
- Wetland
  - PEM

NAD 1983 UTM 17N

1:2,400

0 520 Feet



Mountain Valley Pipeline Project

Mountain Valley PIPELINE

Detail Map
US National Forest Service (National Forest) Lands

Figure 4-13
Giles County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014. USDA Forest Service surface ownership, https://data.fs.usda.gov/geodata/edw. Note: Map insets are at a scale of 1 inch = 50 feet unless otherwise noted.

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Legend

- Study Area
- USDA FS Surface Ownership Boundary
- Appalachian National Scenic Trail
- Culvert

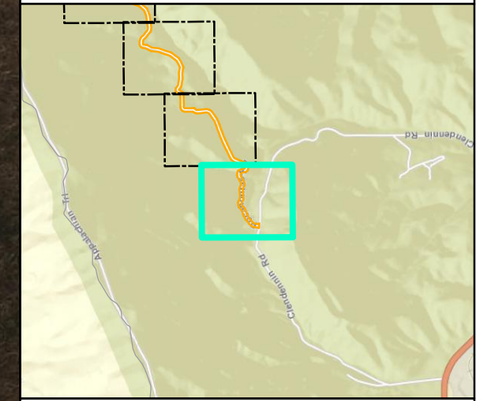
Stream

- Intermittent
- Ephemeral

NAD 1983 UTM 17N

1:2,400

0 520 Feet



Mountain Valley Pipeline Project

Mountain Valley PIPELINE

Detail Map
US National Forest Service (National Forest) Lands

Figure 4-14
Giles County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014. USDA Forest Service surface ownership, https://data.fs.usda.gov/geodata/edw. Note: Map insets are at a scale of 1 inch = 50 feet unless otherwise noted.

Document Path: P:\GH Z:\EOT_MVP\Mapdocs\Wetlands\MVP_USFS_Detail.mxd

Legend

- Alignment Centerline
- Study Area
- USDA FS Surface Ownership Boundary

Stream

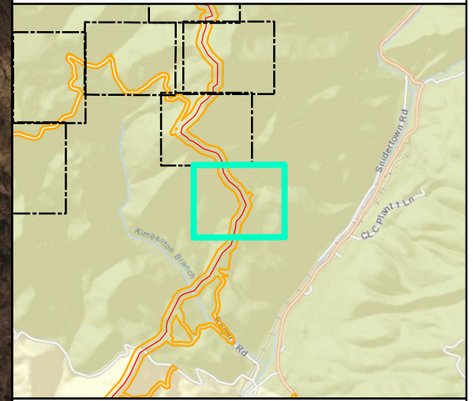
- Ephemeral

NAD 1983 UTM 17N

1:2,400

N
W E
S

0 520 Feet



Mountain Valley Pipeline Project

Mountain Valley PIPELINE

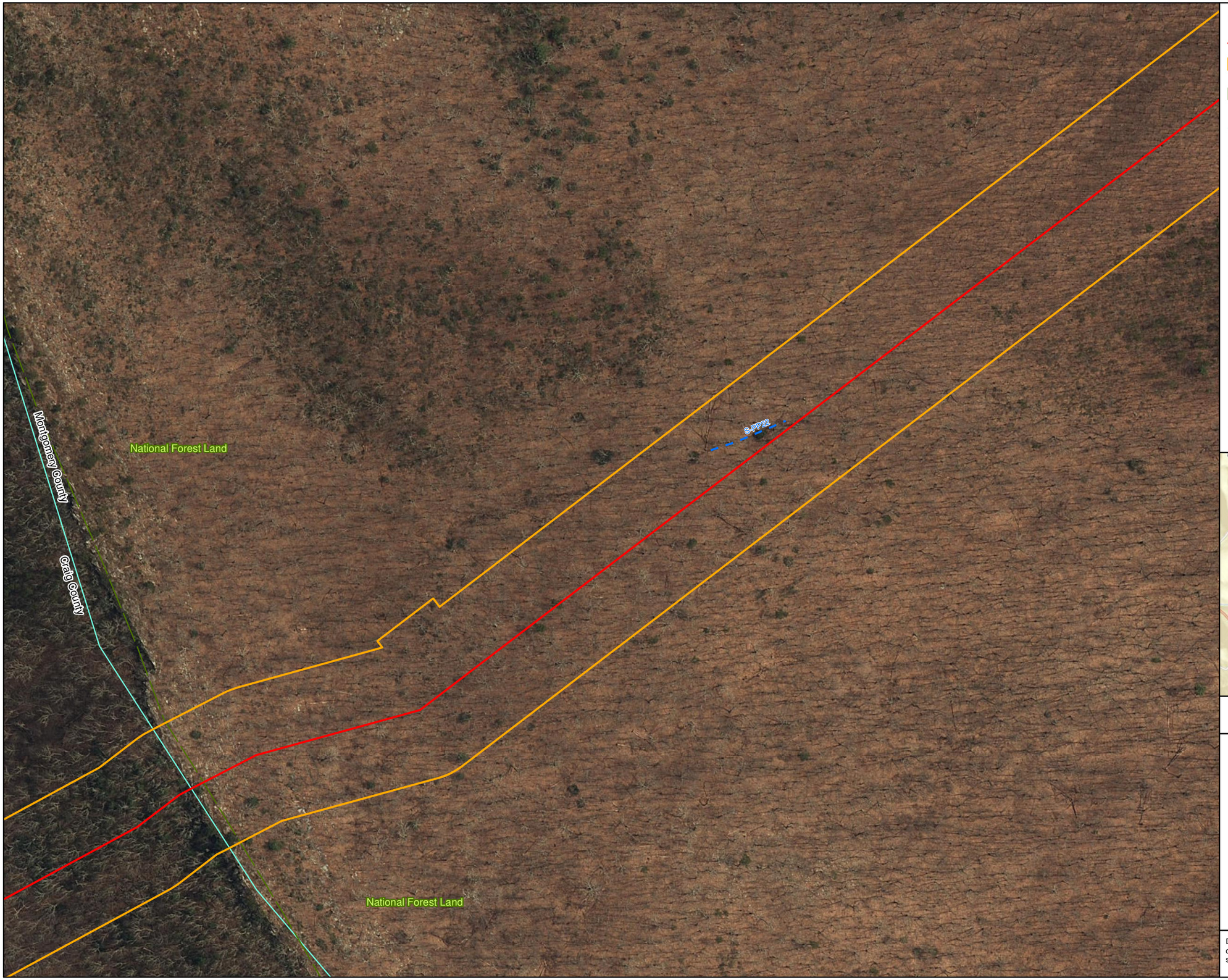
Detail Map
US National Forest Service (National Forest) Lands

Figure 4-15
Giles County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014. USDA Forest Service surface ownership, https://data.fs.usda.gov/geodata/edw. Note: Map insets are at a scale of 1 inch = 50 feet unless otherwise noted.

Document Path: PGH Z:\EOT_MVP\Mapdocs\Wetlands\MVP_USFS_Detail.mxd



Legend

- Alignment Centerline
- Study Area
- USDA FS Surface Ownership Boundary
- County Boundary

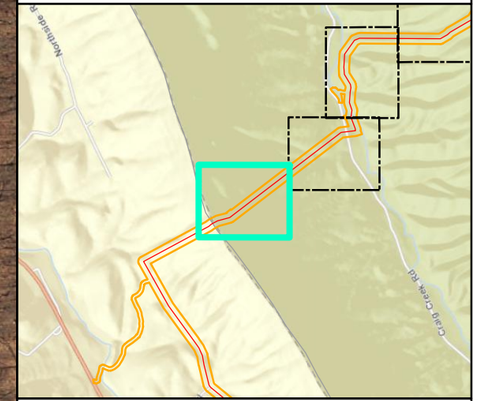
Stream

- Intermittent

NAD 1983 UTM 17N

1:2,400

0 520 Feet



Mountain Valley Pipeline Project

Mountain Valley PIPELINE

Detail Map
US National Forest Service (National Forest) Lands

Figure 4-16
Montgomery County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014. USDA Forest Service surface ownership, https://data.fs.usda.gov/geodata/edw. Note: Map insets are at a scale of 1 inch = 50 feet unless otherwise noted.

Document Path: PGH Z:\EOT_MVP\Mapdocs\Wetlands\MVP_USFS_Detail.mxd

Legend

- Alignment Centerline
- Study Area
- USDA FS Surface Ownership Boundary

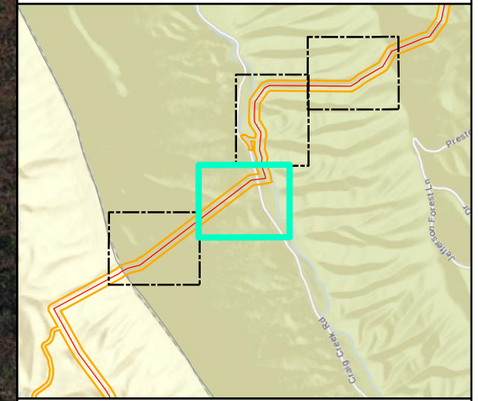
Stream

- Intermittent
- Ephemeral

NAD 1983 UTM 17N

1:2,400

0 520 Feet



Mountain Valley Pipeline Project

Mountain Valley PIPELINE

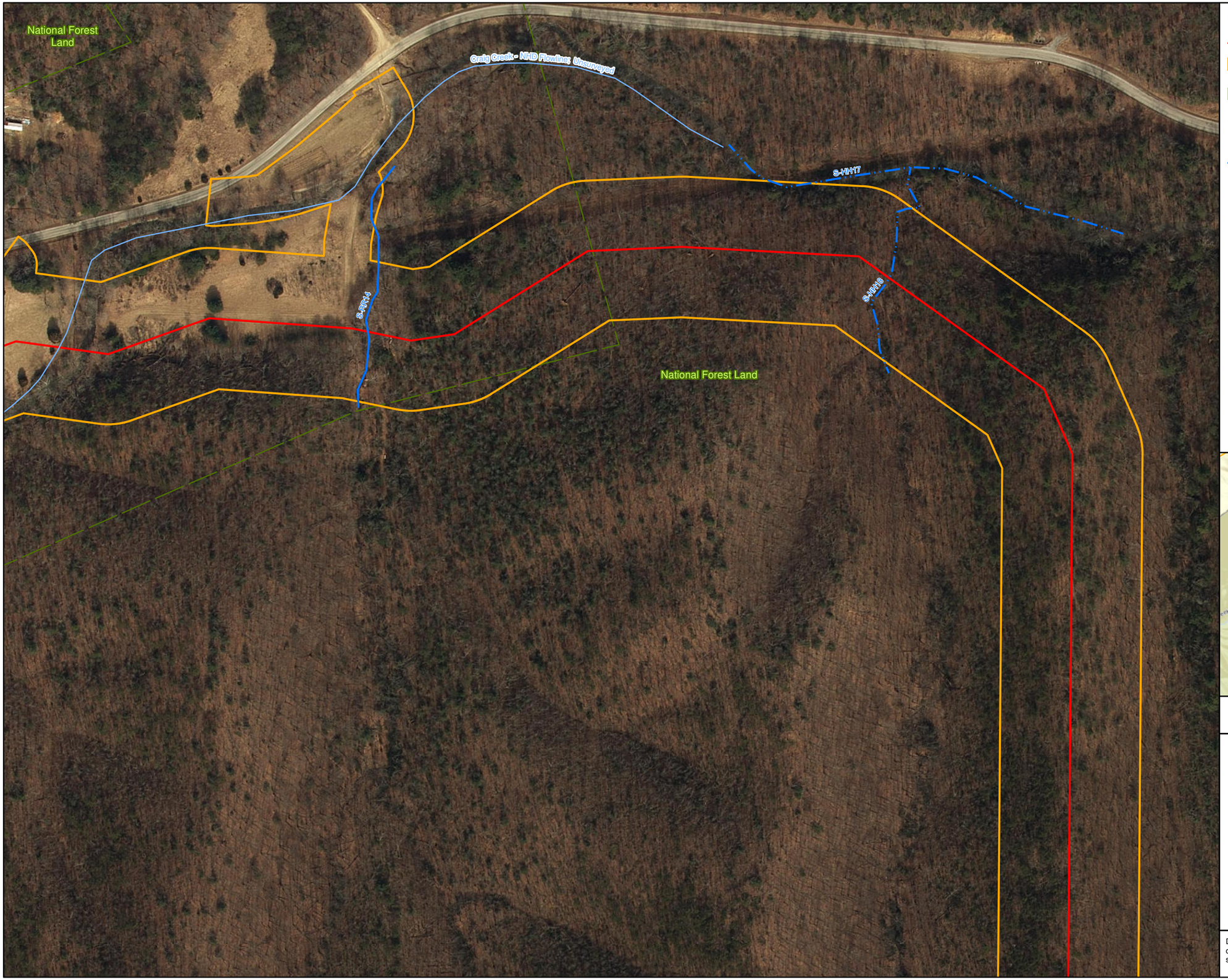
Detail Map
US National Forest Service (National Forest) Lands

Figure 4-17
Montgomery County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014. USDA Forest Service surface ownership, https://data.fs.usda.gov/geodata/edw. Note: Map insets are at a scale of 1 inch = 50 feet unless otherwise noted.

Document Path: PGH Z:\EOT_MVP\Mapdocs\Wetlands\MVP_USFS_Detail.mxd



Legend

- Alignment Centerline
- Study Area
- USDA FS Surface Ownership Boundary

Stream

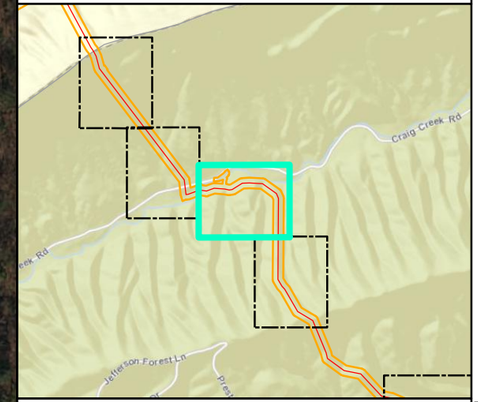
- Perennial
- Ephemeral

NAD 1983 UTM 17N

1:2,400

N
W E
S

0 520 Feet



Mountain Valley Pipeline Project

Mountain Valley PIPELINE

Detail Map
US National Forest Service (National Forest) Lands

Figure 4-18
Montgomery County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014. USDA Forest Service surface ownership, https://data.fs.usda.gov/geodata/edw. Note: Map insets are at a scale of 1 inch = 50 feet unless otherwise noted.

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National Forest Land

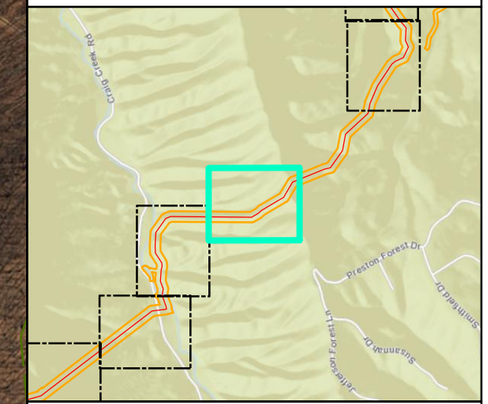
Legend

- Alignment Centerline
- Study Area
- USDA FS Surface Ownership Boundary

NAD 1983 UTM 17N

1:2,400

0 520 Feet



Mountain Valley Pipeline Project

Mountain Valley PIPELINE

Detail Map
US National Forest Service (National Forest) Lands

Figure 4-19
Montgomery County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014. USDA Forest Service surface ownership, https://data.fs.usda.gov/geodata/edw. Note: Map insets are at a scale of 1 inch = 50 feet unless otherwise noted.

Document Path: P:\GH Z:\EOT_MVP\Mapdocs\Wetlands\MVP_USFS_Detail.mxd

National Forest Land

Legend

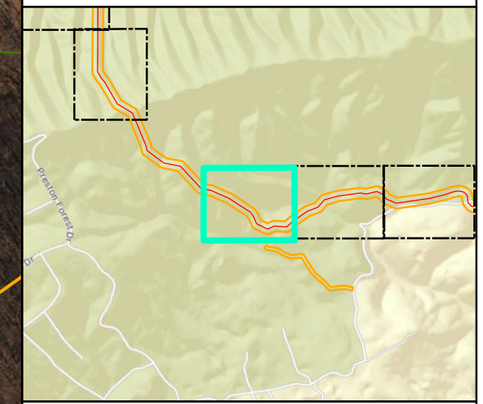
- Alignment Centerline
- Study Area
- USDA FS Surface Ownership Boundary

NAD 1983 UTM 17N

N
W E
S

1:2,400

0 520 Feet



Mountain Valley Pipeline Project

Mountain Valley PIPELINE

Detail Map
US National Forest Service (National Forest) Lands

Figure 4-20
Montgomery County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014. USDA Forest Service surface ownership, https://data.fs.usda.gov/geodata/edw. Note: Map insets are at a scale of 1 inch = 50 feet unless otherwise noted.

