

**SUPPLEMENTAL CUMULATIVE IMPACT
ASSESSMENT REPORT FOR THE CLEAN
WATER ACT SECTION 404 AND RIVERS AND
HARBORS ACT SECTION 10 PERMIT
APPLICATIONS**

Mountain Valley Pipeline

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POTESTA

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SUPPLEMENTAL CUMULATIVE IMPACT ASSESSMENT REPORT FOR THE CLEAN WATER ACT SECTION 404 AND RIVERS AND HARBORS ACT SECTION 10 PERMIT APPLICATION

Mountain Valley Pipeline

1.0 INTRODUCTION

Mountain Valley Pipeline LLC (Mountain Valley) has developed the following cumulative impact evaluation of past, present, and reasonably foreseeable projects within the Hydrologic Unit Code (HUC)-12 watersheds associated with the Mountain Valley Pipeline Project (Project). To conduct this evaluation, Mountain Valley requested permitting information and other data from numerous local, state, and federal agencies, including the West Virginia (WV) Department of Environmental Protection (WVDEP); US Army Corps of Engineers (USACE) Pittsburgh, Huntington, and Norfolk Districts; WV Division of Forestry; WVDEP Division of Mining and Reclamation; WV Department of Transportation, Division of Highways (WVDOT-DOH); WV Division of Natural Resources – Office of Land and Streams (WVDNR-OLS); Virginia Department of Environmental Quality (VADEQ); Virginia Department of Transportation (VDOT); Virginia Marine Resources Commission (VMRC); Virginia Department of Forestry (VADOF); Virginia Department of Energy (VADOE); regional planning departments; county planning departments; and county floodplain coordinators.¹ Mountain Valley submitted Freedom of Information Act requests and/or contacted directly, county and regional planning agencies located in each WV and VA county crossed by the project. Additionally, the City of Salem (VA) and the City of Roanoke (VA) were also contacted regarding comprehensive plans and future development. Mountain Valley also contacted public service districts (PSDs) located within each WV and VA county crossed by the Project. Mountain Valley requested information on all projects permitted since 2018, including recently completed projects (past), projects that are under construction (present), and pending/reasonably foreseeable future projects (planned). The information was then summarized and grouped into several different project categories to identify the different activities occurring within each 12-digit HUC watershed.

Mountain Valley made formal federal or state or local agency Freedom of Information Act (FOIA) requests and/or general information requests to the agencies listed above. Data provided by the agencies included hard copies of documents, electronic copies of documents, spreadsheets, shapefiles, and/or copies obtained from in-house file reviews at agency offices. The information Mountain Valley received was reviewed to determine if it was complete. The data were also viewed in ARCGIS or Google Earth to determine if project locations were within the Project HUC-12 watersheds. Applicable data were then compiled into Excel spreadsheets according to information source. These data are presented in Appendices A-P.

¹ WVDOT-DOH and WVDNR-OLS were unable to provide the information requested by Mountain Valley due to limitations in their record-keeping systems. Additionally, Mountain Valley determined that the incomplete information received from county floodplain coordinators was unsuitable for use in this assessment. VADOF data did not include latitude and longitude and thus are not reflected in the HUC-12-based tables and narrative.

Mountain Valley analyzed and categorized the compiled data into nine project types based on authorizations, activities, and project permitting status: utility lines, residential developments, commercial/industrial developments, transportation projects, additional mining projects (beyond those identified in the commercial/industrial development category), additional oil and gas well developments (beyond those identified in the commercial/industrial development category), forestry projects, other non-construction projects with National Pollution Discharge Elimination System (NPDES) permits, and planned projects (refer to Section 2.0, “Data Source Information Summary” for additional details). The narrative language, summary tables, and mapping provided herein were developed utilizing the compiled information.

To get a more comprehensive picture of cumulative impacts at the watershed level, the information summarized in this “Supplemental Cumulative Impact Assessment Report for the Clean Water Act Section 404 and Rivers and Harbors Act Section 10 Permit Application” (Supplemental CIA) may be reviewed in conjunction with its companion analysis: the May 2022 “Cumulative Impact Assessment Report – Hydrology” (May 2022 CIA) found in Appendix Q. For each of the HUC 12 watersheds crossed by the Project, Appendix Q provides more detailed data on Project-related aquatic impacts. That document also provides supplemental information on the (1) estimated linear feet (lf) of streams; (2) estimated acres of wetlands; (3) land use and cover types; and (4) soil types in each watershed. Whereas Appendix Q evaluates the cumulative impacts of the Project on its own, this Supplemental CIA puts those impacts into the context of other past, present, and reasonably foreseeable projects in the target watersheds.

2.0 DATA SOURCE INFORMATION SUMMARY

The Project’s proposed limits of disturbance (LOD) acreage and total stream and wetland impact acreages included in this analysis were pulled from the Project’s USACE 404 Individual Permit application and other documents submitted to USACE. Note that the LOD may overstate the Project’s impact area because ground-disturbing activities will not occur in all areas of the LOD, such as many existing access roads. Use of this measure provides a modest amount of conservatism in the calculation of the Project’s cumulative impacts. Additionally, the previously mentioned companion document, the May 2022 CIA (Appendix Q), is included as an update to the January 2022 Cumulative Impact Assessment-Hydrology, which included the 2011 and 2016 land use land cover (LULC) data. The May 2022 CIA, which includes the most recently released LULC data from the 2019 National Land Cover Database (NLCD), was prepared to update and compare the 2011, 2016, and 2019 LULC. The 2019 NLCD was released in June 2021 and represents the best and most recent data available for land cover. Additionally, the 2019 NLCD provides a newer classification system and retroactively applied by the Multi-Resolution Land Characteristics Consortium to the 2011 and 2016 NLCD datasets. The analysis conducted and provided by Geosyntec on behalf of Mountain Valley, and included in the May 2022 CIA, includes the present-day classifications for the 2011 and 2016 datasets. This allows the best comparison between land cover on a year-to-year basis (2011, 2016, 2019).