Document Path: PGH Z:\EOT_MVP\Mapdocs\Wetlands\MVP_USFS_Detail.mxd

National Forest Land

Legend

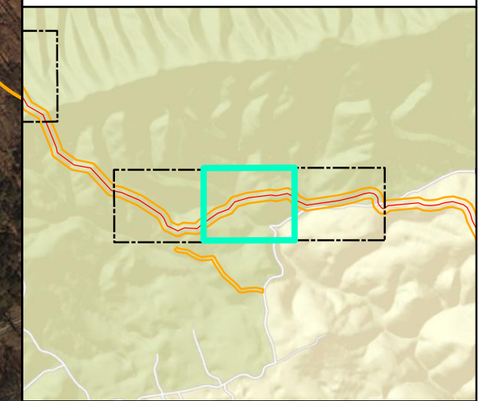
- Alignment Centerline
- Study Area
- USDA FS Surface Ownership Boundary

NAD 1983 UTM 17N

1:2,400

N
W E
S

0 520 Feet



Mountain Valley Pipeline Project

Mountain Valley PIPELINE

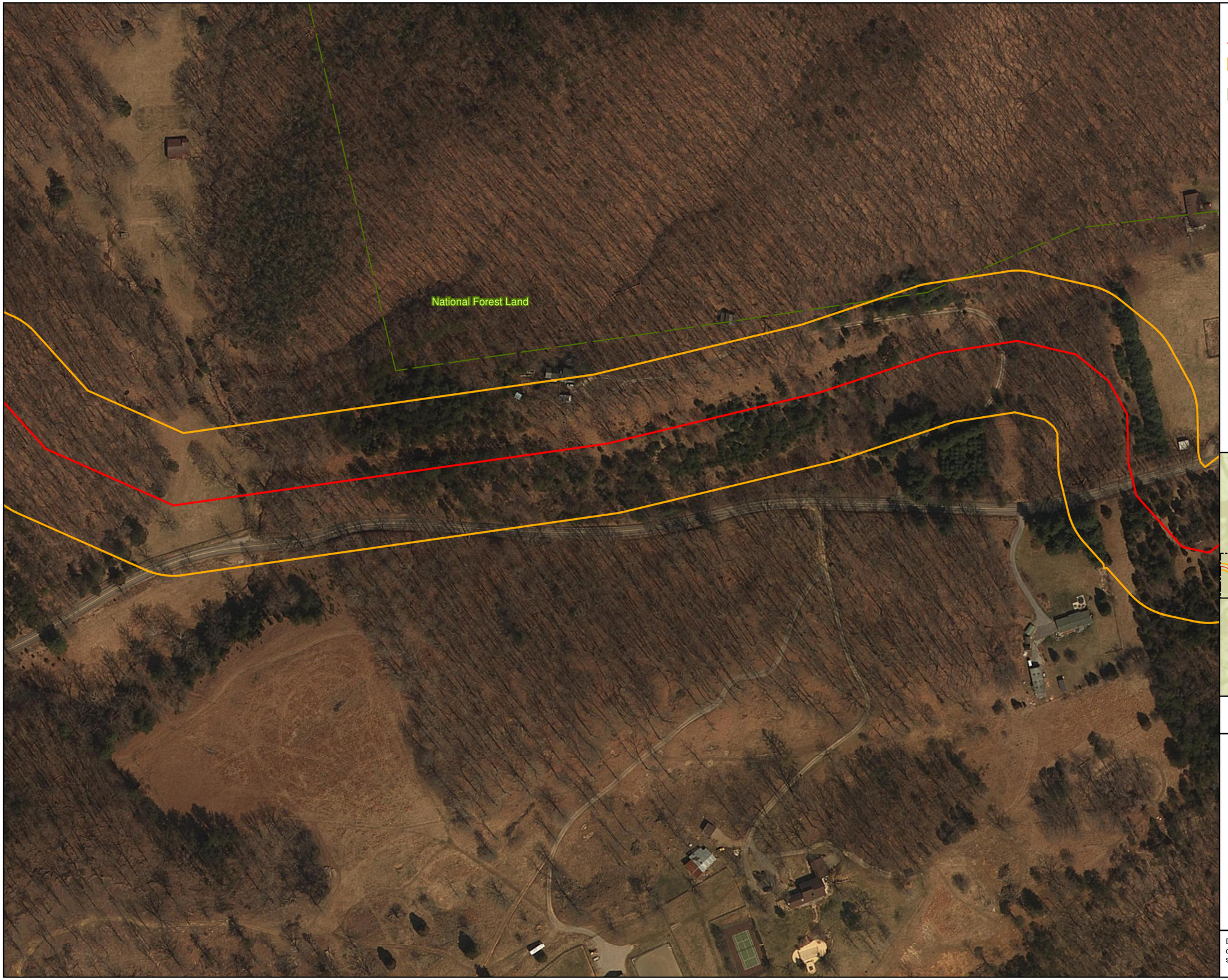
Detail Map
US National Forest Service (National Forest) Lands

Figure 4-21
Montgomery County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014. USDA Forest Service surface ownership, https://data.fs.usda.gov/geodata/edw. Note: Map insets are at a scale of 1 inch = 50 feet unless otherwise noted.

Document Path: PGH Z:\EQT_MVP\Mapdocs\Wetlands\MVP_USFS_Detail.mxd



Legend

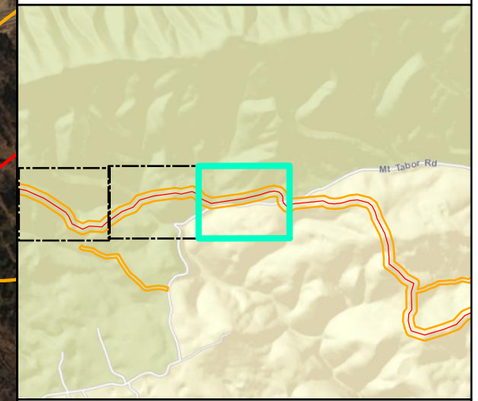
- Alignment Centerline
- Study Area
- USDA FS Surface Ownership Boundary

NAD 1983 UTM 17N

1:2,400

N
W E
S

0 520 Feet



Mountain Valley Pipeline Project

Mountain Valley PIPELINE

Detail Map
US National Forest Service (National Forest) Lands

Figure 4-22
Montgomery County, Virginia

January, 2017

Data Sources: ESRI Streaming Data 2014. USDA Forest Service surface ownership, https://data.fs.usda.gov/geodata/edw. Note: Map insets are at a scale of 1 inch = 50 feet unless otherwise noted.

Document Path: PGH Z:\EQT_MVP\Mapdocs\Wetlands\MVP_USFS_Detail.mxd

Tables

Table 1.
Identified Wetlands

Wetland ID	County	Latitude[1]	Longitude[1]	Cowardin Class[2]	HGM[3]	Water Type[4]	Associated Waterbodies	Size (Acres)[5]	Size (square feet)[5]	Open/Closed Boundary	Dominant Species	Figure
W-KL14	Giles	37.395903	-80.680455	PSS	Depressional	ISOLATE	-	0.004	161	Closed	*Nyssa sylvatica, Vaccinium corymbosum, Acer rubrum, Viola blanda*	4-2
W-UU11	Giles	37.380254	-80.720485	PEM	Slope	RPWWD	Clendennin Creek	0.02	736	Open	*Kalmia latifolia, Rhododendron maximum, Polytrichum commune, Lindera benzoin, Scirpus cyperinus*	4-10
W-UU12	Giles	37.378364	-80.722579	PEM	Depressional	ISOLATE	-	0.003	148	Closed	*Kalmia latifolia, Scirpus cyperinus, Mentha arvensis*	4-10
W-HH15	Giles	37.371087	-80.736164	PEM	Depressional	ISOLATE	-	0.03	1,413	Open	*Glyceria melicaria, Impatiens capensis*	4-12
W-HH14	Giles	37.371001	-80.737201	PEM	Slope	RPWWD	S-HH15 (UNT to Clendennin Creek)	0.01	619	Closed	*Scirpus polyphyllus, Glyceria melicaria*	4-13

Notes:

1 - In decimal degrees. Coordinates show wetland test pit locations

2 - PEM = Palustrine Emergent
- PSS = Palustrine Scrub-Shrub
- PFO = Palustrine Forested

3 - HGM = Hydrogeomorphic

4 - RPWWD = Wetlands directly abutting Relatively Permanent Waters (RPWs) that flow directly or indirectly into Traditional Navigable Waterways (TNWs)
- RPWWN = Wetlands adjacent but not directly abutting RPWs that flow directly or indirectly into TNWs
- NRPWW = Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
- Isolate = Isolated (interstate or intrastate) waters, including isolated wetlands

5 - Size of wetlands with open boundaries may be larger than shown in this table. See Section 3.1 for more information

Table 2.
Identified Streams

Stream ID	NHD Stream Name[1]	County	Latitude[2]	Longitude[2]	Flow Regime	Water Type[3]	Cowardin Class[4]	Top of Bank Width (ft)	Figure
S-KL24	UNT to Kimballton Branch	Giles	37.400694	-80.687779	Ephemeral	NRPW	R6	3	4-1
S-SS3	UNT to Kimballton Branch	Giles	37.399029	-80.685094	Ephemeral	NRPW	R6	3.5	4-2
S-PP14	Kimballton Branch	Giles	37.392676	-80.693871	Perennial	RPW	R2RB1	14	4-6
S-PP15	UNT to Kimballton Branch	Giles	37.392628	-80.690067	Perennial	RPW	R3RB1	6	4-5
S-PP17	UNT to New River	Giles	37.386744	-80.700408	Intermittent	RPW	R4SB3	2	4-7
S-PP18	Curve Branch	Giles	37.385499	-80.708750	Intermittent	RPW	R4SB3	4	4-9
S-PP19	UNT to Curve Branch	Giles	37.382048	-80.714071	Intermittent	RPW	R4SB5	3	4-9
S-Q11	UNT to Stony Creek	Giles	37.381706	-80.676073	Ephemeral	NRPW	R6	6	4-15
S-UU8-Braid	Clendennin Creek	Giles	37.381470	-80.719305	Perennial	RPW	R2UB1	3	4-10
S-UU8	Clendennin Creek	Giles	37.381467	-80.719287	Perennial	RPW	R2UB1	3	4-10
S-UU9	Clendennin Creek	Giles	37.381405	-80.719414	Perennial	RPW	R2UB1	5	4-10
S-HH16	UNT to Clendennin Creek	Giles	37.376291	-80.725779	Perennial	RPW	R3RB2	5	4-11
S-HH15	UNT to Clendennin Creek	Giles	37.370798	-80.737186	Perennial	RPW	R3UB1	5	4-13
S-HH14	UNT to Clendennin Creek	Giles	37.370790	-80.738127	Ephemeral	NRPW	R6	3	4-13
S-HH12	UNT to Clendennin Creek	Giles	37.366134	-80.746301	Ephemeral	NRPW	R6	3	4-14
S-HH11	UNT to Clendennin Creek	Giles	37.366087	-80.747473	Ephemeral	NRPW	R6	4	4-14
S-SS2	UNT to Clendennin Creek	Giles	37.365645	-80.749167	Intermittent	RPW	R4SB3	10	4-14
S-PP22	UNT to Craig Creek	Montgomery	37.321203	-80.412889	Intermittent	RPW	R4SB5	2.5	4-16
S-PP21	UNT to Craig Creek	Montgomery	37.317297	-80.409219	Ephemeral	NRPW	R6	4	4-17
S-PP20	UNT to Craig Creek	Montgomery	37.316550	-80.408634	Intermittent	RPW	R4SB3	6	4-17
S-HH17	Craig Creek	Montgomery	37.314554	-80.398420	Perennial	RPW[5]	R2UB1	18	4-18
S-HH18	UNT to Craig Creek	Montgomery	37.314001	-80.398651	Perennial	RPW	R3RB1	6	4-18
S-RR14	UNT to Craig Creek	Montgomery	37.313894	-80.402445	Ephemeral	NRPW	R6	7	4-18

Notes:

1 - For identified streams without a NHD (National Hydrography Dataset) name, the identified stream was given the name, “Unidentified Tributary (UNT)”, of the first named receiving waterbody

2 - In decimal degrees

3 - RPW = Relatively Permanent Waters
- NRPW = Non-Relatively Permanent Waters
- TNW = Traditional Navigable Waters

4 - See Cowardin et al., 1979

5 - Upstream of USACE-specified limit of TNW

Table 3.
Mapped Soils

County	Map Unit Symbol	Map Unit Name	Hydric Classification
Giles	138CS	Oriskany very cobbly sandy loam, 3 to 15 percent slopes, rubbly	-
Giles	138D	Oriskany very cobbly sandy loam, 15 to 35 percent slopes, very stony	-
Giles	138E	Oriskany very cobbly sandy loam, 35 to 60 percent slopes, very stony	-
Giles	138ES	Oriskany very cobbly sandy loam, 35 to 60 percent slopes, rubbly	-
Giles	23F	Lehew and Wallen soils, very stony, 35 to 65 percent slopes	-
Giles	26C	Jefferson loam, 3 to 15 percent slopes	-
Giles	26D	Jefferson loam, 15 to 35 percent slopes	-
Giles	27E	Lily-Bailegap complex, very stony, 15 to 35 percent slopes	-
Giles	27F	Lily-Bailegap complex, very stony, 35 to 65 percent slopes	-
Giles	30C	Nolichucky very stony sandy loam, 7 to 15 percent slopes	-
Giles	30D	Nolichucky very stony sandy loam, 15 to 30 percent slopes	-
Giles	30F	Nolichucky very stony sandy loam, 30 to 65 percent slopes	-
Giles	48C	Calvin very channery loam, 3 to 15 percent slopes, extremely stony	-
Giles	57E	Clymer sandy loam, 35 to 60 percent slopes	-
Giles	66D	Bailegap sandy loam, 15 to 35 percent slopes	-
Giles	66E	Bailegap sandy loam, 35 to 60 percent slopes	-
Giles	75D	Lily gravelly sandy loam, 15 to 35 percent slopes	-
Giles	75E	Lily gravelly sandy loam, 35 to 60 percent slopes	-
Montgomery	10	Craigsville soils	Hydric
Montgomery	10G	Calvin-Rough complex, 35 to 70 percent slopes, very stony	-
Montgomery	11F	Faywood silt loam, 30 to 65 percent slopes	-
Montgomery	13C	Frederick and Vertrees gravelly silt loams, 7 to 15 percent slopes	-
Montgomery	13D	Frederick and Vertrees gravelly silt loams, 15 to 25 percent slopes	-
Montgomery	16D	Groseclose and Poplimento soils, 15 to 25 percent slopes	-
Montgomery	16E	Groseclose and Poplimento soils, 25 to 60 percent slopes	-
Montgomery	1C	Berks-Clymer complex, 7 to 15 percent slopes	-
Montgomery	23C	Jefferson very stony soils, 7 to 15 percent slopes	-
Montgomery	24D	Jefferson extremely stony soils, 7 to 25 percent slopes	-
Montgomery	4E	Berks-Rock outcrop complex, 25 to 70 percent slopes	-
Montgomery	5D	Berks-Weikert complex, 15 to 25 percent slopes	-
Montgomery	6E	Berks and Weikert soils, 25 to 65 percent slopes	-
Montgomery	7D	Berks and Weikert very stony soils, 15 to 35 percent slopes	-

APPENDIX A
Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: MVP City/County: Giles Sampling Date: 06/28/2016

Applicant/Owner: MVP State: VA Sampling Point: W-KL14

Investigator(s): J. Cook, J. Potrikus, K. Pulver Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): -

Subregion (LRR or MLRA): LRR N Lat: 37.395903 Long: -80.680455 Datum: NAD 83

Soil Map Unit Name: 27F - Lily-Bailegap complex, very stony, 35 to 65 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil ✔, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No ✔

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** **Yes ✔** **No _____**
Hydric Soil Present?	Yes ✔	No _____	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks: Cowardin Code: PSS HGM: Depressional Water Type: ISOLATE

Isolated wetland. Due to the characteristics of the soil, being largely gravel and weakly developed sand, we suspect this wetland was created from impact. The nature of the feature lends more closely to sparsely vegetated pub though the vegetation would allow for PSS classification.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✔ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✔	No _____	Depth (inches): 1
Water Table Present?	Yes ✔	No _____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✔	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Ponded depressional wetland formed by impacted soils.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: W-KL14

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Nyssa sylvatica	15	✔	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	15 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3		
Sapling/Shrub Stratum (Plot size: 15')			
1. Vaccinium corymbosum	20	✔	FACW
2. Acer rubrum	10	✔	FAC
3. Sassafras albidum	3		FACU
4.			
5.			
6.			
7.			
8.			
9.			
	33 = Total Cover		
50% of total cover: 16.5	20% of total cover: 6.6		
Herb Stratum (Plot size: 5')			
1. Viola blanda	5	✔	FACW
2. Vaccinum corymbosum	3	✔	FACW
3. Acer rubrum	1		FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	9 = Total Cover		
50% of total cover: 4.5	20% of total cover: 1.8		
Woody Vine Stratum (Plot size: 15')			
1. Smilax rotundifolia	3		FAC
2.			
3.			
4.			
5.			
	3 = Total Cover		
50% of total cover: 1.5	20% of total cover: 0.6		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: W-KL14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/1	100					SL	
6-16	7.5YR 6/8	60					SL	
	10YR 7/6	40						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ✔ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✔ **No** _____

Remarks:

6-16 inches is disturbed gravel fill and impacted. No restrictive layer found. Due to the vegetation present, as well as standing water, it is suspected that the soils have been impacted and compressed/modified. Without impact, soil would likely qualify for Dark Surface (S7).

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: MVP City/County: Giles Sampling Date: 06/28/2016

Applicant/Owner: MVP State: VA Sampling Point: W-KL14-UP

Investigator(s): J. Cook, J. Potrikus, K. Pulver Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Linear Slope (%): 2

Subregion (LRR or MLRA): LRR N Lat: 37.395941 Long: -80.680333 Datum: NAD 83

Soil Map Unit Name: 27F - Lily-Bailegap complex, very stony, 35 to 65 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks: Cowardin Code: UPLAND HGM: Water Type:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
None

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: W-KL14-UP

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus rubra	20	✔	FACU
2. Sassafras albidum	10	✔	FACU
3. Nyssa sylvatica	7		FAC
4.			
5.			
6.			
7.			
	37 = Total Cover		
50% of total cover: 18.5	20% of total cover: 7.4		

Sapling/Shrub Stratum (Plot size: 15')			
1. Sassafras albidum	10	✔	FACU
2. Acer rubrum	20	✔	FAC
3. Acer pensylvanicum	5		FACU
4.			
5.			
6.			
7.			
8.			
9.			
	35 = Total Cover		
50% of total cover: 17.5	20% of total cover: 7		

Herb Stratum (Plot size: 5')			
1. Viola blanda	3	✔	FACW
2. Vaccinum corymbosum	3	✔	FACW
3. Sassafras albidum	5	✔	FACU
4. Quercus rubra	2		
5. Acer rubrum	1		
6.			
7.			
8.			
9.			
10.			
11.			
	14 = Total Cover		
50% of total cover: 7	20% of total cover: 2.8		

Woody Vine Stratum (Plot size: 15')			
1. Smilax rotundifolia	5	✔	FAC
2.			
3.			
4.			
5.			
	5 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** ✔

Remarks: (Include photo numbers here or on a separate sheet.)

None

SOIL

Sampling Point: W-KL14-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/2	100					SIL	
5-10	10YR 5/4	100					SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: 10

Depth (inches): Refusal, compressed

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

None

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: MVP City/County: Giles Sampling Date: 10/16/2015

Applicant/Owner: MVP State: VA Sampling Point: W-UU11

Investigator(s): S. Townsend, A. Hatfield Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Slope into drainage Slope (%): 6%

Subregion (LRR or MLRA): LRRN Lat: 37.380254 Long: -80.720485 Datum: NAD83

Soil Map Unit Name: 66D - Bailegap sandy loam, 15 to 35 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** **Yes** ✔ **No** _____
Hydric Soil Present?	Yes ✔	No _____	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:
Cowardin Code: PEM
HGM: SLOPE
WT: RPWWD

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✔ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✔	Depth (inches): _____
Water Table Present?	Yes ✔	No _____	Depth (inches): 12"
Saturation Present? (includes capillary fringe)	Yes ✔	No _____	Depth (inches): 0"

Wetland Hydrology Present? **Yes** ✔ **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Jefferson National Forest. This is a seep wetland with saturation to the surface along slopes, as well as a narrow drainage channel approx 6" wide with <1" of surface water. Less than 15% of wetland area is dominated by moss. This point was taken upslope from area with surface water.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: W-UU11

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling/Shrub Stratum (Plot size: 15')			
1. Kalmia latifolia	15	✔	FACU
2. Rhododendron maximum	5	✔	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	20 = Total Cover		
50% of total cover: 10	20% of total cover: 4		
Herb Stratum (Plot size: 5')			
1. *Polytrichum commune	80	✔	FAC
2. Scirpus cyperinus	5	✔	FACW
3. Lindera benzoin	10	✔	FAC
4. Epilobium sp	5		
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50	20% of total cover: 20		
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

*Polytrichum mosses are not on USDA wetland indicator status list. However, P. commune is noted as FAC in Gillrich and Bowman's 2010 "The Use of Bryophytes as Indicators of Hydric Soils and Wetland Hydrology during Wetland Delineations in the US." This would increase the dominance to 4 species of FAC, FACW, OBL for 57%.

SOIL Sampling Point: W-UU11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6"	2.5YR 3/4	100						Moss, organic
6-12"	7.5YR 5/2	80	7.5YR 5/6	20	C	M	SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 12"

Hydric Soil Present? **Yes** ✔ **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: MVP City/County: Giles Sampling Date: 10/16/2015

Applicant/Owner: MVP State: VA Sampling Point: W-UU11-UP

Investigator(s): S. Townsend, A. Hatfield Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Slope concave Slope (%): 2%

Subregion (LRR or MLRA): LRRN Lat: 37.380265 Long: -80.720450 Datum: NAD83

Soil Map Unit Name: 66D - Bailegap sandy loam, 15 to 35 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:
Upland

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No hydrology

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: W-UU11-UP

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling/Shrub Stratum (Plot size: 15')			
1. Liriodendron tulipifera	5	✔	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	5 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1		
Herb Stratum (Plot size: 5')			
1. Agrostis sp.	30	✔	ND
2. Plantago lanceolata	5		UPL
3. Daucus carota	10	✔	UPL
4. Solidago canadensis	5		FACU
5. Glechoma hederacea	10	✔	FACU
6.			
7.			
8.			
9.			
10.			
11.			
	60 = Total Cover		
50% of total cover: 30	20% of total cover: 12		
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

✔ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

Agrostis cannot be identified to species due to late season growth. Other identifiable species in area are UPL or FACU. It is unlikely that Agrostis is OBL, and if it were FACW, the prevalence worksheet would result in index of 3.3 at best.

ND - Not determined

*Not identified to species, not included in dominance test

SOIL Sampling Point: W-UU11-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 5/6	98	10YR 6/8	2	C	M	SL	Road base, rocks 70%

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Gravel road base

Depth (inches): 12"

Hydric Soil Present? **Yes** ____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: MVP City/County: Giles Sampling Date: 10/16/2015

Applicant/Owner: MVP State: VA Sampling Point: W-UU12

Investigator(s): S. Townsend, A. Hatfield Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 2%

Subregion (LRR or MLRA): LRRN Lat: 37.378364 Long: -80.722579 Datum: NAD83

Soil Map Unit Name: 26D - Jefferson loam, 15-35% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** **Yes** ✔ **No** _____
Hydric Soil Present?	Yes ✔	No _____	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:

Cowardin Code: PEM
HGM: Depressional
WT: Isolate

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✔ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✔ No _____ Depth (inches): 0"

Wetland Hydrology Present? **Yes** ✔ **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: W-UU12

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling/Shrub Stratum (Plot size: 15')			
1. Kalmia latifolia	20	✔	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	20 = Total Cover		
50% of total cover: 10	20% of total cover: 4		
Herb Stratum (Plot size: 5')			
1. Scirpus cyperinus	35	✔	FACW
2. Solidago sp.	20		ND
3. Epilobium sp.	20		ND
4. Mentha arvensis	25	✔	FACW
5. Poa sp.	10		ND
6.			
7.			
8.			
9.			
10.			
11.			
	110 = Total Cover		
50% of total cover: 55	20% of total cover: 22		
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

ND - Not determined

*Not identified to species, not included in dominance test

SOIL Sampling Point: W-UU12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14"	7.5YR 4/2	85	2.5YR 4/4	5	C	M/PL	SIL	
			7.5YR 5/8	10	C	M/PL		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Sandstone bedrock

Depth (inches): 14"

Hydric Soil Present? **Yes** ✔ **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: MVP City/County: Giles Sampling Date: 10/16/2015

Applicant/Owner: MVP State: VA Sampling Point: W-UU12-UP

Investigator(s): S. Townsend, A. Hatfield Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Access road terrace Slope (%): 2%

Subregion (LRR or MLRA): LRRN Lat: 37.378433 Long: -80.722484 Datum: NAV83

Soil Map Unit Name: 26D - Jefferson loam, 15-35% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:
Upland

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No hydrology

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: W-UU12-UP

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling/Shrub Stratum (Plot size: 15')			
1. Liriodendron tulipifera	10	✔	FACU
2. Acer saccharum	10	✔	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	20 = Total Cover		
50% of total cover: 10	20% of total cover: 4		
Herb Stratum (Plot size: 5')			
1. Symphyotrichum ericoides	20	✔	FACU
2. Trifolium repens	5		
3. Rubus sp.	10		
4. Solidago canadensis	15	✔	FACU
5. Smilax rotundifolia	10		
6. Ageratina altissima	5		
7.			
8.			
9.			
10.			
11.			
	65 = Total Cover		
50% of total cover: 32.5	20% of total cover: 13		
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: W-UU12-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 4/4	97	10YR 6/8	3			SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Sandstone bedrock

Depth (inches): 14"

Hydric Soil Present? **Yes** ____ **No** ✔

Remarks:

Orange colors caused by sandstone lithics.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: MVP City/County: Narrows/Giles Sampling Date: 10/16/2015

Applicant/Owner: MVP State: VA Sampling Point: W-HH15

Investigator(s): S Ryan, A Larson, M Whitten Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR or MLRA): LRRN Lat: 37.371087 Long: -80.736164 Datum: NAD83

Soil Map Unit Name: Oriskany very cobbly sandy loam, 3 to 15 percent slopes, rubbly NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** **Yes** ✔ **No** _____
Hydric Soil Present?	Yes ✔	No _____	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:
Cowardin Code: PEM
HGM: Depressional
Water Type: Isolate

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✔ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✔ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✔	Depth (inches): _____
Water Table Present?	Yes ✔	No _____	Depth (inches): 8
Saturation Present? (includes capillary fringe)	Yes ✔	No _____	Depth (inches): 0

Wetland Hydrology Present? **Yes** ✔ **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland enters north side of study area and goes underground just north of Access Road. From there a drainage feature (vegetated and lacking defined bed/bank) crosses road via culvert and continues to south edge of study area. Small seeps observed near southern survey boundary but all seeps lacked both stream and wetland characteristics.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: W-HH15

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 5')			
1. Glyceria melicaria	40	✔	OBL
2. Impatiens capensis	30	✔	FACW
3. Viola sp.	5		ND
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	75 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: W-HH15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 2/2	100					SL	High organic content

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ✔ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? **Yes** ✔ **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: MVP City/County: Giles Sampling Date: 10/16/2015

Applicant/Owner: MVP State: VA Sampling Point: W-HH15-UP

Investigator(s): S Ryan, A Larson, M Whitten Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 12

Subregion (LRR or MLRA): LRRN Lat: 37.371039 Long: -80.736149 Datum: NAD83

Soil Map Unit Name: Oriskany very cobbly sandy loam, 3 to 15 percent slopes, rubbly NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:
Upland

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: W-HH15-UP

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Liriodendron tulipifera	35	✔	FACU
2. Pinus strobus	30	✔	FACU
3. Oxydendrum arboreum	20	✔	UPL
4. Betula alleghaniensis	10		FAC
5.			
6.			
7.			
	95 = Total Cover		
50% of total cover: 47.5	20% of total cover: 19		
Sapling/Shrub Stratum (Plot size: 15')			
1. Liriodendron tulipifera	5		FACU
2. Sassafras albidum	5		FACU
3. Robinia psuedoacacia	15	✔	FACU
4. Oxydendrum arboreum	10	✔	UPL
5. Quercus montana	5		FACU
6.			
7.			
8.			
9.			
	40 = Total Cover		
50% of total cover: 20	20% of total cover: 8		
Herb Stratum (Plot size: 5')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: W-HH15-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10R 3/2	100					SL	No Redox
4-10	10R 3/3	100					SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 10

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: MVP City/County: Giles Sampling Date: 10/16/2015

Applicant/Owner: MVP State: VA Sampling Point: W-HH14

Investigator(s): S Ryan, A Larson, M Whitten Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR or MLRA): LRRN Lat: 37.371001 Long: -80.737201 Datum: NAD83

Soil Map Unit Name: Oriskany very cobbly sandy loam, 3 to 15 percent slopes, rubbly NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** **Yes ✔** **No _____**
Hydric Soil Present?	Yes ✔	No _____	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:
Cowardin Code: PEM
HGM: RPWWD
Water Type: Slope

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✔ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✔ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ✔ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✔ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✔	No _____	Depth (inches): 1
Water Table Present?	Yes ✔	No _____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✔	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: W-HH14

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 5')			
1. Scirpus polyphyllus	20	✔	OBL
2. Glyceria melicaria	15	✔	OBL
3. Impatiens capensis	5		FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	40 = Total Cover		
50% of total cover: 20	20% of total cover: 8		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Sparsely vegetated.

SOIL Sampling Point: W-HH14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 3/2	95	10YR 5/8	5	C	M	CL	
7-16	10YR 4/4	100					CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? **Yes** ✔ **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: MVP City/County: Giles Sampling Date: 10/16/2015

Applicant/Owner: MVP State: VA Sampling Point: W-HH14-UP

Investigator(s): S Ryan, A Larson, M Whitten Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 0

Subregion (LRR or MLRA): LRRN Lat: 37.370940 Long: -80.737265 Datum: NAD83

Soil Map Unit Name: Oriskany very cobbly sandy loam, 3 to 15 percent slopes, rubbly NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:
Upland

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: W-HH14-UP

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Liriodendron tulipifera	50	✔	FACU
2. Acer saccharum	10		FACU
3. Carya sp.	10		ND
4.			
5.			
6.			
7.			
	70 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling/Shrub Stratum (Plot size: 15')			
1. Liriodendron tulipifera	20	✔	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	20 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 5')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: W-HH14-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/3	100					CL	No Redox
6-10	10YR 4/4	100					CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 10

Hydric Soil Present? **Yes** ____ **No** ✔

Remarks:

APPENDIX B
Wetland Photographs

Photograph Number: 1 **Feature Name:** W-KL14 **Cowardin Class:** PSS

Direction: W **Date:** 6/28/2016

Photograph Number: 2 **Feature Name:** W-UU11 **Cowardin Class:** PEM

Direction: SW **Date:** 10/16/2015

Photograph Number: 3 **Feature Name:** W-UU12 **Cowardin Class**: PEM

Direction: WSW **Date:** 10/16/2015

Photograph Number: 4 **Feature Name:** W-HH15 **Cowardin Class**: PEM

Direction: SSW **Date:** 10/16/2015

Photograph Number: 5 **Feature Name:** W-HH14 **Cowardin Class**: PEM

Direction: WSW **Date:** 10/16/2015

APPENDIX C
Stream Data Sheets

STREAM ID S-KL24		**STREAM NAME** UNT to Kimballton Branch	
CLIENT MVP		**PROJECT NAME** MVP	
LAT 37.400694	**LONG** -80.687779	**DATE** 06/28/2016	**COUNTY** Giles
INVESTIGATORS J. Cook, J. Potrikus, K. Pulver			
WATER TYPE TNW ☐ RPW ☐ NRPW ☑		**FLOW REGIME** Perennial ☐ Intermittent ☐ Ephemeral ☑	

CHANNEL FEATURES

Estimate Measurements
Top of Bank Width: 3.0 ft
Top of Bank Height:
LB 2.0 ft RB 1.5 ft
Water Depth: 0.00 in
Water Width: 0.0 ft
Ordinary High Water Mark (Width): 1.5 ft
Ordinary High Water Mark (Height): 3.0 in
Flow Direction: Southeast

Sinuosity ✔ Low ___Medium ___High

Gradient ___ Flat (0.5/100 ft) ✔ Moderate (2 ft/100 ft) ___Severe (10 ft/100 ft)

Stream Erosion
✔None ___Moderate ___Heavy

Artificial, Modified or Channelized
___ Yes ✔ No

Within Roadside Ditch
___ Yes ✔No

Culvert Present ___Yes ✔ No
Culvert Material:_____
Culvert Size: _____in

FLOW CHARACTERISTICS

Water Present
✔ No water, stream bed dry
___Stream bed moist
___Standing water
___Flowing water

Velocity
___Fast ___ Moderate
___Slow

Proportion of Reach Represented by Stream Morphology Types (Only enter if water present)
Riffle % Run %
Pool %

Turbidity
___ Clear ___Slightly turbid ___Turbid
___ Other_____

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%) 100

Substrate Type	Diameter	% Composition in Sampling Reach
Bedrock		
Boulder	> 256 mm (10")	
Cobble	64-256 mm (2.5"-10")	30
Gravel	2-64 mm (0.1"-2.5")	
Sand	0.06-2mm (gritty)	30
Silt	0.004-0.06 mm	40
Clay	< 0.004 mm (slick)	

ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)

Substrate Type	Characteristic	% Composition in Sampling Area
Detritus	sticks, wood, coarse plant materials (CPOM)	50
Muck-Mud	black, very fine organic (FPOM)	
Marl	grey, shell fragments	

WATERSHED FEATURES

Predominant Surrounding Landuse
✔ Forest ___ Commercial
___ Field/Pasture ___Industrial
___ Agricultural ___ Residential
___ ROW ___Other:

Canopy Cover
___Open ✔ Partly shaded
___Shaded

Floodplain Width
___ Wide > 30ft ___ Moderate 15-30ft
✔ Narrow <15ft

MACROINVERTEBRATES/OTHER WILDLIFE OBSERVED OR OTHER NOTES AND OBSERVATIONS

STREAM ID S-SS3	**STREAM NAME** UNT to Kimballton Branch
LAT 37.399029 **LONG** -80.685094	**DATE** 09/11/2015
CLIENT MVP	**PROJECT NAME** MVP
INVESTIGATORS L. Canty, E. Foster, A. Carrano	
FLOW REGIME Perennial ___ Intermittent___ Ephemeral ✔	**WATER TYPE** TNW ___ RPW ___ NRPW ✔

CHANNEL FEATURES

Estimate Measurements
Top of Bank Width: 3.5 ft
Top of Bank Height:
LB 2.0 ft RB 2.0 ft
Water Depth: 0.00 in
Water Width: 0.0 ft
High Water Mark: 0.0 in
Flow Direction: South

Stream Erosion
___None ✔ Moderate ___Heavy

Artificial, Modified or Channelized
___ Yes ✔ No

Dam Present ___Yes ✔ No

Sinuosity ___ Low ✔ Medium ✔ High

Gradient
___ Flat (0.5/100 ft) ✔ Moderate (2 ft/100 ft) ___Severe (10 ft/100 ft)

FLOW CHARACTERISTICS

Water Present
✔ No water, stream bed dry
___ Stream bed moist
___ Standing water
___ Flowing water

Velocity
___ Fast ___ Moderate
___ Slow

Proportion of Reach Represented by Stream Morphology Types
Riffle % Run %
Pool %

Turbidity
___ Clear ___Slightly turbid ___Turbid
___ Opaque ___Stained
___Other_____

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)

Substrate Type	Diameter	% Composition in Sampling Reach
Bedrock		
Boulder	> 256 mm (10")	
Cobble	64-256 mm (2.5"-10")	
Gravel	2-64 mm (0.1"-2.5")	25
Sand	0.06-2mm (gritty)	
Silt	0.004-0.06 mm	25
Clay	< 0.004 mm (slick)	50

ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)

Substrate Type	Characteristic	% Composition in Sampling Area
Detritus	sticks, wood, coarse plant materials (CPOM)	50
Muck-Mud	black, very fine organic (FPOM)	
Marl	grey, shell fragments	

WATERSHED FEATURES

Predominant Surrounding Landuse
✔ Forest ___ Commercial
___ Field/Pasture ___Industrial
___ Agricultural ___ Residential
___ Other:

Canopy Cover
✔ Partly open ___Partly shaded
___ Shaded ___ Open

Indicate the dominant type (Check one)
✔ Trees ___ Shrubs
___ Grasses ___ Herbaceous

Floodplain Width
___ Wide > 30ft ___ Moderate 15-30ft
✔ Narrow <16ft

Wetland Present ___Yes ✔ No
Wetland ID

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
___ Rooted emergent ___Rooted submergent ___Rooted floating ___Free floating
___ Floating algae ___Attached algae

MACROINVERTEBRATES OR OTHER WILDLIFE OBSERVED/OTHER OBSERVATIONS AND NOTES

STREAM ID S-PP14	**STREAM NAME** Kimballton Branch
LAT 37.392676 **LONG** -80.693871	**DATE** 10/16/2015
CLIENT MVP	**PROJECT NAME** MVP
INVESTIGATORS D. Hadersbeck, T. Woods, D. McCollough	
FLOW REGIME Perennial ✔ Intermittent ___ Ephemeral ___	**WATER TYPE** TNW ___ RPW ✔ NRPW ___

CHANNEL FEATURES

Estimate Measurements
Top of Bank Width: 14 ft
Top of Bank Height:
LB 1.0 ft RB 10.0 in
Water Depth: 8.00 in
Water Width: 5.0 ft
High Water Mark: 8.0 in
Flow Direction: Southeast

Stream Erosion
✔ None ___ Moderate ___ Heavy

Artificial, Modified or Channelized
✔ Yes ___ No

Dam Present ___ Yes ✔ No

Sinuosity ___ Low ✔ Medium ✔ High

Gradient
___ Flat (0.5/100 ft) ✔ Moderate (2 ft/100 ft) ___ Severe (10 ft/100 ft)

FLOW CHARACTERISTICS

Water Present
___ No water, stream bed dry
___ Stream bed moist
___ Standing water
✔ Flowing water

Velocity
___ Fast ✔ Moderate
___ Slow

Proportion of Reach Represented by Stream Morphology Types
Riffle 30 % Run 50 %
Pool 20 %

Turbidity
✔ Clear ___ Slightly turbid ___ Turbid
___ Opaque ___ Stained
___ Other_____

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)

Substrate Type	Diameter	% Composition in Sampling Reach
Bedrock		
Boulder	> 256 mm (10")	20
Cobble	64-256 mm (2.5"-10")	30
Gravel	2-64 mm (0.1"-2.5")	30
Sand	0.06-2mm (gritty)	20
Silt	0.004-0.06 mm	
Clay	< 0.004 mm (slick)	

ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)

Substrate Type	Characteristic	% Composition in Sampling Area
Detritus	sticks, wood, coarse plant materials (CPOM)	55
Muck-Mud	black, very fine organic (FPOM)	
Marl	grey, shell fragments	

WATERSHED FEATURES

Predominant Surrounding Landuse
✔ Forest ___ Commercial
___ Field/Pasture ___ Industrial
___ Agricultural ___ Residential
___ Other:

Canopy Cover
✔ Partly open ___ Partly shaded
___ Shaded ___ Open

Indicate the dominant type (Check one)
✔ Trees ___ Shrubs
___ Grasses ___ Herbaceous

Floodplain Width
___ Wide > 30ft ✔ Moderate 15-30ft
___ Narrow <16ft

Wetland Present ___ Yes ✔ No
Wetland ID

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
___ Rooted emergent ___ Rooted submergent ___ Rooted floating ___ Free floating
___ Floating algae ✔ Attached algae

MACROINVERTEBRATES OR OTHER WILDLIFE OBSERVED/OTHER OBSERVATIONS AND NOTES

Stream traverses a culvert under the road.