The *Utility Line Project* category is limited to oil/gas pipelines, sanitary sewer lines, water lines, electric lines, communication lines, and potable water lines (based on available data) that required and have received a USACE Section 404 permit, WVDEP State 401 Water Quality Certification,

VADEQ State 401 Water Quality Certification, WVDEP Construction Stormwater NPDES permit, VADEQ Construction General VPDES permit, and/or VMRC authorizations (Appendices A-F). Please note that LOD and/or aquatic resource impacts were not available for all projects, depending on the data source and status of project.

Residential Development Projects include residential development construction (based on available data) that required and have received a USACE Section 404 permit, WVDEP State 401 Water Quality Certification, VADEQ State 401 Water Quality Certification, WVDEP Construction Stormwater NPDES permit, VADEQ Construction General VPDES permit, and/or VMRC authorizations (Appendices A-F). Please note that LOD and/or aquatic resource impacts were not available for all projects, depending on the data source and status of project.

Commercial/Industrial Projects include all commercial and or industrial projects (mining, oil and gas development, manufacturing, solar developments, etc., based on available data) that required and have received a USACE Section 404 permit, WVDEP State 401 Water Quality Certification, VADEQ State 401 Water Quality Certification, WVDEP Construction Stormwater NPDES permit, VADEQ Construction General VPDES permit, and/or VMRC authorizations (Appendices A-F). Please note that LOD and/or aquatic resource impacts were not available for all projects, depending on the data source and status of project.

Transportation Projects include WVDOT-DOH and VDOT projects (based on available data) that required and have received a USACE Section 404 permit, WVDEP State 401 Water Quality Certification, VADEQ State 401 Water Quality Certification, WVDEP Construction Stormwater NPDES permit, VADEQ Construction General VPDES permit, and/or VMRC authorizations (Appendices A-F). Please note that LOD and/or aquatic resource impacts were not available for all projects, depending on the data source and status of project.

Forestry Projects include timbering operations licensed by the WV Division of Forestry and the VA Division of Forestry (VADOF) (Appendices G-H). LOD acreage is equal to the total disturbance acreage. Please note that latitude, longitude, and acreage data were not provided by the VADOF.

Mining Projects include surface mines, underground mines, mining haul roads, preparation plants, loadouts, and mine reclamation actions previously authorized by the WVDEP Division of Mining and Reclamation, VADOE, and/or WVDEP Division of Water and Waste Management that were not included under the Commercial/Industrial category due to lack of corresponding USACE Section 404, WVDEP Section 401, VADEQ Section 401, WVDEP Construction Stormwater NPDES, and/or VADEQ Construction Stormwater VPDES authorizations (Appendices I-K). LOD acreage is equal to the available disturbance acreage.

Oil and Gas Well Development Projects include those that required and have received conventional and non-conventional well permit authorizations from the WVDEP Office of Oil and Gas and the VADOE “Gas and Oil Information Program” and that were not included under the Commercial/Industrial category due to lack of corresponding USACE Section 404, WVDEP Section 401, VADEQ Section 401, WVDEP Construction Stormwater NPDES, and/or VADEQ

Construction Stormwater VPDES authorizations (Appendices L-M). Disturbance acreages were not available for all oil and gas well development projects in Virginia and have been excluded due to the inconsistency of the data.

Other NPDES/VPDES Projects include those projects that required and have received WVDEP/VADEQ Individual or Industrial/General authorizations and that were not included under other categories previously listed (utility line/residential development/commercial/industrial development/transportation; no corresponding USACE 404/WVDEP 401/VADEQ 401 and/or WVDEP/VADEQ Construction Stormwater NPDES authorizations). These include general non-construction stormwater authorizations, home aeration unit seals, general sewage authorizations, individual Publicly Owned Treatment Works authorizations, and industrial authorizations, etc. (Appendices E-F).

Planned Projects include those with pending modifications of existing permits or new permit applications from the USACE, WVDEP, VDOT, water sewer authorities, and/or those listed by WV regional planning/development offices or VA county planning/development offices as planned (Appendices N-P). Please note that location information was not always included in the information provided or made available, depending on the source. Refer to Section 4.0 for additional details. Additionally, VADOE, VADEQ, VMRC, VADOF, and WV Forestry did not include planned projects with the information they provided or made available.

3.0 AQUATIC RESOURCE MITIGATION

To offset the loss of impacts to wetlands and streams within the HUC-12 watersheds, multiple mitigation banks have been created or are being developed by entities other than Mountain Valley. The sites have been reviewed and approved by the Interagency Review Team to offset impacts to aquatic resources and “to support the sustainability or improvement of aquatic resources in a watershed.”²

For the impacts to streams and wetlands associated with the Project, as explained in the Individual Permit application, Mountain Valley has provided compensatory mitigation for all permanent impacts to streams and wetlands in the form of mitigation banking or in-lieu fee credits and for all temporary impacts in the form of restoration of the impacted resources. Additionally, Appendix F of the Comprehensive Stream and Wetland Monitoring, Restoration, and Mitigation Framework (Mitigation Framework) provides the details of the supplemental compensatory mitigation, in the form of mitigation banking or in-lieu credits, for each temporary stream and wetland impact. This approach to mitigation provides additional assurance that the goal of “no net loss” will be achieved – if not result in a net increase in aquatic resources.