STREAM ID S-PP15	**STREAM NAME** UNT to Kimballton Branch
LAT 37.392628 **LONG** -80.690067	**DATE** 10/16/2015
CLIENT MVP	**PROJECT NAME** MVP
INVESTIGATORS D. Hadersbeck, T. Woods, D. McCollough	
FLOW REGIME Perennial ✔ Intermittent ___ Ephemeral ___	**WATER TYPE** TNW ___ RPW ✔ NRPW ___

CHANNEL FEATURES

Estimate Measurements
Top of Bank Width: 6 ft
Top of Bank Height:
LB 6.0 in RB 6.0 in
Water Depth: 6.00 in
Water Width: 3.0 ft
High Water Mark: 8.0 in
Flow Direction: Southwest

Stream Erosion
✔ None ___ Moderate ___ Heavy

Artificial, Modified or Channelized
✔ Yes ___ No

Dam Present ___ Yes ✔ No

Sinuosity ___ Low ✔ Medium ✔ High

Gradient
___ Flat (0.5/100 ft) ✔ Moderate (2 ft/100 ft) ___ Severe (10 ft/100 ft)

FLOW CHARACTERISTICS

Water Present
___ No water, stream bed dry
___ Stream bed moist
___ Standing water
✔ Flowing water

Velocity
___ Fast ✔ Moderate
___ Slow

Proportion of Reach Represented by Stream Morphology Types
Riffle 30 % Run 50 %
Pool 20 %

Turbidity
✔ Clear ___ Slightly turbid ___ Turbid
___ Opaque ___ Stained
___ Other_____

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)

Substrate Type	Diameter	% Composition in Sampling Reach
Bedrock		
Boulder	> 256 mm (10")	20
Cobble	64-256 mm (2.5"-10")	30
Gravel	2-64 mm (0.1"-2.5")	30
Sand	0.06-2mm (gritty)	20
Silt	0.004-0.06 mm	
Clay	< 0.004 mm (slick)	

ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)

Substrate Type	Characteristic	% Composition in Sampling Area
Detritus	sticks, wood, coarse plant materials (CPOM)	65
Muck-Mud	black, very fine organic (FPOM)	
Marl	grey, shell fragments	

WATERSHED FEATURES

Predominant Surrounding Landuse
✔ Forest ___ Commercial
___ Field/Pasture ___ Industrial
___ Agricultural ___ Residential
___ Other:

Canopy Cover
✔ Partly open ___ Partly shaded
___ Shaded ___ Open

Indicate the dominant type (Check one)
✔ Trees ___ Shrubs
___ Grasses ___ Herbaceous

Floodplain Width
___ Wide > 30ft ✔ Moderate 15-30ft
___ Narrow <16ft

Wetland Present ___ Yes ✔ No
Wetland ID

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
___ Rooted emergent ___ Rooted submergent ___ Rooted floating ___ Free floating
___ Floating algae ✔ Attached algae

MACROINVERTEBRATES OR OTHER WILDLIFE OBSERVED/OTHER OBSERVATIONS AND NOTES

Stream traverses a culvert under the road.

STREAM ID S-PP17	**STREAM NAME** UNT to New River
LAT 37.386744 **LONG** -80.700408	**DATE** 10/16/2015
CLIENT MVP	**PROJECT NAME** MVP
INVESTIGATORS D. Hadersbeck, T. Woods, D. McCollough	
FLOW REGIME Perennial ___ Intermittent ✔ Ephemeral ___	**WATER TYPE** TNW ___ RPW ✔ NRPW ___

CHANNEL FEATURES

Estimate Measurements
Top of Bank Width: 2 ft
Top of Bank Height:
LB 6.0 in RB 6.0 in
Water Depth: 3.00 in
Water Width: 1.0 ft
High Water Mark: 6.0 in
Flow Direction: South

Stream Erosion
✔ None ___ Moderate ___ Heavy

Artificial, Modified or Channelized
✔ Yes ___ No

Dam Present ___ Yes ✔ No

Sinuosity ___ Low ✔ Medium ✔ High

Gradient
___ Flat (0.5/100 ft) ✔ Moderate (2 ft/100 ft) ___ Severe (10 ft/100 ft)

FLOW CHARACTERISTICS

Water Present
___ No water, stream bed dry
___ Stream bed moist
___ Standing water
✔ Flowing water

Velocity
___ Fast ___ Moderate
✔ Slow

Proportion of Reach Represented by Stream Morphology Types
Riffle 20 % Run 60 %
Pool 20 %

Turbidity
___ Clear ✔ Slightly turbid ___ Turbid
___ Opaque ___ Stained
___ Other_____

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)

Substrate Type	Diameter	% Composition in Sampling Reach
Bedrock		20
Boulder	> 256 mm (10")	20
Cobble	64-256 mm (2.5"-10")	30
Gravel	2-64 mm (0.1"-2.5")	30
Sand	0.06-2mm (gritty)	
Silt	0.004-0.06 mm	
Clay	< 0.004 mm (slick)	

ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)

Substrate Type	Characteristic	% Composition in Sampling Area
Detritus	sticks, wood, coarse plant materials (CPOM)	80
Muck-Mud	black, very fine organic (FPOM)	
Marl	grey, shell fragments	

WATERSHED FEATURES

Predominant Surrounding Landuse
✔ Forest ___ Commercial
___ Field/Pasture ___ Industrial
___ Agricultural ___ Residential
___ Other:

Canopy Cover
✔ Partly open ___ Partly shaded
___ Shaded ___ Open

Indicate the dominant type (Check one)
✔ Trees ___ Shrubs
___ Grasses ___ Herbaceous

Floodplain Width
___ Wide > 30ft ✔ Moderate 15-30ft
___ Narrow <16ft

Wetland Present ___ Yes ✔ No
Wetland ID

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
___ Rooted emergent ___ Rooted submergent ___ Rooted floating ___ Free floating
___ Floating algae ___ Attached algae

MACROINVERTEBRATES OR OTHER WILDLIFE OBSERVED/OTHER OBSERVATIONS AND NOTES

Stream emerges from high side of road from black plastic tubing then traverses a culvert under the road.

STREAM ID S-PP18	**STREAM NAME** Curve Branch
LAT 37.385499 **LONG** -80.708750	**DATE** 10/16/2015
CLIENT MVP	**PROJECT NAME** MVP
INVESTIGATORS D. Hadersbeck, T. Woods, D. McCollough	
FLOW REGIME Perennial ___ Intermittent ✔ Ephemeral ___	**WATER TYPE** TNW ___ RPW ✔ NRPW ___

CHANNEL FEATURES

Estimate Measurements
Top of Bank Width: 4 ft
Top of Bank Height:
LB 6.0 in RB 6.0 in
Water Depth: 3.00 in
Water Width: 1.0 ft
High Water Mark: 6.0 in
Flow Direction: Southwest

Stream Erosion
✔ None ___ Moderate ___ Heavy

Artificial, Modified or Channelized
✔ Yes ___ No

Dam Present ___ Yes ✔ No

Sinuosity ___ Low ✔ Medium ✔ High

Gradient
___ Flat (0.5/100 ft) ✔ Moderate (2 ft/100 ft) ___ Severe (10 ft/100 ft)

FLOW CHARACTERISTICS

Water Present
___ No water, stream bed dry
___ Stream bed moist
___ Standing water
✔ Flowing water

Velocity
___ Fast ___ Moderate
✔ Slow

Proportion of Reach Represented by Stream Morphology Types
Riffle 20 % Run 60 %
Pool 20 %

Turbidity
___ Clear ✔ Slightly turbid ___ Turbid
___ Opaque ___ Stained
___ Other_____

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)

Substrate Type	Diameter	% Composition in Sampling Reach
Bedrock		20
Boulder	> 256 mm (10")	20
Cobble	64-256 mm (2.5"-10")	30
Gravel	2-64 mm (0.1"-2.5")	30
Sand	0.06-2mm (gritty)	
Silt	0.004-0.06 mm	
Clay	< 0.004 mm (slick)	

ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)

Substrate Type	Characteristic	% Composition in Sampling Area
Detritus	sticks, wood, coarse plant materials (CPOM)	80
Muck-Mud	black, very fine organic (FPOM)	
Marl	grey, shell fragments	

WATERSHED FEATURES

Predominant Surrounding Landuse
✔ Forest ___ Commercial
___ Field/Pasture ___ Industrial
___ Agricultural ___ Residential
___ Other:

Canopy Cover
✔ Partly open ___ Partly shaded
___ Shaded ___ Open

Indicate the dominant type (Check one)
✔ Trees ___ Shrubs
___ Grasses ___ Herbaceous

Floodplain Width
___ Wide > 30ft ✔ Moderate 15-30ft
___ Narrow <16ft

Wetland Present ___ Yes ✔ No
Wetland ID

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
___ Rooted emergent ___ Rooted submergent ___ Rooted floating ___ Free floating
___ Floating algae ___ Attached algae

MACROINVERTEBRATES OR OTHER WILDLIFE OBSERVED/OTHER OBSERVATIONS AND NOTES

Stream emerges from high side of road from black plastic tubing then traverses a culvert under the road.

STREAM ID S-PP19	**STREAM NAME** UNT to Curve Branch
LAT 37.382048 **LONG** -80.714071	**DATE** 10/16/2015
CLIENT MVP	**PROJECT NAME** MVP
INVESTIGATORS D. Hadersbeck, T. Woods, D. McCollough	
FLOW REGIME Perennial ___ Intermittent ✔ Ephemeral ___	**WATER TYPE** TNW ___ RPW ✔ NRPW ___

CHANNEL FEATURES

Estimate Measurements
Top of Bank Width: 3 ft
Top of Bank Height:
LB 1.0 ft RB 1.0 ft
Water Depth: 3.00 in
Water Width: 2.5 ft
High Water Mark: 1.0 ft
Flow Direction: South

Stream Erosion
✔ None ___ Moderate ___ Heavy

Artificial, Modified or Channelized
✔ Yes ___ No

Dam Present ___ Yes ✔ No

Sinuosity ___ Low ✔ Medium ✔ High

Gradient
___ Flat (0.5/100 ft) ✔ Moderate (2 ft/100 ft) ___ Severe (10 ft/100 ft)

FLOW CHARACTERISTICS

Water Present
___ No water, stream bed dry
___ Stream bed moist
___ Standing water
✔ Flowing water

Velocity
___ Fast ___ Moderate
✔ Slow

Proportion of Reach Represented by Stream Morphology Types
Riffle % Run 80 %
Pool 20 %

Turbidity
✔ Clear ___ Slightly turbid ___ Turbid
___ Opaque ___ Stained
___ Other_____

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)

Substrate Type	Diameter	% Composition in Sampling Reach
Bedrock		
Boulder	> 256 mm (10")	10
Cobble	64-256 mm (2.5"-10")	20
Gravel	2-64 mm (0.1"-2.5")	20
Sand	0.06-2mm (gritty)	10
Silt	0.004-0.06 mm	40
Clay	< 0.004 mm (slick)	

ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)

Substrate Type	Characteristic	% Composition in Sampling Area
Detritus	sticks, wood, coarse plant materials (CPOM)	70
Muck-Mud	black, very fine organic (FPOM)	
Marl	grey, shell fragments	

WATERSHED FEATURES

Predominant Surrounding Landuse
✔ Forest ___ Commercial
___ Field/Pasture ___ Industrial
___ Agricultural ___ Residential
___ Other:

Canopy Cover
✔ Partly open ___ Partly shaded
___ Shaded ___ Open

Indicate the dominant type (Check one)
✔ Trees ___ Shrubs
___ Grasses ___ Herbaceous

Floodplain Width
___ Wide > 30ft ✔ Moderate 15-30ft
___ Narrow <16ft

Wetland Present ___ Yes ✔ No
Wetland ID

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
___ Rooted emergent ___ Rooted submergent ___ Rooted floating ___ Free floating
___ Floating algae ___ Attached algae

MACROINVERTEBRATES OR OTHER WILDLIFE OBSERVED/OTHER OBSERVATIONS AND NOTES

Stream traverses a culvert under the road.

STREAM ID S-Q11	**STREAM NAME** UNT to Stony Creek
LAT 37.381706 **LONG** -80.676073	**DATE** 06/17/2015
CLIENT MVP	**PROJECT NAME** MVP
INVESTIGATORS A. Stott, A.Grech, L. Sexton	
FLOW REGIME Perennial ___ Intermittent___ Ephemeral ✔	**WATER TYPE** TNW ___ RPW ___ NRPW ✔

CHANNEL FEATURES

Estimate Measurements
Top of Bank Width: 6.0 ft
Top of Bank Height:
LB 4.0 in RB 4.0 in
Water Depth: 0.00 in
Water Width: 0.0 ft
High Water Mark: 0.0 in
Flow Direction: South

Stream Erosion
___None ✔ Moderate ___Heavy

Artificial, Modified or Channelized
___ Yes ✔ No

Dam Present ___Yes ✔ No

Sinuosity ✔ Low ___ Medium ___ High

Gradient
___ Flat (0.5/100 ft) ✔ Moderate (2 ft/100 ft) ___Severe (10 ft/100 ft)

FLOW CHARACTERISTICS

Water Present
✔ No water, stream bed dry
___ Stream bed moist
___ Standing water
___ Flowing water

Velocity
___ Fast ___ Moderate
___ Slow

Proportion of Reach Represented by Stream Morphology Types
Riffle % Run %
Pool %

Turbidity
___ Clear ___Slightly turbid ___Turbid
___ Opaque ___Stained
___Other_____

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)

Substrate Type	Diameter	% Composition in Sampling Reach
Bedrock		
Boulder	> 256 mm (10")	5
Cobble	64-256 mm (2.5"-10")	10
Gravel	2-64 mm (0.1"-2.5")	25
Sand	0.06-2mm (gritty)	30
Silt	0.004-0.06 mm	20
Clay	< 0.004 mm (slick)	10

ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)

Substrate Type	Characteristic	% Composition in Sampling Area
Detritus	sticks, wood, coarse plant materials (CPOM)	10
Muck-Mud	black, very fine organic (FPOM)	
Marl	grey, shell fragments	

WATERSHED FEATURES

Predominant Surrounding Landuse
✔ Forest ___ Commercial
___ Field/Pasture ✔ Industrial
___ Agricultural ___ Residential
___ Other:

Canopy Cover
___Partly open ___Partly shaded
✔ Shaded ___ Open

Indicate the dominant type (Check one)
✔ Trees ___ Shrubs
___ Grasses ___ Herbaceous

Floodplain Width
___ Wide > 30ft ___ Moderate 15-30ft
✔ Narrow <16ft

Wetland Present ___Yes ✔ No
Wetland ID

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
___Rooted emergent ___Rooted submergent ___Rooted floating ___Free floating
___Floating algae ___Attached algae

MACROINVERTEBRATES OR OTHER WILDLIFE OBSERVED/OTHER OBSERVATIONS AND NOTES

STREAM ID S-UU8-Braid	**STREAM NAME** Clendennin Creek
LAT 37.381470 **LONG** -80.719305	**DATE** 10/16/2015
CLIENT MVP	**PROJECT NAME** MVP
INVESTIGATORS S. Townsend, A. Hatfield	
FLOW REGIME Perennial ✔ Intermittent ___ Ephemeral ___	**WATER TYPE** TNW ___ RPW ✔ NRPW ___

CHANNEL FEATURES

Estimate Measurements
Top of Bank Width: 3.0 ft
Top of Bank Height:
LB 1.0 ft RB 1.0 ft
Water Depth: 1.00 in
Water Width: 2.5 ft
High Water Mark: 1.0 ft
Flow Direction: South

Stream Erosion
✔ None ___ Moderate ___ Heavy

Artificial, Modified or Channelized
___ Yes ✔ No

Dam Present ___ Yes ✔ No

Sinuosity ✔ Low ___ Medium ___ High

Gradient
✔ Flat (0.5/100 ft) ✔ Moderate (2 ft/100 ft) ___ Severe (10 ft/100 ft)

FLOW CHARACTERISTICS

Water Present
___ No water, stream bed dry
___ Stream bed moist
___ Standing water
✔ Flowing water

Velocity
___ Fast ___ Moderate
✔ Slow

Proportion of Reach Represented by Stream Morphology Types
Riffle 100 % Run % Pool %

Turbidity
✔ Clear ___ Slightly turbid ___ Turbid
___ Opaque ___ Stained
___ Other_____

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)

Substrate Type	Diameter	% Composition in Sampling Reach
Bedrock		
Boulder	> 256 mm (10")	
Cobble	64-256 mm (2.5"-10")	35
Gravel	2-64 mm (0.1"-2.5")	30
Sand	0.06-2mm (gritty)	30
Silt	0.004-0.06 mm	5
Clay	< 0.004 mm (slick)	

ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)

Substrate Type	Characteristic	% Composition in Sampling Area
Detritus	sticks, wood, coarse plant materials (CPOM)	5
Muck-Mud	black, very fine organic (FPOM)	
Marl	grey, shell fragments	

WATERSHED FEATURES

Predominant Surrounding Landuse
✔ Forest ___ Commercial
___ Field/Pasture ___ Industrial
___ Agricultural ___ Residential
___ Other:

Canopy Cover
___ Partly open ___ Partly shaded
✔ Shaded ___ Open

Indicate the dominant type (Check one)
✔ Trees ___ Shrubs
___ Grasses ___ Herbaceous

Floodplain Width
✔ Wide > 30ft ___ Moderate 15-30ft
___ Narrow <16ft

Wetland Present ___ Yes ✔ No
Wetland ID

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
___ Rooted emergent ___ Rooted submergent ___ Rooted floating ___ Free floating
___ Floating algae ___ Attached algae

MACROINVERTEBRATES OR OTHER WILDLIFE OBSERVED/OTHER OBSERVATIONS AND NOTES	Braid of S-UU8

STREAM ID S-UU8	**STREAM NAME** Clendennin Creek
LAT 37.381467 **LONG** -80.719287	**DATE** 10/16/2015
CLIENT MVP	**PROJECT NAME** MVP
INVESTIGATORS S. Townsend, A. Hatfield	
FLOW REGIME Perennial ✔ Intermittent ___ Ephemeral ___	**WATER TYPE** TNW ___ RPW ✔ NRPW ___

CHANNEL FEATURES

Estimate Measurements
Top of Bank Width: 3 ft
Top of Bank Height:
LB 1.0 ft RB 1.0 ft
Water Depth: 1.00 in
Water Width: 2.5 ft
High Water Mark: 1.0 ft
Flow Direction: South

Stream Erosion
✔ None ___ Moderate ___ Heavy

Artificial, Modified or Channelized
___ Yes ✔ No

Dam Present ___ Yes ✔ No

Sinuosity ✔ Low ___ Medium ✔ High

Gradient
✔ Flat (0.5/100 ft) ✔ Moderate (2 ft/100 ft) ___ Severe (10 ft/100 ft)

FLOW CHARACTERISTICS

Water Present
___ No water, stream bed dry
___ Stream bed moist
___ Standing water
✔ Flowing water

Velocity
___ Fast ___ Moderate
✔ Slow

Proportion of Reach Represented by Stream Morphology Types
Riffle 100 % Run % Pool %

Turbidity
✔ Clear ___ Slightly turbid ___ Turbid
___ Opaque ___ Stained
___ Other_____

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)

Substrate Type	Diameter	% Composition in Sampling Reach
Bedrock		
Boulder	> 256 mm (10")	
Cobble	64-256 mm (2.5"-10")	35
Gravel	2-64 mm (0.1"-2.5")	30
Sand	0.06-2mm (gritty)	30
Silt	0.004-0.06 mm	5
Clay	< 0.004 mm (slick)	

ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)

Substrate Type	Characteristic	% Composition in Sampling Area
Detritus	sticks, wood, coarse plant materials (CPOM)	5
Muck-Mud	black, very fine organic (FPOM)	
Marl	grey, shell fragments	

WATERSHED FEATURES

Predominant Surrounding Landuse
✔ Forest ___ Commercial
___ Field/Pasture ___ Industrial
___ Agricultural ___ Residential
___ Other:

Canopy Cover
___ Partly open ___ Partly shaded
✔ Shaded ___ Open

Indicate the dominant type (Check one)
✔ Trees ___ Shrubs
___ Grasses ___ Herbaceous

Floodplain Width
✔ Wide > 30ft ___ Moderate 15-30ft
___ Narrow <16ft

Wetland Present ___ Yes ✔ No
Wetland ID

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
___ Rooted emergent ___ Rooted submergent ___ Rooted floating ___ Free floating
___ Floating algae ___ Attached algae

MACROINVERTEBRATES OR OTHER WILDLIFE OBSERVED/OTHER OBSERVATIONS AND NOTES

STREAM ID S-UU9	**STREAM NAME** Clendennin Creek
LAT 37.381405 **LONG** -80.719414	**DATE** 10/16/2015
CLIENT MVP	**PROJECT NAME** MVP
INVESTIGATORS S. Townsend, A. Hatfield	
FLOW REGIME Perennial ✔ Intermittent ___ Ephemeral ___	**WATER TYPE** TNW ___ RPW ✔ NRPW ___

CHANNEL FEATURES

Estimate Measurements
Top of Bank Width: 5 ft
Top of Bank Height:
LB 1.5 ft RB 3.0 ft
Water Depth: 2.00 in
Water Width: 3.5 ft
High Water Mark: 1.5 ft
Flow Direction: West

Stream Erosion
✔ None ___ Moderate ___ Heavy

Artificial, Modified or Channelized
✔ Yes ___ No

Dam Present ___ Yes ✔ No

Sinuosity ___ Low ✔ Medium ✔ High

Gradient
✔ Flat (0.5/100 ft) ✔ Moderate (2 ft/100 ft) ___ Severe (10 ft/100 ft)

FLOW CHARACTERISTICS

Water Present
___ No water, stream bed dry
___ Stream bed moist
___ Standing water
✔ Flowing water

Velocity
___ Fast ___ Moderate
✔ Slow

Proportion of Reach Represented by Stream Morphology Types
Riffle 100 % Run % Pool %

Turbidity
✔ Clear ___ Slightly turbid ___ Turbid
___ Opaque ___ Stained
___ Other_____

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)

Substrate Type	Diameter	% Composition in Sampling Reach
Bedrock		15
Boulder	> 256 mm (10")	5
Cobble	64-256 mm (2.5"-10")	45
Gravel	2-64 mm (0.1"-2.5")	15
Sand	0.06-2mm (gritty)	15
Silt	0.004-0.06 mm	5
Clay	< 0.004 mm (slick)	

ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)

Substrate Type	Characteristic	% Composition in Sampling Area
Detritus	sticks, wood, coarse plant materials (CPOM)	5
Muck-Mud	black, very fine organic (FPOM)	
Marl	grey, shell fragments	

WATERSHED FEATURES

Predominant Surrounding Landuse
✔ Forest ___ Commercial
___ Field/Pasture ___ Industrial
___ Agricultural ___ Residential
___ Other:

Canopy Cover
___ Partly open ✔ Partly shaded
___ Shaded ___ Open

Indicate the dominant type (Check one)
✔ Trees ___ Shrubs
___ Grasses ___ Herbaceous

Floodplain Width
___ Wide > 30ft ___ Moderate 15-30ft
✔ Narrow <16ft

Wetland Present ___ Yes ✔ No
Wetland ID

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
___ Rooted emergent ___ Rooted submergent ___ Rooted floating ___ Free floating
___ Floating algae ___ Attached algae

MACROINVERTEBRATES OR OTHER WILDLIFE OBSERVED/OTHER OBSERVATIONS AND NOTES	

STREAM ID S-HH16	**STREAM NAME** UNT to Clendennin Creek
LAT 37.376291 **LONG** -80.725779	**DATE** 10/16/2015
CLIENT MVP	**PROJECT NAME** MVP
INVESTIGATORS S Ryan, A Larson, M Whitten	
FLOW REGIME Perennial ✔ Intermittent ___ Ephemeral ___	**WATER TYPE** TNW ___ RPW ✔ NRPW ___

CHANNEL FEATURES

Estimate Measurements
Top of Bank Width: 5 ft
Top of Bank Height:
LB 2.0 ft RB 2.0 ft
Water Depth: 2.00 in
Water Width: 1.0 ft
High Water Mark: 4.0 in
Flow Direction: Southeast

Stream Erosion
✔ None ___ Moderate ___ Heavy

Artificial, Modified or Channelized
___ Yes ✔ No

Dam Present ___ Yes ✔ No

Sinuosity ✔ Low ___ Medium ✔ High

Gradient
___ Flat (0.5/100 ft) ___ Moderate (2 ft/100 ft) ✔ Severe (10 ft/100 ft)

FLOW CHARACTERISTICS

Water Present
___ No water, stream bed dry
___ Stream bed moist
___ Standing water
✔ Flowing water

Velocity
___ Fast ___ Moderate
✔ Slow

Proportion of Reach Represented by Stream Morphology Types
Riffle % Run 40 %
Pool 60 %

Turbidity
✔ Clear ___ Slightly turbid ___ Turbid
___ Opaque ___ Stained
___ Other_____

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)

Substrate Type	Diameter	% Composition in Sampling Reach
Bedrock		
Boulder	> 256 mm (10")	60
Cobble	64-256 mm (2.5"-10")	30
Gravel	2-64 mm (0.1"-2.5")	
Sand	0.06-2mm (gritty)	10
Silt	0.004-0.06 mm	
Clay	< 0.004 mm (slick)	

ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)

Substrate Type	Characteristic	% Composition in Sampling Area
Detritus	sticks, wood, coarse plant materials (CPOM)	40
Muck-Mud	black, very fine organic (FPOM)	
Marl	grey, shell fragments	

WATERSHED FEATURES

Predominant Surrounding Landuse
✔ Forest ___ Commercial
___ Field/Pasture ___ Industrial
___ Agricultural ___ Residential
___ Other:

Canopy Cover
✔ Partly open ___ Partly shaded
___ Shaded ___ Open

Indicate the dominant type (Check one)
✔ Trees ___ Shrubs
___ Grasses ___ Herbaceous

Floodplain Width
___ Wide > 30ft ✔ Moderate 15-30ft
___ Narrow <16ft

Wetland Present ___ Yes ✔ No
Wetland ID

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
___ Rooted emergent ___ Rooted submergent ___ Rooted floating ___ Free floating
___ Floating algae ___ Attached algae

MACROINVERTEBRATES OR OTHER WILDLIFE OBSERVED/OTHER OBSERVATIONS AND NOTES

Stream goes subsurface occassionally

STREAM ID S-HH15	**STREAM NAME** UNT to Clendennin Creek
LAT 37.370798 **LONG** -80.737186	**DATE** 10/16/2015
CLIENT MVP	**PROJECT NAME** MVP
INVESTIGATORS S Ryan, A Larson, M Whitten	
FLOW REGIME Perennial ✔ Intermittent ___ Ephemeral ___	**WATER TYPE** TNW ___ RPW ✔ NRPW ___

CHANNEL FEATURES

Estimate Measurements
Top of Bank Width: 5 ft
Top of Bank Height:
LB 1.5 ft RB 1.5 ft
Water Depth: 1.00 in
Water Width: 2.0 ft
High Water Mark: 4.0 in
Flow Direction: South

Stream Erosion
✔ None ___ Moderate ___ Heavy

Artificial, Modified or Channelized
___ Yes ✔ No

Dam Present ___ Yes ✔ No

Sinuosity ___ Low ✔ Medium ✔ High

Gradient
___ Flat (0.5/100 ft) ✔ Moderate (2 ft/100 ft) ___ Severe (10 ft/100 ft)

FLOW CHARACTERISTICS

Water Present
___ No water, stream bed dry
___ Stream bed moist
___ Standing water
✔ Flowing water

Velocity
___ Fast ✔ Moderate
___ Slow

Proportion of Reach Represented by Stream Morphology Types
Riffle 70 % Run % Pool 30 %

Turbidity
✔ Clear ___ Slightly turbid ___ Turbid
___ Opaque ___ Stained
___ Other_____

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)

Substrate Type	Diameter	% Composition in Sampling Reach
Bedrock		
Boulder	> 256 mm (10")	
Cobble	64-256 mm (2.5"-10")	30
Gravel	2-64 mm (0.1"-2.5")	10
Sand	0.06-2mm (gritty)	40
Silt	0.004-0.06 mm	20
Clay	< 0.004 mm (slick)	

ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)

Substrate Type	Characteristic	% Composition in Sampling Area
Detritus	sticks, wood, coarse plant materials (CPOM)	75
Muck-Mud	black, very fine organic (FPOM)	
Marl	grey, shell fragments	

WATERSHED FEATURES

Predominant Surrounding Landuse
✔ Forest ___ Commercial
___ Field/Pasture ___ Industrial
___ Agricultural ___ Residential
___ Other:

Canopy Cover
___ Partly open ___ Partly shaded
✔ Shaded ___ Open

Indicate the dominant type (Check one)
✔ Trees ___ Shrubs
___ Grasses ___ Herbaceous

Floodplain Width
___ Wide > 30ft ___ Moderate 15-30ft
✔ Narrow <16ft

Wetland Present ✔ Yes ___ No
Wetland ID W-HH14

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
___ Rooted emergent ___ Rooted submergent ___ Rooted floating ___ Free floating
___ Floating algae ___ Attached algae

MACROINVERTEBRATES OR OTHER WILDLIFE OBSERVED/OTHER OBSERVATIONS AND NOTES

Stream enters survey area and crosses AR via culvert and flows south out of survey area. W-HH14 drains into stream north of AR.

STREAM ID S-HH14	**STREAM NAME** UNT to Clendennin Creek
LAT 37.370790 **LONG** -80.738127	**DATE** 10/16/2015
CLIENT MVP	**PROJECT NAME** MVP
INVESTIGATORS S Ryan, A Larson, M Whitten	
FLOW REGIME Perennial ___ Intermittent___ Ephemeral ✔	**WATER TYPE** TNW ___ RPW ___ NRPW ✔

CHANNEL FEATURES

Estimate Measurements
Top of Bank Width: 3 ft
Top of Bank Height:
LB 1.5 ft RB 1.5 ft
Water Depth: 0.00 ft
Water Width: 0.0 ft
High Water Mark: 3.0 in
Flow Direction: Southwest

Stream Erosion
✔ None ___ Moderate ___ Heavy

Artificial, Modified or Channelized
___ Yes ✔ No

Dam Present ___ Yes ✔ No

Sinuosity ___ Low ✔ Medium ✔ High

Gradient
___ Flat (0.5/100 ft) ✔ Moderate (2 ft/100 ft) ___ Severe (10 ft/100 ft)

FLOW CHARACTERISTICS

Water Present
___ No water, stream bed dry
✔ Stream bed moist
___ Standing water
___ Flowing water

Velocity
___ Fast ___ Moderate
___ Slow

Proportion of Reach Represented by Stream Morphology Types
Riffle % Run %
Pool %

Turbidity
___ Clear ___ Slightly turbid ___ Turbid
___ Opaque ___ Stained
___ Other_____

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)

Substrate Type	Diameter	% Composition in Sampling Reach
Bedrock		
Boulder	> 256 mm (10")	
Cobble	64-256 mm (2.5"-10")	
Gravel	2-64 mm (0.1"-2.5")	10
Sand	0.06-2mm (gritty)	10
Silt	0.004-0.06 mm	80
Clay	< 0.004 mm (slick)	

ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)

Substrate Type	Characteristic	% Composition in Sampling Area
Detritus	sticks, wood, coarse plant materials (CPOM)	90
Muck-Mud	black, very fine organic (FPOM)	
Marl	grey, shell fragments	

WATERSHED FEATURES

Predominant Surrounding Landuse
✔ Forest ___ Commercial
___ Field/Pasture ___ Industrial
___ Agricultural ___ Residential
___ Other:

Canopy Cover
___ Partly open ___ Partly shaded
✔ Shaded ___ Open

Indicate the dominant type (Check one)
✔ Trees ___ Shrubs
___ Grasses ___ Herbaceous

Floodplain Width
___ Wide > 30ft ___ Moderate 15-30ft
✔ Narrow <16ft

Wetland Present ___ Yes ✔ No
Wetland ID

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
___ Rooted emergent ___ Rooted submergent ___ Rooted floating ___ Free floating
___ Floating algae ___ Attached algae

MACROINVERTEBRATES OR OTHER WILDLIFE OBSERVED/OTHER OBSERVATIONS AND NOTES

Stream begins in survey area then parallels AR before crossing AR via culvert then exits survey area flowing SW.

STREAM ID S-HH12	**STREAM NAME** UNT to Clendennin Creek
LAT 37.366134 **LONG** -80.746301	**DATE** 10/16/2015
CLIENT MVP	**PROJECT NAME** MVP
INVESTIGATORS S Ryan, A Larson, M Whitten	
FLOW REGIME Perennial ___ Intermittent___ Ephemeral ✔	**WATER TYPE** TNW ___ RPW ___ NRPW ✔

CHANNEL FEATURES

Estimate Measurements
Top of Bank Width: 3 ft
Top of Bank Height:
LB 1.0 ft RB 1.0 ft
Water Depth: 0.00 ft
Water Width: 0.0 ft
High Water Mark: 3.0 in
Flow Direction: South

Stream Erosion
✔ None ___ Moderate ___ Heavy

Artificial, Modified or Channelized
___ Yes ✔ No

Dam Present ___ Yes ✔ No

Sinuosity ___ Low ✔ Medium ✔ High

Gradient
___ Flat (0.5/100 ft) ✔ Moderate (2 ft/100 ft) ___ Severe (10 ft/100 ft)

FLOW CHARACTERISTICS

Water Present
___ No water, stream bed dry
✔ Stream bed moist
___ Standing water
___ Flowing water

Velocity
___ Fast ___ Moderate
___ Slow

Proportion of Reach Represented by Stream Morphology Types
Riffle % Run %
Pool %

Turbidity
___ Clear ___ Slightly turbid ___ Turbid
___ Opaque ___ Stained
___ Other_____

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)

Substrate Type	Diameter	% Composition in Sampling Reach
Bedrock		
Boulder	> 256 mm (10")	
Cobble	64-256 mm (2.5"-10")	10
Gravel	2-64 mm (0.1"-2.5")	20
Sand	0.06-2mm (gritty)	35
Silt	0.004-0.06 mm	35
Clay	< 0.004 mm (slick)	

ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)

Substrate Type	Characteristic	% Composition in Sampling Area
Detritus	sticks, wood, coarse plant materials (CPOM)	100
Muck-Mud	black, very fine organic (FPOM)	
Marl	grey, shell fragments	

WATERSHED FEATURES

Predominant Surrounding Landuse
✔ Forest ___ Commercial
___ Field/Pasture ___ Industrial
___ Agricultural ___ Residential
___ Other:

Canopy Cover
___ Partly open ✔ Partly shaded
___ Shaded ___ Open

Indicate the dominant type (Check one)
✔ Trees ___ Shrubs
___ Grasses ___ Herbaceous

Floodplain Width
___ Wide > 30ft ___ Moderate 15-30ft
✔ Narrow <16ft

Wetland Present ___ Yes ✔ No
Wetland ID

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
___ Rooted emergent ___ Rooted submergent ___ Rooted floating ___ Free floating
___ Floating algae ___ Attached algae

MACROINVERTEBRATES OR OTHER WILDLIFE OBSERVED/OTHER OBSERVATIONS AND NOTES

Crosses AR via culvert then exits survey area to the S. Marginal bed/bank characteristics within majority of survey area, with better defined bed/bank near southern survey boundary and outside survey area to south.

STREAM ID S-HH11	**STREAM NAME** UNT to Clendennin Creek
LAT 37.366087 **LONG** -80.747473	**DATE** 10/16/2015
CLIENT MVP	**PROJECT NAME** MVP
INVESTIGATORS S Ryan, A Larson, M Whitten	
FLOW REGIME Perennial ___ Intermittent___ Ephemeral ✔	**WATER TYPE** TNW ___ RPW ___ NRPW ✔

CHANNEL FEATURES

Estimate Measurements
Top of Bank Width: 4 ft
Top of Bank Height:
LB 1.5 ft RB 1.5 ft
Water Depth: 0.00 ft
Water Width: 0.0 ft
High Water Mark: 3.0 in
Flow Direction: Southeast

Stream Erosion
✔ None ___ Moderate ___ Heavy

Artificial, Modified or Channelized
___ Yes ✔ No

Dam Present ___ Yes ✔ No

Sinuosity ___ Low ✔ Medium ✔ High

Gradient
___ Flat (0.5/100 ft) ✔ Moderate (2 ft/100 ft) ___ Severe (10 ft/100 ft)

FLOW CHARACTERISTICS

Water Present
___ No water, stream bed dry
✔ Stream bed moist
___ Standing water
___ Flowing water

Velocity
___ Fast ___ Moderate
___ Slow

Proportion of Reach Represented by Stream Morphology Types
Riffle % Run %
Pool %

Turbidity
___ Clear ___ Slightly turbid ___ Turbid
___ Opaque ___ Stained
___ Other_____

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)

Substrate Type	Diameter	% Composition in Sampling Reach
Bedrock		
Boulder	> 256 mm (10")	
Cobble	64-256 mm (2.5"-10")	20
Gravel	2-64 mm (0.1"-2.5")	20
Sand	0.06-2mm (gritty)	35
Silt	0.004-0.06 mm	25
Clay	< 0.004 mm (slick)	

ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)

Substrate Type	Characteristic	% Composition in Sampling Area
Detritus	sticks, wood, coarse plant materials (CPOM)	80
Muck-Mud	black, very fine organic (FPOM)	
Marl	grey, shell fragments	

WATERSHED FEATURES

Predominant Surrounding Landuse
✔ Forest ___ Commercial
___ Field/Pasture ___ Industrial
___ Agricultural ___ Residential
___ Other:

Canopy Cover
___ Partly open ✔ Partly shaded
___ Shaded ___ Open

Indicate the dominant type (Check one)
✔ Trees ___ Shrubs
___ Grasses ___ Herbaceous

Floodplain Width
___ Wide > 30ft ___ Moderate 15-30ft
✔ Narrow <16ft

Wetland Present ___ Yes ✔ No
Wetland ID

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
___ Rooted emergent ___ Rooted submergent ___ Rooted floating ___ Free floating
___ Floating algae ___ Attached algae

MACROINVERTEBRATES OR OTHER WILDLIFE OBSERVED/OTHER OBSERVATIONS AND NOTES

Crosses AR via culvert then exits survey area to the SE.