Appendix R summarizes the characteristics of each mitigation bank and the applicable HUC-12 watersheds.

² See <https://www.lrh.usace.army.mil/Portals/38/docs/WV%20irt%20initiatives%20guidance%20.pdf>. The Interagency Review Team consists of USACE Huntington and Pittsburgh Districts, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, the Natural Resources Conservation Service, WVDEP, and WVDNR.

4.0 RESULTS

The Project extends 304 miles across 11 HUC-8 watersheds (Figures 1 and 2, Appendix S), which contain 62 HUC-12 watersheds with associated waterbody crossings requiring a USACE 404 permit. The 11 HUC-8 watersheds are listed in Table 2. Please note that the Upper New watershed in West Virginia and the Middle New watershed in Virginia are the same HUC-8 watershed. To better facilitate the discussion herein, the data are grouped by HUC-8 watershed, with data from each HUC-12 summarized further. Table 2 also provides the counties where each watershed is located; however, the Project Area does not occur in all of these counties. The Project Area is located in Wetzell, Harrison, Doddridge, Lewis, Braxton, Webster, Nicholas, Greenbrier, Fayette, Summers, and Monroe counties in West Virginia and in Giles, Craig, Montgomery, Roanoke, Franklin, and Pittsylvania counties in Virginia.

Table 1
HUC-8 Watersheds Within the Project Area

HUC-8 Watershed	Counties	State
Middle Ohio-North (05030201)	Pleasants, Tyler, Wetzell, Marion, Harrison, Lewis	West Virginia
West Fork (05020002)	Marion, Harrison, Taylor, Barbour, Wetzell, Doddridge	West Virginia
Little Kanawha (05030203)	Wood, Writ, Richie, Roan, Calhoun, Gilmer, Lewis, Braxton	West Virginia
Elk (05050007)	Kanawha, Roane, Clay, Braxton, Nicholas, Webster, Randolph, Pocahontas	West Virginia
Gauley (05050005)	Pocahontas, Fayette, Webster, Nicholas, Greenbrier	West Virginia
Lower New (05050004)	Fayette, Raleigh, Summers	West Virginia
Greenbrier (05050003)	Pocahontas, Greenbrier, Summers, Monroe	West Virginia
Upper/Middle New (05050002)	Mercer (WV), Summers (WV), Monroe (WV), Bland (VA), Pulaski (VA), Giles (VA), Craig (VA)	West Virginia, Virginia
Upper James (02080201)	Monroe (WV), Highland (VA), Bath (VA), Alleghany (VA), Craig (VA), Botetourt (VA), Roanoke (VA), Montgomery (VA)	West Virginia, Virginia
Upper Roanoke (03010101)	Montgomery, Roanoke, Floyd, Bedford, Botetourt, Campbell, Henry, Franklin Pittsylvania	Virginia
Banister (03010105)	Halifax, Pittsylvania	Virginia

The information provided in Sections 4.1 through 4.11 lists the types of projects (past, present, and planned) and their locations, if that location (latitude and longitude, physical 911 address, etc.) could be determined from the information available. In some instances, there are additional planned projects identified within a general area (e.g., county); however, the information provided did not clearly identify the project's location within a specific watershed. Due to the inability to identify the location of those projects, and thus their potential for cumulative effects, they are not discussed in Sections 4.1 through 4.11. However, the information available is provided in Appendices N-P.

4.1 Middle Ohio-North Watershed

The Project crosses four 12-digit HUC watersheds in the Middle Ohio-North HUC-8 watershed (Figures 1-2). These include North Fork Fishing Creek (050302010202), Headwaters South Fork Fishing Creek (050302010201), Buckeye Creek (050302010402), and Meathouse Fork (050302010403). The Middle Ohio-North watershed is approximately 1,813.5 square miles (mi²) (1,160,635 acres). These four HUC-12 watersheds have a combined drainage area of 171.1 mi² (109,503.6 acres).

4.1.1 North Fork Fishing Creek

The Project's LOD would impact approximately 68.6 acres within the North Fork Fishing Creek HUC-12 watershed. Refer to Tables 2 through 4 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the North Fork Fishing Creek HUC-12 watershed include five utility line projects (identified through four construction stormwater permits and one 404 permit with three stream/wetland crossings), one transportation project (identified through one 404 permit with one stream/wetland crossings), 13 forestry projects, three oil and gas well development projects, and five other NPDES projects (non-construction stormwater; these five projects have a total of eight stream discharge outlets). The only planned project identified is a utility line project known as the Equitrans Ohio Valley Connector Pipeline Project (Table 2; Appendix O; Figure 3, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 0.0431 acre (0.0395 acre permanent/0.0037 acre temporary; refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 1,165 acres. Please note that the planned project disturbance acreage was not provided in the information available. The total known disturbed acreage, including the Project's LOD, is approximately 1,233.5 acres, which is approximately 4.54 percent of the watershed.