STREAM ID S-SS2	**STREAM NAME** UNT to Clendennin Creek
LAT 37.365645 **LONG** -80.749167	**DATE** 09/11/2015
CLIENT MVP	**PROJECT NAME** MVP
INVESTIGATORS L. Canty, E. Foster, A. Carrano	
FLOW REGIME Perennial ___ Intermittent ✔ Ephemeral ___	**WATER TYPE** TNW ___ RPW ✔ NRPW ___

CHANNEL FEATURES

Estimate Measurements
Top of Bank Width: 10 ft
Top of Bank Height:
LB 20.0 in RB 10.0 in
Water Depth: 0.00 in
Water Width: 0.0 ft
High Water Mark: 4.0 in
Flow Direction: South

Stream Erosion
___ None ✔ Moderate ___ Heavy

Artificial, Modified or Channelized
___ Yes ✔ No

Dam Present ___ Yes ✔ No

Sinuosity ✔ Low ___ Medium ✔ High

Gradient
___ Flat (0.5/100 ft) ✔ Moderate (2 ft/100 ft) ___ Severe (10 ft/100 ft)

FLOW CHARACTERISTICS

Water Present
✔ No water, stream bed dry
___ Stream bed moist
___ Standing water
___ Flowing water

Velocity
___ Fast ___ Moderate
___ Slow

Proportion of Reach Represented by Stream Morphology Types
Riffle % Run %
Pool %

Turbidity
___ Clear ___ Slightly turbid ___ Turbid
___ Opaque ___ Stained
___ Other_____

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)

Substrate Type	Diameter	% Composition in Sampling Reach
Bedrock		
Boulder	> 256 mm (10")	25
Cobble	64-256 mm (2.5"-10")	25
Gravel	2-64 mm (0.1"-2.5")	30
Sand	0.06-2mm (gritty)	
Silt	0.004-0.06 mm	10
Clay	< 0.004 mm (slick)	10

ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)

Substrate Type	Characteristic	% Composition in Sampling Area
Detritus	sticks, wood, coarse plant materials (CPOM)	15
Muck-Mud	black, very fine organic (FPOM)	
Marl	grey, shell fragments	

WATERSHED FEATURES

Predominant Surrounding Landuse
✔ Forest ___ Commercial
___ Field/Pasture ___ Industrial
___ Agricultural ___ Residential
___ Other:

Canopy Cover
✔ Partly open ___ Partly shaded
___ Shaded ___ Open

Indicate the dominant type (Check one)
✔ Trees ___ Shrubs
___ Grasses ___ Herbaceous

Floodplain Width
___ Wide > 30ft ___ Moderate 15-30ft
✔ Narrow <16ft

Wetland Present ___ Yes ✔ No
Wetland ID

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
___ Rooted emergent ___ Rooted submergent ___ Rooted floating ___ Free floating
___ Floating algae ___ Attached algae

MACROINVERTEBRATES OR OTHER WILDLIFE OBSERVED/OTHER OBSERVATIONS AND NOTES

STREAM ID S-PP22	**STREAM NAME** UNT to Craig Creek
LAT 37.321203 **LONG** -80.412889	**DATE** 10/17/2015
CLIENT MVP	**PROJECT NAME** MVP
INVESTIGATORS D. Hadersbeck, T. Woods, D. McCollough	
FLOW REGIME Perennial ___ Intermittent ✔ Ephemeral ___	**WATER TYPE** TNW ___ RPW ✔ NRPW ___

CHANNEL FEATURES

Estimate Measurements
Top of Bank Width: 2.5 ft
Top of Bank Height:
LB 0.5 ft RB 0.5 ft
Water Depth: 1.00 in
Water Width: 1.0 ft
High Water Mark: 6.0 in
Flow Direction: South

Stream Erosion
___ None ✔ Moderate ___ Heavy

Artificial, Modified or Channelized
___ Yes ✔ No

Dam Present ___ Yes ✔ No

Sinuosity ✔ Low ___ Medium ✔ High

Gradient
___ Flat (0.5/100 ft) ___ Moderate (2 ft/100 ft) ✔ Severe (10 ft/100 ft)

FLOW CHARACTERISTICS

Water Present
___ No water, stream bed dry
___ Stream bed moist
___ Standing water
✔ Flowing water

Velocity
___ Fast ___ Moderate
✔ Slow

Proportion of Reach Represented by Stream Morphology Types
Riffle 10 % Run 90 %
Pool %

Turbidity
✔ Clear ___ Slightly turbid ___ Turbid
___ Opaque ___ Stained
___ Other_____

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)

Substrate Type	Diameter	% Composition in Sampling Reach
Bedrock		
Boulder	> 256 mm (10")	10
Cobble	64-256 mm (2.5"-10")	10
Gravel	2-64 mm (0.1"-2.5")	20
Sand	0.06-2mm (gritty)	20
Silt	0.004-0.06 mm	40
Clay	< 0.004 mm (slick)	

ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)

Substrate Type	Characteristic	% Composition in Sampling Area
Detritus	sticks, wood, coarse plant materials (CPOM)	70
Muck-Mud	black, very fine organic (FPOM)	
Marl	grey, shell fragments	

WATERSHED FEATURES

Predominant Surrounding Landuse
✔ Forest ___ Commercial
___ Field/Pasture ___ Industrial
___ Agricultural ___ Residential
___ Other:

Canopy Cover
___ Partly open ___ Partly shaded
✔ Shaded ___ Open

Indicate the dominant type (Check one)
✔ Trees ___ Shrubs
___ Grasses ___ Herbaceous

Floodplain Width
___ Wide > 30ft ✔ Moderate 15-30ft
___ Narrow <16ft

Wetland Present ___ Yes ✔ No
Wetland ID

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
___ Rooted emergent ___ Rooted submergent ___ Rooted floating ___ Free floating
___ Floating algae ___ Attached algae

MACROINVERTEBRATES OR OTHER WILDLIFE OBSERVED/OTHER OBSERVATIONS AND NOTES

Stream sources from spring or seep then returns underground at the end point

STREAM ID S-PP21	**STREAM NAME** UNT to Craig Creek
LAT 37.317297 **LONG** -80.409219	**DATE** 10/17/2015
CLIENT MVP	**PROJECT NAME** MVP
INVESTIGATORS D. Hadersbeck, T. Woods, D. McCollough	
FLOW REGIME Perennial ___ Intermittent___ Ephemeral ✔	**WATER TYPE** TNW ___ RPW ___ NRPW ✔

CHANNEL FEATURES

Estimate Measurements
Top of Bank Width: 4 ft
Top of Bank Height:
LB 0.5 ft RB 0.5 ft
Water Depth: 3.00 in
Water Width: 2.5 ft
High Water Mark: 10.0 in
Flow Direction: Southwest

Stream Erosion
___None ✔ Moderate ___Heavy

Artificial, Modified or Channelized
___ Yes ✔ No

Dam Present ___Yes ✔ No

Sinuosity ___ Low ✔ Medium ✔ High

Gradient
___ Flat (0.5/100 ft) ✔ Moderate (2 ft/100 ft) ___Severe (10 ft/100 ft)

FLOW CHARACTERISTICS

Water Present
___ No water, stream bed dry
___ Stream bed moist
___ Standing water
✔ Flowing water

Velocity
___ Fast ___ Moderate
✔ Slow

Proportion of Reach Represented by Stream Morphology Types
Riffle 10 % Run 70 %
Pool 20 %

Turbidity
✔ Clear ___Slightly turbid ___Turbid
___ Opaque ___Stained
___Other_____

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)

Substrate Type	Diameter	% Composition in Sampling Reach
Bedrock		
Boulder	> 256 mm (10")	10
Cobble	64-256 mm (2.5"-10")	20
Gravel	2-64 mm (0.1"-2.5")	30
Sand	0.06-2mm (gritty)	20
Silt	0.004-0.06 mm	20
Clay	< 0.004 mm (slick)	

ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)

Substrate Type	Characteristic	% Composition in Sampling Area
Detritus	sticks, wood, coarse plant materials (CPOM)	70
Muck-Mud	black, very fine organic (FPOM)	
Marl	grey, shell fragments	

WATERSHED FEATURES

Predominant Surrounding Landuse
✔ Forest ___ Commercial
___ Field/Pasture ___Industrial
___ Agricultural ___ Residential
___ Other:

Canopy Cover
✔ Partly open ___Partly shaded
___ Shaded ___ Open

Indicate the dominant type (Check one)
✔ Trees ___ Shrubs
___ Grasses ___Herbaceous

Floodplain Width
___ Wide > 30ft ✔ Moderate 15-30ft
___ Narrow <16ft

Wetland Present ___Yes ✔ No
Wetland ID

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
___ Rooted emergent ___Rooted submergent ___Rooted floating ___Free floating
___ Floating algae ___Attached algae

MACROINVERTEBRATES OR OTHER WILDLIFE OBSERVED/OTHER OBSERVATIONS AND NOTES

STREAM ID S-PP20	**STREAM NAME** UNT to Craig Creek
LAT 37.316550 **LONG** -80.408634	**DATE** 10/17/2015
CLIENT MVP	**PROJECT NAME** MVP
INVESTIGATORS D. Hadersbeck, T. Woods, D. McCollough	
FLOW REGIME Perennial ___ Intermittent ✔ Ephemeral ___	**WATER TYPE** TNW ___ RPW ✔ NRPW ___

CHANNEL FEATURES

Estimate Measurements
Top of Bank Width: 6 ft
Top of Bank Height:
LB 1.0 ft RB 1.0 ft
Water Depth: 4.00 in
Water Width: 3.0 ft
High Water Mark: 10.0 in
Flow Direction: Southwest

Stream Erosion
✔ None ___ Moderate ___ Heavy

Artificial, Modified or Channelized
___ Yes ✔ No

Dam Present ___ Yes ✔ No

Sinuosity ___ Low ✔ Medium ✔ High

Gradient
___ Flat (0.5/100 ft) ✔ Moderate (2 ft/100 ft) ___ Severe (10 ft/100 ft)

FLOW CHARACTERISTICS

Water Present
___ No water, stream bed dry
___ Stream bed moist
___ Standing water
✔ Flowing water

Velocity
___ Fast ___ Moderate
✔ Slow

Proportion of Reach Represented by Stream Morphology Types
Riffle 10 % Run 70 %
Pool 20 %

Turbidity
✔ Clear ___ Slightly turbid ___ Turbid
___ Opaque ___ Stained
___ Other_____

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)

Substrate Type	Diameter	% Composition in Sampling Reach
Bedrock		
Boulder	> 256 mm (10")	10
Cobble	64-256 mm (2.5"-10")	20
Gravel	2-64 mm (0.1"-2.5")	30
Sand	0.06-2mm (gritty)	20
Silt	0.004-0.06 mm	20
Clay	< 0.004 mm (slick)	

ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)

Substrate Type	Characteristic	% Composition in Sampling Area
Detritus	sticks, wood, coarse plant materials (CPOM)	70
Muck-Mud	black, very fine organic (FPOM)	
Marl	grey, shell fragments	

WATERSHED FEATURES

Predominant Surrounding Landuse
✔ Forest ___ Commercial
___ Field/Pasture ___ Industrial
___ Agricultural ___ Residential
___ Other:

Canopy Cover
✔ Partly open ___ Partly shaded
___ Shaded ___ Open

Indicate the dominant type (Check one)
✔ Trees ___ Shrubs
___ Grasses ___ Herbaceous

Floodplain Width
___ Wide > 30ft ✔ Moderate 15-30ft
___ Narrow <16ft

Wetland Present ___ Yes ✔ No
Wetland ID

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
___ Rooted emergent ___ Rooted submergent ___ Rooted floating ___ Free floating
___ Floating algae ___ Attached algae

MACROINVERTEBRATES OR OTHER WILDLIFE OBSERVED/OTHER OBSERVATIONS AND NOTES

STREAM ID S-HH17	**STREAM NAME** Craig Creek
LAT 37.314554 **LONG** -80.398420	**DATE** 10/17/2015
CLIENT MVP	**PROJECT NAME** MVP
INVESTIGATORS S Ryan, A Larson, M Whitten, A Carrano	
FLOW REGIME Perennial ✔ Intermittent ___ Ephemeral ___	**WATER TYPE** TNW ___ RPW ✔ NRPW ___

CHANNEL FEATURES

Estimate Measurements
Top of Bank Width: 18 ft
Top of Bank Height:
LB 4.0 ft RB 4.0 ft
Water Depth: 12.00 in
Water Width: 10.0 ft
High Water Mark: 12.0 in
Flow Direction: East

Stream Erosion
✔ None ___ Moderate ___ Heavy

Artificial, Modified or Channelized
___ Yes ✔ No

Dam Present ___ Yes ✔ No

Sinuosity ___ Low ✔ Medium ___ High

Gradient
✔ Flat (0.5/100 ft) ___ Moderate (2 ft/100 ft) ___ Severe (10 ft/100 ft)

FLOW CHARACTERISTICS

Water Present
___ No water, stream bed dry
___ Stream bed moist
___ Standing water
✔ Flowing water

Velocity
___ Fast ___ Moderate
✔ Slow

Proportion of Reach Represented by Stream Morphology Types
Riffle % Run 60 %
Pool 40 %

Turbidity
✔ Clear ___ Slightly turbid ___ Turbid
___ Opaque ___ Stained
___ Other_____

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)

Substrate Type	Diameter	% Composition in Sampling Reach
Bedrock		
Boulder	> 256 mm (10")	10
Cobble	64-256 mm (2.5"-10")	40
Gravel	2-64 mm (0.1"-2.5")	30
Sand	0.06-2mm (gritty)	
Silt	0.004-0.06 mm	20
Clay	< 0.004 mm (slick)	

ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)

Substrate Type	Characteristic	% Composition in Sampling Area
Detritus	sticks, wood, coarse plant materials (CPOM)	15
Muck-Mud	black, very fine organic (FPOM)	
Marl	grey, shell fragments	

WATERSHED FEATURES

Predominant Surrounding Landuse
✔ Forest ___ Commercial
___ Field/Pasture ___ Industrial
___ Agricultural ___ Residential
___ Other:

Canopy Cover
___ Partly open ___ Partly shaded
✔ Shaded ___ Open

Indicate the dominant type (Check one)
✔ Trees ___ Shrubs
___ Grasses ___ Herbaceous

Floodplain Width
___ Wide > 30ft ___ Moderate 15-30ft
✔ Narrow <16ft

Wetland Present ___ Yes ✔ No
Wetland ID

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
___ Rooted emergent ___ Rooted submergent ___ Rooted floating ___ Free floating
___ Floating algae ___ Attached algae

MACROINVERTEBRATES OR OTHER WILDLIFE OBSERVED/OTHER OBSERVATIONS AND NOTES

STREAM ID S-HH18	**STREAM NAME** UNT to Craig Creek
LAT 37.314001 **LONG** -80.398651	**DATE** 10/17/2015
CLIENT MVP	**PROJECT NAME** MVP
INVESTIGATORS S Ryan, A Larson, M Whitten, A Carrano	
FLOW REGIME Perennial ✔ Intermittent ___ Ephemeral ___	**WATER TYPE** TNW ___ RPW ✔ NRPW ___

CHANNEL FEATURES

Estimate Measurements
Top of Bank Width: 6 ft
Top of Bank Height:
LB 3.0 ft RB 2.0 ft
Water Depth: 2.00 in
Water Width: 2.0 ft
High Water Mark: 2.0 in
Flow Direction: Northeast

Stream Erosion
✔ None ___ Moderate ___ Heavy

Artificial, Modified or Channelized
___ Yes ✔ No

Dam Present ___ Yes ✔ No

Sinuosity ___ Low ✔ Medium ✔ High

Gradient
___ Flat (0.5/100 ft) ✔ Moderate (2 ft/100 ft) ___ Severe (10 ft/100 ft)

FLOW CHARACTERISTICS

Water Present
___ No water, stream bed dry
___ Stream bed moist
___ Standing water
✔ Flowing water

Velocity
___ Fast ___ Moderate
✔ Slow

Proportion of Reach Represented by Stream Morphology Types
Riffle 10 % Run 60 %
Pool 30 %

Turbidity
✔ Clear ___ Slightly turbid ___ Turbid
___ Opaque ___ Stained
___ Other_____

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)

Substrate Type	Diameter	% Composition in Sampling Reach
Bedrock		60
Boulder	> 256 mm (10")	5
Cobble	64-256 mm (2.5"-10")	20
Gravel	2-64 mm (0.1"-2.5")	15
Sand	0.06-2mm (gritty)	
Silt	0.004-0.06 mm	
Clay	< 0.004 mm (slick)	

ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)

Substrate Type	Characteristic	% Composition in Sampling Area
Detritus	sticks, wood, coarse plant materials (CPOM)	10
Muck-Mud	black, very fine organic (FPOM)	
Marl	grey, shell fragments	

WATERSHED FEATURES

Predominant Surrounding Landuse
✔ Forest ___ Commercial
___ Field/Pasture ___ Industrial
___ Agricultural ___ Residential
___ Other:

Canopy Cover
___ Partly open ___ Partly shaded
✔ Shaded ___ Open

Indicate the dominant type (Check one)
✔ Trees ___ Shrubs
___ Grasses ___ Herbaceous

Floodplain Width
___ Wide > 30ft ___ Moderate 15-30ft
✔ Narrow <16ft

Wetland Present ___ Yes ✔ No
Wetland ID

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
___ Rooted emergent ___ Rooted submergent ___ Rooted floating ___ Free floating
___ Floating algae ___ Attached algae

MACROINVERTEBRATES OR OTHER WILDLIFE OBSERVED/OTHER OBSERVATIONS AND NOTES

Stream joins S-HH17.