4.1.2 Headwaters South Fork Fishing Creek

The Project's LOD would impact approximately 236.1 acres within the Headwaters South Fork Fishing Creek HUC-12 watershed. Refer to Tables 2 through 4 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Headwaters South Fork Fishing Creek HUC-12 watershed include ten

utility line projects (identified through nine construction stormwater and one 404 permit with two stream/wetland crossings), three commercial/industrial projects (identified through one construction stormwater, one 401 certification with one stream/wetland crossing, and one 404 permit with 17 stream/wetland crossings), 14 forestry projects, one mining project (identified through one mining NPDES with 11 stream discharge outlets), 15 oil and gas well development projects, and four other NPDES projects (non-construction stormwater; these four projects have a total of five stream discharge outlets). Four planned projects were identified, all oil and gas well development projects (Wells 7302, 7467, 7381, and 7382 proposed by West Virginia Land Resources, Inc.) (Table 2; Appendix O; Figure 4, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 0.235 acre (all permanent), plus an additional 1,600 lf of impacts associated with a commercial/industrial development project requiring a WVDEP State 401 Water Quality Certification (refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 1,469 acres. Please note that the planned project disturbance acreage was not provided in the information available. The total known disturbed acreage, including the Project's LOD, is approximately 1,705.2 acres, which is approximately 6.60 percent of the watershed.

4.1.3 Buckeye Creek

The Project's LOD would impact approximately 28.9 acres within the Buckeye Creek HUC-12 watershed. Refer to Tables 2 through 4 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Buckeye Creek HUC-12 watershed include six utility line projects (one project listed in two separate HUC-12s) (identified through two construction stormwater and four 404 permits with 61 stream/wetland crossings), one commercial/industrial project (identified through one 404 permit with 15 stream/wetland crossings), nine forestry projects, and 21 other NPDES projects (non-construction stormwater; these 21 projects have a total of 24 stream discharge outlets). No planned projects were identified in the available information (Table 2; Figure 5, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 0.572 acre (0.2086 acre permanent/0.3634 acre temporary; refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 994 acres. The total known disturbed acreage, including the Project's LOD, is approximately 1,023.0 acres, which is approximately 4.09 percent of the watershed.

4.1.4 Meathouse Fork

The Project's LOD would impact approximately 64.9 acres within the Meathouse Fork HUC-12 watershed. Refer to Tables 2 through 4 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Meathouse Fork HUC-12 watershed include one utility line project (one project listed in two separate HUC-12s) (identified through one 404 permit with 129 stream/wetland crossings), five

commercial/industrial projects (identified through one construction stormwater, one 401 certification with one stream/wetland crossing, and three 404 permits with 11 stream/wetland crossings), one transportation project (identified through one 404 permit with one stream/wetland crossing), six forestry projects, and eight other NPDES projects (non-construction stormwater; these eight projects have a total of nine stream discharge outlets). Two planned projects were identified: the Doddridge County PSD Blandville Water Line Extension and the Snowbird Park Water Line Extension, which are both utility line projects (Table 2; Appendix O; Figure 6, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 1.621 acres (0.3585 acre permanent/1.442 acres temporary; refer to Appendix T), plus an additional 6,820 lf of impacts associated with a commercial/industrial development project requiring a WVDEP State 401 Water Quality Certification. The total known disturbed acreage for the past and present projects in the watershed is approximately 1,265 acres. Please note that the planned project disturbance acreage was not provided in the information available. The total known disturbed acreage, including the Project's LOD, is approximately 1,329.9 acres, which is approximately 4.23 percent of the watershed.

Table 2
Summary of Past, Present, and Planned Projects in the HUC-12
Watersheds that Fall Within the Middle Ohio North HUC-8 Watershed Based on Available Information^a

HUC-12 Watershed	HUC-12 Watershed Acreage (2019)	Mountain Valley Pipeline Project		Utility Line Projects			Residential Development Projects			Commercial/Industrial Projects			Transportation Projects			Forestry Projects		Mining Projects		Oil and Gas Well Development Projects	Other NPDES Projects	Planned Projects
		Limit of Disturbance (LOD) (acres)	Aquatic Resource Impacts (acres)	#	LOD (acres)	Aquatic Resource Impacts ^d (acres)	#	LOD (acres)	Aquatic Resource Impacts ^d (acres)	#	LOD (acres)	Aquatic Resource Impacts ^d (acres)	#	LOD (acres)	Aquatic Resource Impacts ^d (acres)	#	LOD (acres)	#	LOD (acres)	#	#	#
North Fork Fishing Creek	27,189	68.6	0.4431	5	108.89	0.0238	0	---	---	0	---	---	1	NL	0.0193	13	1,056	0	---	3	5	1
Headwaters South Fork Fishing Creek	25,818	236.1	0.5579	10	49.06	0.033	0	---	---	3	13.02	0.2020 ^e	0	---	---	14	1,407	1	NL	15	4	4
Buckeye Creek	25,016	28.9	0.0656	6 ^b	59.05	0.5414	0	---	---	1	NL	0.0306	0	---	---	9	935	0	---	0	21	0
Meathouse Fork	31,467	64.9	0.4651	1 ^b	NL	1.401	0	---	---	5	13	0.2368 ^e	1	NL	0.22	6	1,252	0	---	0	8	2

Notations

NL = LOD Acreage and/or Aquatic Resource Impact Acreage Not Available from Source(s), Not Listed.

^aPlease refer to Section 2.0 DATA SOURCE INFORMATION SUMMARY for descriptions of categories.

^bPast and present project(s) listed in multiple HUC 12 watersheds are counted as separate projects in each HUC-12. Please note that for LOD acreage values, each HUC-12 value includes the total past and present project LOD.

^cAdditional If impacts are listed in the accompanying HUC-12 section in the text.

^dAquatic Resource Impacts include the total for both temporary and permanent impacts, per category, as listed in Appendix T.

4.2 West Fork River Watershed

The Project crosses seven 12-digit HUC watersheds in the West Fork River HUC-8 Watershed (Figure 2). These include the Little Tenmile Creek (050200020503), the Outlet Tenmile Creek (050200020504), the Headwaters Tenmile Creek (050200020502), Salem Fork (050200020501), Kincheloe Creek (050200020302), Freemans Creek (050500020301), and Polk Creek-West Fork River (050200020105) Watersheds (Table 2). The West Fork River Watershed is approximately 879.8 mi² (563,069.7 acres), while the seven 12-digit HUC watersheds total 210.2 mi² (134,527.5 acres).

4.2.1 Little Tenmile Creek

The Project's LOD would impact approximately 138.0 acres within the Little Tenmile Creek HUC-12 watershed. Refer to Tables 5 through 7 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Little Tenmile Creek HUC-12 watershed include five utility line projects (identified through three construction stormwater and two 404 permits with three stream/wetland crossings), one commercial/industrial project (identified as one 404 permit with three stream/wetland crossings), one transportation project (identified as one 401 certification with one stream/wetland crossing), five forestry projects, two mining projects (identified as one mining project and one mining NPDES project with one stream discharge outlet), and 15 other NPDES projects (non-construction stormwater; these 15 projects have a total of 15 stream discharge outlets). No planned projects were identified in the available information (Table 3; Figure 7, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 0.0502 acre (all temporary impacts; refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 358.8 acres. The total known disturbed acreage, including the Project's LOD, is approximately 496.8 acres, which is approximately 2.75 percent of the watershed.

4.2.2 Outlet Tenmile Creek

The Project's LOD would impact approximately 77.6 acres within the Outlet Tenmile Creek HUC-12 watershed. Refer to Tables 5 through 7 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Outlet Tenmile Creek HUC-12 watershed include two utility line projects (identified through one construction stormwater and one 404 permit with one stream/wetland crossing), six commercial/industrial projects (identified through six 404 permits with 16 stream/wetland crossings), ten forestry projects, two mining projects, and 24 other NPDES projects (non-construction stormwater; these 24 projects have a total of 24 stream discharge outlets). No planned projects were identified in the available information (Table 3; Figure 8, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 3.0028 acres (0.8871 acre permanent/2.116 acre temporary; refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 571.0 acres. The total known disturbed acreage, including the Project's LOD, is approximately 648.6 acres, which is approximately 2.54 percent of the watershed.

4.2.3 Headwaters Tenmile Creek

The Project's LOD would impact approximately 133.2 acres within the Headwaters Tenmile Creek HUC-12 watershed. Refer to Tables 5 through 7 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Headwaters Tenmile Creek HUC-12 watershed include four utility line projects (one project listed in two separate HUC-12s) (identified through three construction stormwater and one 404 permit with one stream/wetland crossing), three commercial/industrial projects (identified through three 404 permits with four stream/wetland crossings), 16 forestry projects, two mining projects, and 24 other NPDES projects (non-construction stormwater; these 24 projects have a total of 25 stream discharge outlets) (one project is listed in two separate HUC-12s). The only identified planned project is the Lake Floyd Public Service District Sewer Improvement Project, which is a commercial/industrial project (Table 3; Appendix O; Figure 9, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 0.4440 acres (0.4291 acre permanent/0.0149 acre temporary; refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 1,509.6 acres. Please note that the planned project disturbance acreage was not provided in the information available. The total known disturbed acreage, including the Project's LOD, is approximately 1,642.8 acres, which is approximately 6.36 percent of the watershed.

4.2.4 Salem Fork

The Project's LOD would impact approximately 111.7 acres within the Salem Fork HUC-12 watershed. Refer to Tables 5 through 7 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Salem Fork HUC-12 watershed include three utility line projects (one project listed in two separate HUC-12s) (identified through two construction stormwater and one 404 permit with one stream/wetland crossing), one commercial/industrial project (identified as one 404 permit with one stream/wetland crossing), two forestry projects, and 33 other NPDES projects (non-construction stormwater; these 33 projects have a total of 45 stream discharge outlets) (one project listed in two separate HUC-12s). The two planned projects that were identified include the City of Salem's Water System Improvement Project Phase III and the Wastewater System Improvement Project Phase IV, both which are commercial/industrial projects (Table 3; Appendix O; Figure 10, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 0.0294 acres (0.0094 acre permanent/0.02 acre temporary; refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 255.0 acres. Please note that the planned project disturbance acreage was not provided in the information available. The total known disturbed acreage, including the Project's LOD, is approximately 366.7 acres, which is approximately 3.49 percent of the watershed.

4.2.5 Kincheloe Creek

The Project's LOD would impact approximately 40.9 acres within the Kincheloe Creek HUC-12 watershed. Refer to Tables 5 through 7 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Kincheloe Creek HUC-12 watershed include three utility line projects (identified through three 404 permits with 34 stream/wetland crossings), two commercial/industrial projects (identified through two 404 permits with seven stream/wetland crossings), four forestry projects, one oil and gas well development project, and three other NPDES projects (non-construction stormwater; these three projects have a total of three stream discharge outlets). No planned projects were identified in the available information (Table 3; Figure 11, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 1.4973 acres (0.4720 acre permanent/1.026 acre temporary; refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 339.0 acres. The total known disturbed acreage, including the Project's LOD, is approximately 379.9 acres, which is approximately 2.79 percent of the watershed.