STREAM ID S-RR14	**STREAM NAME** UNT to Craig Creek
LAT 37.313894 **LONG** -80.402445	**DATE** 09/14/2015
CLIENT MVP	**PROJECT NAME** MVP
INVESTIGATORS J. Cook, R. Keyser, D. McCullough	
FLOW REGIME Perennial ___ Intermittent___ Ephemeral ✔	**WATER TYPE** TNW ___ RPW ___ NRPW ✔

CHANNEL FEATURES

Estimate Measurements
Top of Bank Width: 7 ft
Top of Bank Height:
LB 2.0 ft RB 18.0 in
Water Depth: 0.00 in
Water Width: 0.0 ft
High Water Mark: 3.0 in
Flow Direction: North

Stream Erosion
___None ✔ Moderate ___Heavy

Artificial, Modified or Channelized
___ Yes ✔ No

Dam Present ___Yes ✔ No

Sinuosity ✔ Low ___ Medium ✔ High

Gradient
✔ Flat (0.5/100 ft) ___Moderate (2 ft/100 ft) ___Severe (10 ft/100 ft)

FLOW CHARACTERISTICS

Water Present
✔ No water, stream bed dry
___ Stream bed moist
___ Standing water
___ Flowing water

Velocity
___ Fast ___ Moderate
___ Slow

Proportion of Reach Represented by Stream Morphology Types
Riffle % Run %
Pool %

Turbidity
___ Clear ___Slightly turbid ___Turbid
___ Opaque ___Stained
___Other_____

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)

Substrate Type	Diameter	% Composition in Sampling Reach
Bedrock		
Boulder	> 256 mm (10")	10
Cobble	64-256 mm (2.5"-10")	30
Gravel	2-64 mm (0.1"-2.5")	35
Sand	0.06-2mm (gritty)	25
Silt	0.004-0.06 mm	
Clay	< 0.004 mm (slick)	

ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)

Substrate Type	Characteristic	% Composition in Sampling Area
Detritus	sticks, wood, coarse plant materials (CPOM)	10
Muck-Mud	black, very fine organic (FPOM)	
Marl	grey, shell fragments	

WATERSHED FEATURES

Predominant Surrounding Landuse
✔ Forest ___ Commercial
___ Field/Pasture ___Industrial
___ Agricultural ___ Residential
___ Other:

Canopy Cover
___Partly open ___Partly shaded
✔ Shaded ___ Open

Indicate the dominant type (Check one)
✔ Trees ___ Shrubs
___ Grasses ___Herbaceous

Floodplain Width
___ Wide > 30ft ___ Moderate 15-30ft
✔ Narrow <16ft

Wetland Present ___Yes ✔ No
Wetland ID

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
___Rooted emergent ___Rooted submergent ___Rooted floating ___Free floating
___Floating algae ___Attached algae

MACROINVERTEBRATES OR OTHER WILDLIFE OBSERVED/OTHER OBSERVATIONS AND NOTES

APPENDIX D
Stream Photographs

Photograph Number: 1 **Feature Name:** S-KL24 **Flow Regime:** Ephemeral

Direction: E **Date:** 7/11/2016

Photograph Number: 2 **Feature Name:** S-SS3 **Flow Regime:** Ephemeral

Direction: SSE **Date:** 9/11/2015

Photograph Number: 3 **Feature Name:** S-PP14 **Flow Regime:** Perennial

Direction: NW **Date:** 10/16/2015

Photograph Number: 4 **Feature Name:** S-PP15 **Flow Regime:** Perennial

Direction: NNE **Date:** 10/16/2015

Photograph Number: 5 **Feature Name:** S-PP17 **Flow Regime:** Intermittent

Direction: SE **Date:** 10/16/2015

Photograph Number: 6 **Feature Name:** S-PP18 **Flow Regime:** Intermittent

Direction: W **Date:** 10/16/2015

Photograph Number: 7 **Feature Name:** S-PP19 **Flow Regime:** Intermittent

Direction: S **Date:** 10/16/2015

Photograph Number: 8 **Feature Name:** S-Q11 **Flow Regime:** Ephemeral

Direction: N **Date:** 6/17/2015

Photograph Number: 9 **Feature Name:** S-UU8-Braid **Flow Regime:** Perennial

Direction: SSW **Date:** 10/16/2015

Photograph Number: 10 **Feature Name:** S-UU8 **Flow Regime:** Perennial

Direction: N **Date:** 10/16/2015

Photograph Number: 11 **Feature Name:** S-UU9 **Flow Regime:** Perennial

Direction: SSW **Date:** 10/16/2015

Photograph Number: 12 **Feature Name:** S-HH16 **Flow Regime:** Perennial

Direction: NW **Date:** 10/16/2015

Photograph Number: 13 **Feature Name:** S-HH15 **Flow Regime:** Perennial

Direction: S **Date:** 10/16/2015

Photograph Number: 14 **Feature Name:** S-HH14 **Flow Regime:** Ephemeral

Direction: S **Date:** 10/16/2015

Photograph Number: 15 **Feature Name:** S-HH12 **Flow Regime:** Ephemeral

Direction: N **Date:** 10/16/2015

Photograph Number: 16 **Feature Name:** S-HH11 **Flow Regime:** Ephemeral

Direction: NW **Date:** 10/16/2015

Photograph Number: 17 **Feature Name:** S-SS2 **Flow Regime:** Intermittent

Direction: SE **Date:** 9/11/2015

Photograph Number: 18 **Feature Name:** S-PP22 **Flow Regime:** Intermittent

Direction: NE **Date:** 10/17/2015

Photograph Number: 19 **Feature Name:** S-PP21 **Flow Regime:** Ephemeral

Direction: NE **Date:** 10/17/2015

Photograph Number: 20 **Feature Name:** S-PP20 **Flow Regime:** Intermittent

Direction: SSW **Date:** 10/17/2015

Photograph Number: 21 **Feature Name:** S-HH17 **Flow Regime:** Perennial

Direction: W **Date:** 10/17/2015

Photograph Number: 22 **Feature Name:** S-HH18 **Flow Regime:** Perennial

Direction: N **Date:** 10/17/2015

Photograph Number: 23 **Feature Name:** S-RR14 **Flow Regime:** Ephemeral

Direction: N **Date:** 9/14/2015

APPENDIX E
Project Field Personnel

Project Field Personnel

Name	Job Title	Degree	Years of Experience	Summary
Whitten, Mike	Environmental Scientist	B.S. Mathematics, M.S. Environmental Sciences	26	26 years performing wildlife and endangered species surveys, habitat evaluations, and ecological risk assessments; one year experience conducting stream and wetland delineations. Training includes USACE Wetland Delineation Training Program, and 40-Hour OSHA Compliance Course and annual refreshers.
Townsend, Sara	Ecologist	B.S. Watershed Science, M.S. Wildlife Ecology Conservation	20	Fifteen years conducting jurisdictional wetland delineations, USACE Wetland Delineation Training, U.S. Forest Service stream assessment protocol training.
Hadersbeck, David	Wildlife Biologist II	B.S. Wildlife Ecology	13+	Extensive experience with avian research, botanical surveys, and wetland delineations ranging across the United States.
Ryan, Stephen	Biologist IV	B.S. Wildlife & Fisheries Science	6	Seven years employed in environmental sciences with an additional four years in construction management. Responsibilities have included wetland/stream delineation and mapping, reproduction and dispersal studies of migrant waterfowl, Phase I bog turtle assessments, Phase I northern log-eared bat assessments, environmental site assessments, endangered shorebird surveys, vernal pool surveys, critical issues analysis assessments, preparation of general and individual permits for development within regulated areas (freshwater wetlands, flood hazard areas, and coastal zones), and technical review/writing.
Larson, Andy	Environmental Scientist II	B.S. Environmental Science: Freshwater Ecology	4+	Going into 5th year with the company as part time employee focusing on fisheries projects and general biological surveys. Minored in Geography: Soils Science and Chemistry, with a focus of wetland studies with B.S.
Cook, James	Environmental Scientist II	BS in Biology, M.S. Environmental Science	3+	Over three years of wetland delineation/mapping experience throughout East Coast and Alaska. Training includes a Masters degree with a focus on wetland science, membership in the Society for Wetland Science, and certification for Wetland Professional in Training.
Foster, Emily	Biologist II	B.S. Biology, M.S. Environmental Science	3+	Over three years experience conducting wetland delineations and assessments in multiple regions. Member of the Society for Wetland Scientists (SWS), and Wetland Professional in Training (WPIT) certification through the SWS.
Pulver, Kevin	Environmental Scientist II	B.S. Environmental Science/Studies/Watershed Management	2+	Two years experience conducting stream and wetland delineations. USACE Wetland Delineation Training Program certificate from Swamp School Institute.
Potrikus, Jennifer	Biologist I	B.A Biology, M.S Conservation Biology	<1	6 months in the consulting field as a field biologist focused on wetland and stream delineations. Other areas include invasive species and threatened/endangered species assessments.

PLANT SURVEY FOR THE PROPOSED AND ALTERNATIVE BLUE RIDGE PARKWAY CROSSINGS

MOUNTAIN VALLEY PIPELINE

15 August 2016

Prepared for:

National Park Service
Blue Ridge Parkway
199 Hemphill Knob Road
Asheville, NC 28803

Prepared on behalf of:

Mountain Valley PIPELINE LLC

Prepared by:

ESI
Environmental Solutions & Innovations, Inc.

4525 Este Avenue
Cincinnati, Ohio 45232
Phone: (513) 451-1777
Fax: (513) 451-3321
Syracuse, NY • Stow, OH • Indianapolis, IN • Orlando, FL • Springfield, MO • Pittsburgh, PA

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Appendices

Appendix A: Photographs

1.0 Introduction

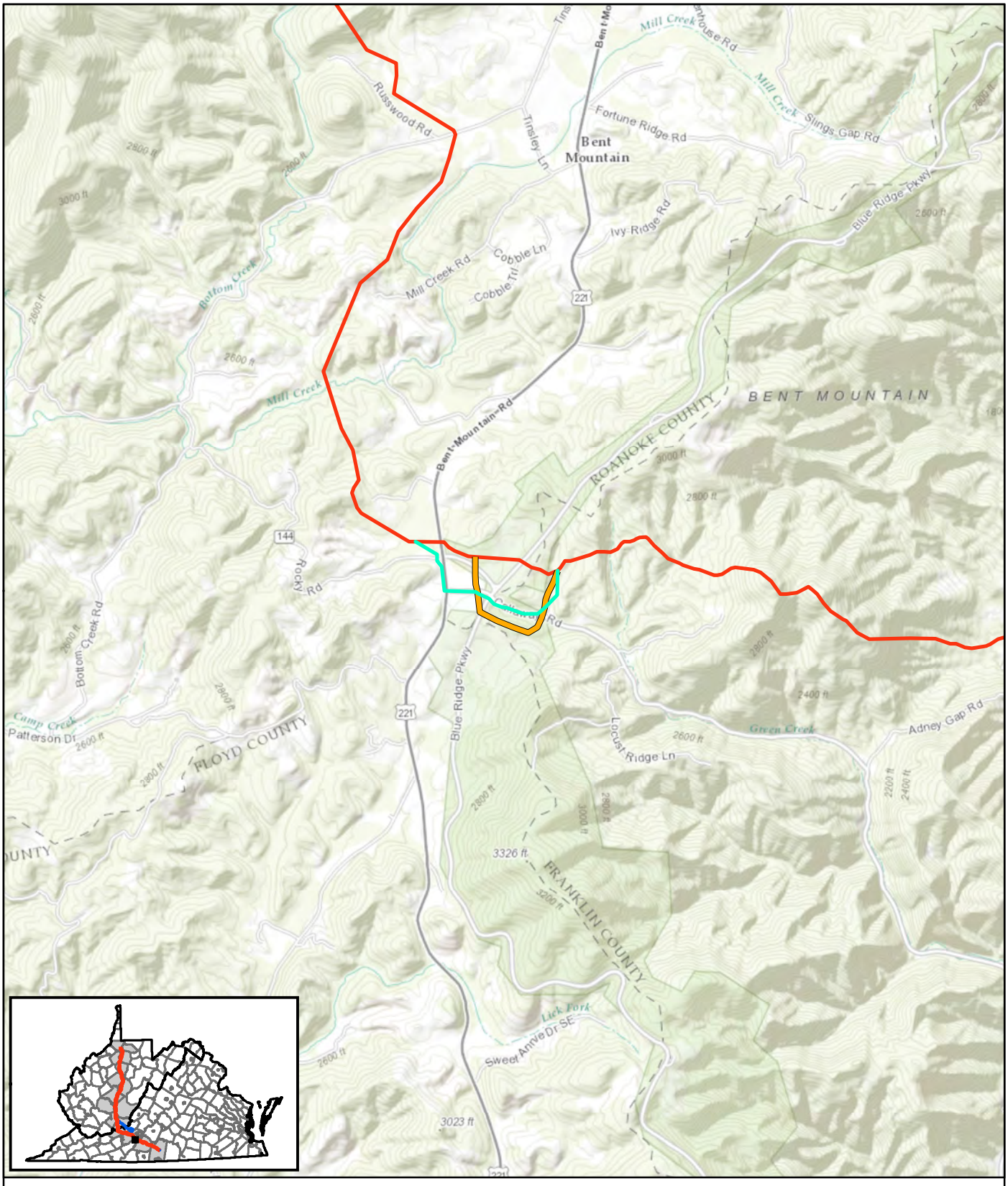
Mountain Valley Pipeline, LLC (MVP), a joint venture between EQT Midstream Partners, LP and affiliates of NextEra Energy, Inc., Con Edison Gas Midstream, LLC, WGL Holdings, Inc., Vega Energy Partners, Ltd., and RGC Midstream, LLC, is seeking a Certificate of Public Convenience and Necessity (Certificate) from the Federal Energy Regulatory Commission (FERC) pursuant to Section 7(c) of the Natural Gas Act authorizing it to construct and operate the proposed Mountain Valley Pipeline Project (Project) located in 17 counties in West Virginia and Virginia. MVP plans to construct an approximately 301-mile, 42-inch-diameter natural gas pipeline to provide timely, cost-effective access to the growing demand for natural gas for use by local distribution companies (LDCs), industrial users and power generation in the Mid-Atlantic and southeastern markets, as well as potential markets in the Appalachian region.

The proposed pipeline will extend from the existing Equitrans, L.P. transmission system and other natural gas facilities in Wetzel County, West Virginia to Transcontinental Gas Pipe Line Company, LLC's (Transco) Zone 5 compressor station 165 in Pittsylvania County, Virginia. In addition to the pipeline, the Project will include approximately 171,600 horsepower (hp) of compression at three compressor stations currently planned along the route, as well as measurement, regulation, and other ancillary facilities required for the safe and reliable operation of the pipeline. The pipeline is designed to transport up to 2.0 million dekatherms per day of natural gas.

The Project is currently proposed to cross the Blue Ridge Parkway National Park (BRP) in Roanoke and Franklin Counties, Virginia between approximate mileposts 244.0 and 244.5 (Figures 1 and 2). The survey area, as defined in the Special Use Permit (Permit #2016.076) approved on May 23, 2016, is defined as an area extending 300 feet north and south from N37° 07.477' and W80° 07.603', extending east and west to the BRP boundaries.

Two potential crossings are identified in Permit #2016.076 (MVP Proposed Alignment and National Park Service [NPS] Preferred Alignment). A third crossing (Alternative 1 Alignment) was added in a permit amendment on June 1, 2016.

This report provides details of plant surveys conducted along the MVP Proposed Alignment, NPS Preferred Alignment, and Alternative 1 Alignment.



MVP Proposed Route — NPS Preferred Alignment — Alternative 1 Alignment

N
W E
S

Figure 1. Location of Potential Blue Ridge Parkway Crossings by the Mountain Valley Pipeline Project.

Project No. 593

0.5 0 0.5 1 Kilometers

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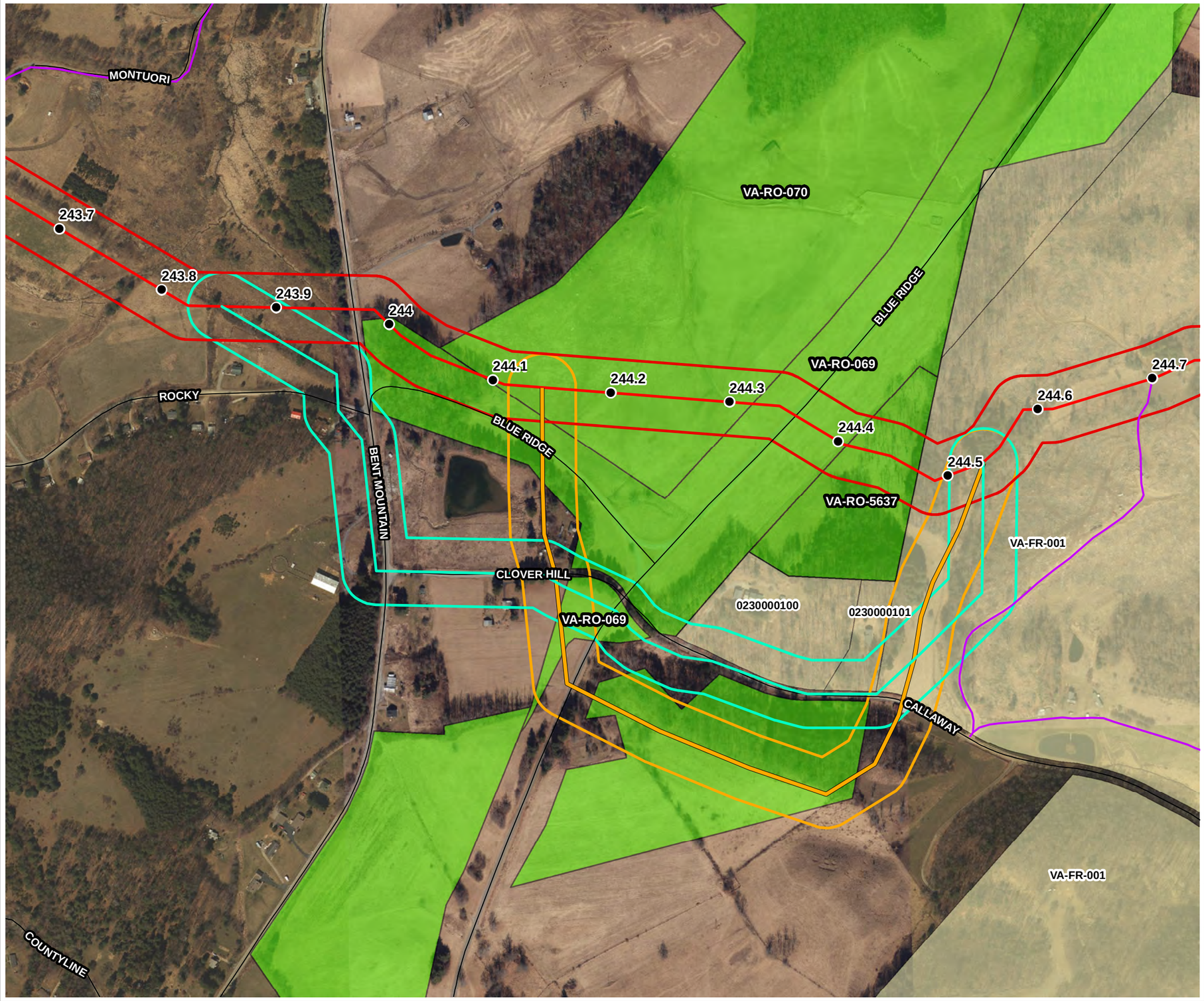
Path: G:\Current\593_EQT_MVP\MXD\Plant Survey_Rare_Plant_Srvy_Report2016\NPS_BlueRdige_PKWY\593_NPS_BlueRdige_PKWY_Fig1_20160815.mxd (mbruening) - 8/15/2016

Figure 2: Location of Surveys along the Potential Blue Ridge Parkway Crossings by the Mountain Valley Pipeline Project.