4.2.6 Freemans Creek

The Project's LOD would impact approximately 106.6 acres within the Freemans Creek HUC-12 watershed. Refer to Tables 5 through 7 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Freemans Creek HUC-12 watershed include five utility line projects (one project listed in two separate HUC-12s) (identified through three construction stormwater and two 404 permits with six stream/wetland crossings), four commercial/industrial projects (identified through four 404 permits with six stream/wetland crossings), five forestry projects, four oil and gas well development projects, and 14 other NPDES projects (non-construction stormwater; these 14 projects have a total of 14 stream discharge outlets) (one project listed in two separate HUC-12s). No planned projects were identified in the available information (Table 3; Figure 12, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 1.0154 acres (0.9843 acre permanent/0.0311 acre temporary; refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 507.6 acres. The total known

disturbed acreage, including the Project's LOD, is approximately 614.2 acres, which is approximately 3.11 percent of the watershed.

4.2.7 Polk Creek-West Fork River

The Project's LOD would impact approximately 16.3 acres within the Polk Creek-West Fork River HUC-12 watershed. Refer to Tables 5 through 7 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past (since 2018) and present projects identified in the Polk Creek-West Fork River HUC-12 watershed include four utility line projects (one project listed in two separate HUC-12s) (identified through four 404 permits with four stream/wetland crossings), two commercial/industrial projects (identified through one construction stormwater and one 404 permit with two stream/wetland crossings), nine forestry projects, one mining project, and 24 other NPDES projects (non-construction stormwater; these 24 projects have a total of 29 stream discharge outlets) (one project listed in two separate HUC-12s). Only one planned project was identified, namely the Shriver Trucking Company, Inc. project, which is a commercial/industrial project (Table 3; Appendix O; Figure 13, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 0.4158 acre (0.3528 acre permanent/0.0630 acre temporary; refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 446.3 acres. Please note that the planned project disturbance acreage was not provided in the information available. The total known disturbed acreage, including the Project's, is approximately 462.6 acres, which is approximately 2.18 percent of the watershed.

Table 3
Summary of Past, Present, and Planned Projects in the HUC-12
Watersheds that Fall Within the West Fork River HUC-8 Watershed Based on Available Information^a

HUC-12 Watershed	HUC-12 Watershed Acreage (2019)	Mountain Valley Pipeline Project		Utility Line Projects			Residential Development Projects			Commercial/Industrial Projects			Transportation Projects			Forestry Projects		Mining Projects		Oil and Gas Well Development Projects	Other NPDES Projects	Planned Projects
		Limit of Disturbance (LOD) (acres)	Aquatic Resource Impacts (acres)	#	LOD (acres)	Aquatic Resource Impacts ^c (acres)	#	LOD (acres)	Aquatic Resource Impacts ^c (acres)	#	LOD (acres)	Aquatic Resource Impacts ^c (acres)	#	LOD (acres)	Aquatic Resource Impacts ^c (acres)	#	LOD (acres)	#	LOD (acres)	#	#	#
Little Tenmile Creek	18,079	138.0	0.1821	5	11.81	0.0202	0	---	---	1	NL	0.03	1	NL	NL	5	347	2	0	0	15	0
Outlet Tenmile Creek	25,521	77.6	0.5287	2	2.01	2.038	0	---	---	6	NL	0.9648	0	---	---	10	557	2	11.99	0	24	0
Headwaters Tenmile Creek	25,841	133.2	1.552	4	66.64 ^b	0.0149	0	---	---	3	NL	0.4291	0	---	---	16	1,494	2	15.55	0	24 ^b	1
Salem Fork	10,515	111.7	0.1157	3	59 ^b	0.02	0	---	---	1	NL	0.0094	0	---	---	2	255	0	---	0	33 ^b	2
Kincheloe Creek	13,629	40.9	0.5976	3	NL	1.288	0	---	---	2	NL	0.2093	0	---	---	4	339	0	---	1	3	0
Freemans Creek	19,727	106.6	0.8332	5 ^b	67.64	0.3401	0	---	---	4	NL	0.6753	0	---	---	5	440	0	---	4	14 ^b	0
Polk Creek – West Fork River	21,264	16.3	0.0231	4 ^b	NL	0.1346	0	---	---	2	6.3	0.2812	0	---	---	9	440	1	NL	0	24 ^b	1

Notations

NL = LOD Acreage and/or Aquatic Resource Impact Acreage Not Available from Source(s), Not Listed.

^aPlease refer to Section 2.0 DATA SOURCE INFORMATION SUMMARY for descriptions of categories.

^bPast and present project(s) listed in multiple HUC 12 watersheds are counted as separate projects in each HUC-12. Please note that for LOD acreage values, each HUC-12 value includes the total past and present project LOD.

^cAquatic Resource Impacts include the total for both temporary and permanent impacts, per category, as listed in Appendix T.

4.3 Little Kanawha Watershed

The Project crosses seven 12-digit HUC watersheds in the Little Kanawha HUC-8 watershed (Figure 2). These include Fink Creek (050302030201), the Headwaters Leading Creek (050302030202), the Headwaters Sand Fork (050302030101), Indian Fork (050302030102), Oil Creek (050302030306), Burnsville Lake-Little Kanawha River (050302030305), and Falls Run-Little Kanawha River (050302030303) (Table 2). The Little Kanawha watershed is approximately 2,307.7 mi² (1,476,922 acres.) The combined drainage of the seven listed watersheds is approximately 235.1 mi² (150,463.4 acres) or less than 10% of the HUC-8 watershed.

4.3.1 Fink Creek

The Project's LOD would impact approximately 42.1 acres within the Fink Creek HUC-12 watershed. Refer to Tables 8 through 10 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Fink Creek HUC-12 watershed include two utility line projects (identified through one construction stormwater and one 404 permit with 17 stream/wetland crossings), one commercial/industrial project (identified through one 404 permit with one stream/wetland crossing), one transportation project (identified through one 404 permit with two stream/wetland crossings), 10 forestry projects, one oil and gas well development project, and seven other NPDES projects (non-construction stormwater; these seven projects have a total of seven stream discharge outlets). The only planned project identified is the 1222 PL Takeaway, which is a utility line project (Table 4; Appendix O; Figure 14, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 0.1868 acre (0.087 acre permanent/0.0998 acre temporary; refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 921.2 acres. Please note that the planned project disturbance acreage was not provided in the information available. The total known disturbed acreage, including the Project's LOD, is approximately 963.3 acres, which is approximately 3.54 percent of the watershed.

4.3.2 Headwaters Leading Creek

The Project's LOD would impact approximately 36.3 acres within the Headwaters Leading Creek HUC-12 watershed. Refer to Tables 8 through 10 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Headwaters Leading Creek HUC-12 watershed include one utility line project (identified through one 404 permit with 45 stream/wetland crossings), eight forestry projects, and seven other NPDES projects (non-construction stormwater; these seven projects have a total of seven stream discharge outlets). No planned projects were identified in the available information (Table 4; Figure 15, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 0.1628 acre (all temporary; refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 850.0 acres. The total known disturbed acreage, including the Project's, is approximately 886.3 acres, which is approximately 4.65 percent of the watershed.

4.3.3 Headwaters Sand Fork

The Project's LOD would impact approximately 128.1 acres within the Headwaters Sand Fork HUC-12 watershed. Refer to Tables 8 through 10 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Headwaters Sand Fork HUC-12 watershed include 10 forestry projects and one other NPDES project (non-construction stormwater; this one project has one stream discharge outlet). No planned projects were identified in the available information (Table 4; Figure 16, Appendix S).

Additional aquatic resource impacts not associated with the Project were not identified in this watershed (refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 530.0 acres. The total known disturbed acreage, including the Project's LOD, is approximately 658.1 acres, which is approximately 2.64 percent of the watershed.

4.3.4 Indian Fork

The Project's LOD would impact approximately 76.8 acres within the Indian Fork HUC-12 watershed. Refer to Tables 8 through 10 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Indian Fork HUC-12 watershed include one utility line project (identified through one construction stormwater), four forestry projects, and one other NPDES project (non-construction stormwater; this one project has one stream discharge outlet). No planned projects were identified in the available information (Table 4; Figure 17, Appendix S).

Additional aquatic resource impacts not associated with the Project were not identified in this watershed (refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 453.2 acres. The total known disturbed acreage, including the Project's LOD, is approximately 530.0 acres, which is approximately 3.48 percent of the watershed.

4.3.5 Oil Creek

The Project's LOD would impact approximately 138.9 acres within the Oil Creek HUC-12 watershed. Refer to Tables 8 through 10 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Oil Creek HUC-12 watershed include one utility line project (identified through one construction stormwater), one commercial/industrial project (identified through one 404 permit

with two stream/wetland crossings), 12 forestry projects, and two other NPDES projects (non-construction stormwater; these two projects have a total of two stream discharge outlets). No planned projects were identified in the available information (Table 4; Figure 18, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 0.0275 acre (all permanent impacts; refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 937.8 acres. The total known disturbed acreage, including the Project's LOD, is approximately 1,076.7 acres, which is approximately 5.34 percent of the watershed.

4.3.6 Burnsville Lake-Little Kanawha River

The Project's LOD would impact approximately 88.9 acres within the Burnsville Lake-Little Kanawha River HUC-12 watershed. Refer to Tables 8 through 10 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Burnsville Lake-Little Kanawha River HUC-12 watershed include eight forestry projects and four other NPDES projects (non-construction stormwater; these four projects have a total of seven stream discharge outlets). No planned projects were identified in the available information (Table 4; Figure 19, Appendix S).

Additional aquatic resource impacts not associated with the Project were not identified in this watershed (refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 473.0 acres. The total known disturbed acreage, including the Project's LOD, is approximately 561.9 acres, which is approximately 2.47 percent of the watershed.

4.3.7 Falls Run-Little Kanawha River

The Project's LOD would impact approximately 205.4 acres within the Falls Run-Little Kanawha River HUC-12 watershed. Refer to Tables 8 through 10 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Falls Run-Little Kanawha River HUC-12 watershed include one utility line project (identified through one construction stormwater), eight forestry projects, and four other NPDES projects (non-construction stormwater; these four projects have a total of four stream discharge outlets). No planned projects were identified in the available information (Table 4; Figure 20, Appendix S).