- MVP Rev 4.0.0 Milepost
- Proposed MVP Access Road
- Proposed MVP Alignment
- NPS Preferred Alignment
- Alternative 1 Alignment
- Proposed MVP Alignment Survey Buffer
- NPS Preferred Alignment Survey Buffer
- Alternative 1 Alignment Survey Buffer
- National Park Service Parcel
- Privately owned parcel

NOTE: NPS Preferred Alignment with Buffer and Alternative 1 Alignment (20160524) with buffer had been supplied by client on May 2016.

N W E S

70 0 70 140 Meters

Base Map: ESRI ArcGIS Web service - "World_Imagery" accessed - 8/15/2016

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Project No. 593

2.0 Plant Survey

Plant surveys are completed using a meander search technique across the 300-foot wide environmental survey corridor. In areas where habitat conditions are highly suitable for protected species, more intensive searches are employed. Any protected plants are noted and GPS coordinates recorded. Additionally, habitat suitability is also noted.

Target plant species are based on a desktop assessment and Project coordination with respective federal and state agencies; however, any plant species of interest are documented if identified in the field.

3.0 Results

A plant survey was conducted by ESI scientists on BRP parcels on June 6, 2016 as well as privately-owned parcels on June 30, 2016 and July 21, 2016. Multiple plant communities were observed, including: pasture/hayfield, pasture with scattered trees, planted pines/early successional forest, young forest, scrub-shrub wetland, emergent wetland, and over-mature/old-growth forest. No threatened or endangered plant species were identified within these communities.

3.1.1 Pasture/Hayfield

This plant community was found along the majority of the MVP Proposed Alignment as well as areas along Alternative 1 Alignment. Dominant herbaceous species observed were meadow fescue (*Festuca pratensis*), orchard grass (*Dactylis glomerata*), timothy (*Phleum pratense*), and white clover (*Triflorum repans*).

3.1.2 Pasture with Scattered Trees

This plant community was found along a small portion of the MVP proposed alignment. The dominant tree observed in this area was black locust (*Robinia pseudoacacia*). Dominant herbaceous species observed were meadow fescue, orchard grass, timothy, and white clover.

3.1.3 Planted Pines/Early Successional Forest

Small areas of plant pines / early successional forest were found in the central parts of the NPS Preferred Alignment and Alternative 1 Alignment. It is primarily composed of a row of white pine (*Pinus strobus*) as well as scattered early successional trees such

as white ash (*Fraxinus americana*) and black cherry (*Prunus serotina*). The dominant shrub observed in this area was the invasive exotic multiflora rose (*Rosa multiflora*).

3.1.4 Young Forest

Young forest was observed along the central part of the NPS Preferred Alignment. The most abundant trees observed in this area were sassafras (*Sassafras albidum*), black locust, white oak (*Quercus alba*), and tulip tree (*Liriodendron tulipifera*). The dominant shrub was the invasive exotic multiflora rose. Dominant herbaceous species observed were poison ivy (*Toxicodendron radicans*), Christmas fern (*Polystichum acrostichoides*), and white snakeroot (*Ageratina altissima*).

3.1.5 Scrub-shrub Wetland

One scrub-shrub wetland was observed on the western portion of the MVP Proposed Alignment. The dominant tree in this area was silky dogwood (*Cornus amomum*). Dominant herbaceous species observed included skunk cabbage (*Symplocarpus foetidus*) and orange jewelweed (*Impatiens capensis*).

3.1.6 Emergent Wetland

One emergent wetland was observed on the southeastern portion of the NPS Preferred Alignment. The dominant species observed in this area were rice-cut grass (*Leezia orzoides*), orange jewelweed, and field horsetail (*Equisetum arvense*).

3.1.7 Mature Forest

Forested habitat exhibiting characteristics of mature forest was observed on the western part of the MVP Proposed Alignment as well as the southeastern parts of the NPS Preferred Alignment and Alternative 1 Alignment (Figure 3). Many of the trees in these areas were 3 – 4 feet diameter at breast height (DBH). These areas also exhibited other characteristics of this forest type, including: no signs of past tree cutting, uneven age tree size distribution, rich herb layer, natural downed logs, and relatively low amount of invasive plant species.

Dominant trees in these forests included red oak (*Quercus rubra*), white oak, tulip tree, white pine, and red maple (*Acer rubrum*). Other trees observed were chestnut oak (*Quercus montana*), cucumber magnolia (*Magnolia acuminata*), sweet birch (*Betula lenta*), and black gum (*Nyssa sylvatica*). The most abundant shrubs were spicebush (*Lindera benzoin*), great rhododendron (*Rhododendron maximum*), flowering dogwood (*Cornus florida*), common greenbrier (*Smilax rotundifloia*), and the invasive exotic multiflora rose. Herbaceous species observed in these areas included black cohosh (*Actaea racemosa*), poison ivy, zigzag goldenrod (*Solidago flexicalus*), orange jewelweed, wild geranium (*Geranium maculatum*), wood nettle (*Laportea canadensis*), Enchanter's nightshade (*Circaea canadensis*), hooked buttercup (*Ranuculus recurvatus*), aniseroot (*Osmorhiza longistylis*), Virginia creeper (*Parthenocissus quinquefolia*), common blue violet (*Viola sororia*), tall rattlesnake root (*Nabalus altissimus*), marginal shield fern (*Dryopteris marginalis*), New York fern

(*Parathelypteris noveboracensis*), Virginia waterleaf (*Hydrophyllum virginianum*), early meadow rue (*Thalictrum dioicum*), partridgeberry (*Mitchella repens*), nodding *fescue* (*Festuca subverticillata*), Indian cucumber-root (*Medeola virginiana*), hog peanut (*Amphicarpaea bracteata*), wild yam (*Dioscorea villosa*), water hemlock (*Cicuta bulbifera*), great yellow wood-sorrel (*Oxalis grandis*), trillium (*Trillium* sp.), bloodroot (*Sanguinaria canadensis*), honewort (*Cryptotaenia canadensis*), mayapple (*Podophyllum peltatum*), and the invasive exotic garlic mustard (*Alliaria petiolata*).

The locations of the mature trees are shown on Figure 3 and the corresponding photographs are in Appendix A.

4.0 Conclusion

No rare plants were observed during field surveys along the MVP Proposed Alignment, NPS Preferred Alignment, or Alternative 1 Alignment. Most of the plant communities observed within the assessment areas were of low ecological quality with the exception of the mature forest areas and the wetlands.

Figure 3. Location of Mature Forest along the Potential Blue Ridge Parkway Crossings by the Mountain Valley Pipeline Project.

- Proposed MVP Milepost
- Location of Large Mature Trees
- Proposed MVP Access Road
- Proposed MVP Alignment
- NPS Preferred Alignment
- Alternative 1 Alignment
- NPS Blue Ridge Parkway Mature Forest
- Proposed MVP Alignment Survey Buffer
- NPS Preferred Alignment Survey Buffer
- Alternative 1 Alignment Survey Buffer

NOTE: NPS Preferred Alignment with Buffer and Alternative 1 Alignment (20160524) with buffer had been supplied by client on May 2016.

N
W E
S

50 0 50 100 Meters

Base Map: ESRI ArcGIS Web service - "World_Imagery" accessed - 8/15/2016

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Project No. 593

APPENDIX A
PHOTOGRAPHS

OGT-1
White Oak (*Quercus alba*)

OGT-2
Tulip Tree (*Liriodendron tulipifera*)

OGT-3
Red Oak (*Quercus rubra*)

OGT-4
Red Oak *(Quercus rubra)*

OGT-5
Chestnut Oak (*Quercus montana*)

OGT-6
Cucumber Magnolia (*Magnolia acuminata*)

Mountain Valley Pipeline Project

Docket No. CP16-10-000

Attachment DR4 General 7

February 2017

Attachment DR4 General 7

Survey Status for Cathodic Protection Ground Beds

Area (sq ft)	Name	County	State	Impact	Cultural Survey Status	Cultural Survey Results	Wetland Survey Status	Wetland Survey Results	Eagle Survey Status	Eagle Survey Results	Loggerhead Shrike Survey Status	Loggerhead Shrike Survey Results	Plant Survey Status	Plant Survey Results	Portal Survey Status	Portal Survey Results
16,875	MVP-CPGB-12	Webster	West Virginia	Permanent	Complete	No Features Found	Complete	S-EF40, S-B30, W-EF29, W-B28	NA	NA	NA	NA	NA	NA	Complete	No Features Found
16,767	MVP-CPGB-06	Lewis	West Virginia	Permanent	Complete	No Features Found	Complete	S-I63	NA	NA	NA	NA	NA	NA	Complete	No Features Found
671	MVP-CPGB-19	Monroe	West Virginia	Permanent	Complete	No Features Found	Complete	No Features Found	Incomplete	N/A	NA	NA	NA	NA	Complete	No Features Found
524	MVP-CPGB-19	Monroe	West Virginia	Temporary	Complete	No Features Found	Complete	No Features Found	Incomplete	N/A	NA	NA	NA	NA	Complete	No Features Found
14,610	MVP-CPGB-02	Harrison	West Virginia	Temporary	Complete	No Features Found	Complete	No Features Found	NA	NA	NA	NA	NA	NA	Complete	No Features Found
17,183	MVP-CPGB-04	Harrison	West Virginia	Permanent	Complete	46DO111, 46DO109	Complete	W-A23	NA	NA	NA	NA	NA	NA	Complete	No Features Found
16,915	MVP-CPGB-05	Lewis	West Virginia	Temporary	Complete	No Features Found	Complete	W-B46, W-ST14, W-ST15	NA	NA	NA	NA	NA	NA	Complete	No Features Found
9,889	MVP-CPGB-06	Lewis	West Virginia	Temporary	Complete	No Features Found	Complete	No Features Found	NA	NA	NA	NA	NA	NA	Complete	No Features Found
14,313	MVP-CPGB-07	Lewis	West Virginia	Permanent	Complete	No Features Found	Complete	W-ST16	NA	NA	NA	NA	NA	NA	Complete	No Features Found
14,832	MVP-CPGB-08	Braxton	West Virginia	Temporary	Complete	No Features Found	Complete	No Features Found	NA	NA	NA	NA	NA	NA	Complete	No Features Found
14,217	MVP-CPGB-11	Webster	West Virginia	Temporary	Incomplete	N/A	Incomplete	N/A	NA	NA	NA	NA	NA	NA	Incomplete	N/A
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11,653	MVP-CPGB-20	Monroe	West Virginia	Temporary	Complete	No Features Found	Incomplete	N/A	NA	NA	NA	NA	NA	NA	Complete	No Features Found
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14,757	MVP-CPGB-30	Pittsylvania	Virginia	Permanent	Complete	No Features Found	Complete	No Features Found	Complete	No Features Found	NA	NA	NA	NA	Complete	No Features Found
13,776	MVP-CPGB-27	Franklin	Virginia	Permanent	Complete	No Features Found	Complete	No Features Found	Complete	No Features Found	NA	NA	NA	NA	Complete	No Features Found
13,392	MVP-CPGB-27	Franklin	Virginia	Temporary	Complete	No Features Found	Complete	No Features Found	Complete	No Features Found	NA	NA	NA	NA	Complete	No Features Found
15,675	MVP-CPGB-16	Greenbrier	West Virginia	Permanent	Complete	No Features Found	Complete	S-EF39, W-EF28	NA	NA	NA	NA	Complete	No Features Found	Complete	No Features Found
2,257	MVP-CPGB-16	Greenbrier	West Virginia	Temporary	Complete	No Features Found	Complete	No Features Found	NA	NA	NA	NA	Complete	No Features Found	Complete	No Features Found
4,110	MVP-CPGB-16	Greenbrier	West Virginia	Temporary	Complete	No Features Found	Complete	No Features Found	NA	NA	NA	NA	Complete	No Features Found	Complete	No Features Found
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625	MVP-CPGB-09	Webster	West Virginia	Permanent	Complete	No Features Found	Complete	No Features Found	NA	NA	NA	NA	NA	NA	Complete	No Features Found
16,834	MVP-CPGB-08	Braxton	West Virginia	Permanent	Complete	No Features Found	Complete	No Features Found	NA	NA	NA	NA	NA	NA	Complete	No Features Found

Attachment DR4 General 7

Survey Status for Cathodic Protection Ground Beds

Area (sq ft)	Name	County	State	Impact	Cultural Survey Status	Cultural Survey Results	Wetland Survey Status	Wetland Survey Results	Eagle Survey Status	Eagle Survey Results	Loggerhead Shrike Survey Status	Loggerhead Shrike Survey Results	Plant Survey Status	Plant Survey Results	Portal Survey Status	Portal Survey Results
15,143	MVP-CPGB-28	Franklin	Virginia	Permanent	Complete	No Features Found	Complete	No Features Found	Complete	No Features Found	NA	NA	NA	NA	Complete	No Features Found
17,586	MVP-CPGB-03	Harrison	West Virginia	Temporary	Complete	No Features Found	Complete	W-B2A	NA	NA	NA	NA	NA	NA	Complete	No Features Found
14,012	MVP-CPGB-12	Webster	West Virginia	Temporary	Complete	No Features Found	Complete	S-EF40, W-EF29, W-B28	NA	NA	NA	NA	NA	NA	Complete	No Features Found
9,401	MVP-CPGB-13	Nicholas	West Virginia	Permanent	Complete	No Features Found	Complete	No Features Found	NA	NA	NA	NA	NA	NA	Complete	No Features Found
18,132	MVP-CPGB-01A	Wetzel	West Virginia	Temporary	Complete	46WZ132	Complete	No Features Found	NA	NA	NA	NA	NA	NA	Complete	No Features Found
16,868	MVP-CPGB-05	Lewis	West Virginia	Permanent	Complete	No Features Found	Complete	W-B46, W-ST15	NA	NA	NA	NA	NA	NA	Complete	No Features Found
17,271	MVP-CPGB-04	Harrison	West Virginia	Temporary	Complete	46DO109	Complete	W-A23	NA	NA	NA	NA	NA	NA	Complete	No Features Found
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16,346	MVP-CPGB-02	Harrison	West Virginia	Permanent	Complete	No Features Found	Complete	No Features Found	NA	NA	NA	NA	NA	NA	Complete	No Features Found
625	MVP-CPGB-15	Greenbrier	West Virginia	Permanent	Complete	46GB494	Complete	No Features Found	NA	NA	NA	NA	NA	NA	Complete	No Features Found
625	MVP-CPGB-18	Summers	West Virginia	Permanent	Complete	No Features Found	Complete	No Features Found	Complete	No Features Found	NA	NA	NA	NA	Complete	No Features Found
14,608	MVP-CPGB-30	Pittsylvania	Virginia	Temporary	Complete	No Features Found	Complete	No Features Found	Complete	No Features Found	NA	NA	NA	NA	Complete	No Features Found
18,284	MVP-CPGB-29	Pittsylvania	Virginia	Permanent	Complete	No Features Found	Complete	No Features Found	Complete	No Features Found	NA	NA	Complete	No Features Found	Complete	No Features Found
12,059	MVP-CPGB-24	Montgomery	Virginia	Permanent	Complete	No Features Found	Complete	No Features Found	Complete	No Features Found	Complete	No Features Found	NA	NA	Complete	No Features Found
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19,616	MVP-CPGB-14	Nicholas	West Virginia	Permanent	Complete	No Features Found	Complete	No Features Found	NA	NA	NA	NA	NA	NA	Complete	No Features Found
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5,325	MVP-CPGB-16	Greenbrier	West Virginia	Temporary	Complete	No Features Found	Complete	No Features Found	NA	NA	NA	NA	Complete	No Features Found	Complete	No Features Found
20,086	MVP-CPGB-22	Giles	Virginia	Temporary	Complete	44GS0231	Complete	No Features Found	Complete	No Features Found	NA	NA	NA	NA	Complete	No Features Found
21,945	MVP-CPGB-22	Giles	Virginia	Permanent	Complete	44GS0231	Complete	S-NN17	Complete	No Features Found	NA	NA	NA	NA	Complete	No Features Found
6,432	MVP-CPGB-26	Franklin	Virginia	Temporary	Complete	No Features Found	Complete	No Features Found	Complete	No Features Found	NA	NA	NA	NA	Complete	No Features Found
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10,839	MVP-CPGB-23	Montgomery	Virginia	Temporary	Complete	No Features Found	Complete	No Features Found	Complete	No Features Found	Complete	No Features Found	NA	NA	Complete	No Features Found
12,362	MVP-CPGB-23	Montgomery	Virginia	Permanent	Complete	44MY0576	Complete	No Features Found	Complete	No Features Found	Complete	No Features Found	NA	NA	Complete	No Features Found
18,196	MVP-CPGB-01A	Wetzel	West Virginia	Permanent	Complete	46WZ132	Complete	No Features Found	NA	NA	NA	NA	NA	NA	Complete	No Features Found

Attachment DR4 General 7

Survey Status for Cathodic Protection Ground Beds

Area (sq ft)	Name	County	State	Impact	Cultural Survey Status	Cultural Survey Results	Wetland Survey Status	Wetland Survey Results	Eagle Survey Status	Eagle Survey Results	Loggerhead Shrike Survey Status	Loggerhead Shrike Survey Results	Plant Survey Status	Plant Survey Results	Portal Survey Status	Portal Survey Results
10,363	MVP-CPGB-25	Roanoke	Virginia	Temporary	Complete	No Features Found	Complete	No Features Found	Complete	No Features Found	NA	NA	NA	NA	Complete	No Features Found
11,282	MVP-CPGB-25	Roanoke	Virginia	Permanent	Complete	No Features Found	Complete	No Features Found	Complete	No Features Found	NA	NA	NA	NA	Complete	No Features Found

NA = Survey is not applicable to that area and/or resource per the approved survey protocol for each resource.