Additional aquatic resource impacts not associated with the Project were not identified in this watershed (refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 609.0 acres. The total known disturbed acreage, including the Project's LOD, is approximately 814.4 acres, which is approximately 3.86 percent of the watershed.

Table 4
Summary of Past, Present, and Planned Projects in the HUC-12
Watersheds that Fall Within the Little Kanawha River HUC-8 Watershed Based on Available Information^a

HUC-12 Watershed	HUC-12 Watershed Acreage (2019)	Mountain Valley Pipeline Project		Utility Line Projects			Residential Development Projects			Commercial/Industrial Projects			Transportation Projects			Forestry Projects		Mining Projects		Oil and Gas Well Development Projects	Other NPDES Projects	Planned Projects
		Limit of Disturbance (LOD) (acres)	Aquatic Resource Impacts (acres)	#	LOD (acres)	Aquatic Resource Impacts ^b (acres)	#	LOD (acres)	Aquatic Resource Impacts ^b (acres)	#	LOD (acres)	Aquatic Resource Impacts ^b (acres)	#	LOD (acres)	Aquatic Resource Impacts ^b (acres)	#	LOD (acres)	#	LOD (acres)	#	#	#
Fink Creek	27,207	42.1	0.2658	2	2.24	0.0650	0	---	---	1	NL	0.0008	1	NL	0.121	10	919	0	---	1	7	1
Headwaters Leading Creek	19,067	36.3	0.0348	1	NL	0.1628	0	---	---	0	---	---	0	---	---	8	850	0	---	0	7	0
Headwaters Sand Fork	24,971	128.1	0.4404	0	---	---	0	---	---	0	---	---	0	---	---	10	530	0	---	0	1	0
Indian Fork	15,213	76.8	0.2501	1	5.21	NL	0	---	---	0	---	---	0	---	---	4	448	0	---	0	1	0
Oil Creek	20,179	138.9	1.0329	1	7.8	NL	0	---	---	1	NL	0.0275	0	---	---	12	930	0	---	0	2	0
Burnsville Lake – Little Kanawha River	22,753	88.9	0.251	0	---	---	0	---	---	0	---	---	0	---	---	8	473	0	---	0	4	0
Falls Run – Little Kanawha River	21,098	205.4	0.892	1	17	NL	0	---	---	0	---	---	0	---	---	8	592	0	---	0	4	0

Notations

NL = LOD Acreage and/or Aquatic Resource Impact Acreage Not Available from Source(s), Not Listed.

^aPlease refer to Section 2.0 DATA SOURCE INFORMATION SUMMARY for descriptions of categories.

^bAquatic Resource Impacts include the total for both temporary and permanent impacts, per category, as listed in Appendix T.

4.4 Elk River Watershed

The Project crosses eight 12-digit HUC watersheds in the Little Kanawha HUC-8 watershed (Figure 2). These include the Outlet Holly River (050500070304), the Left Fork Holly River (050500070301), the Outlet Right Fork Holly River (050500070303), Upper Sutton Lake-Elk River (050500070602), Big Run-Elk River (050500070601), the Headwaters Laurel Creek (050500070201), Outlet Laurel Creek (050500070202), and Upper Birch River (050500070401) (Table 2). The Elk River watershed is approximately 1,532.1 mi² (980,540.1 acres), while the eight 12-digit HUC watersheds total 268.1 mi² (171,583.3 acres).

4.4.1 Outlet Holly River

The Project's LOD would impact approximately 83.0 acres within the Outlet Holly River HUC-12 watershed. Refer to Tables 11 through 13 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Outlet Holly River HUC-12 watershed include one transportation project (identified through one 404 permit with one stream/wetland crossing), 17 forestry projects, and two other NPDES projects (non-construction stormwater; these two projects have a total of two stream discharge outlets). No planned projects were identified in the available information (Table 5; Figure 21, Appendix S).

Additional aquatic resource impacts not associated with the Project were not identified in this watershed (refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 1,453.0 acres. The total known disturbed acreage, including the Project's LOD, is approximately 1,536.0 acres, which is approximately 7.93 percent of the watershed.

4.4.2 Headwaters Holly River (Left Fork Holly River)

The Project's LOD would impact approximately 9.5 acres within the Headwaters Holly River (Left Fork Holly River) HUC-12 watershed. Refer to Tables 11 through 13 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Headwaters Holly River (Left Fork Holly River) HUC-12 watershed include one utility line project (identified through one construction stormwater), one commercial/industrial project (identified through one 404 permit with three stream/wetland crossings), 34 forestry projects, and five other NPDES projects (non-construction stormwater; these five projects have a total of 11 stream discharge outlets). No planned projects were identified in the available information (Table 5; Figure 22, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 0.0321 acre (all permanent impacts; refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 3,550.8 acres. The total known disturbed acreage, including the Project's, is approximately 3,560.3 acres, which is approximately 10.18 percent of the watershed.

4.4.3 Outlet Right Fork Holly River

The Project's LOD would impact approximately 71.4 acres within the Outlet Right Fork Holly River HUC-12 watershed. Refer to Tables 11 through 13 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Outlet Right Fork Holly River HUC-12 watershed include one transportation project (identified through one 404 permit with eight stream/wetland crossings), 21 forestry projects, two mining projects (identified through one mining and one mining NPDES permit with one stream discharge outlet), and one other NPDES project (non-construction stormwater; this one project has one stream discharge outlet). No planned projects were identified in the available information (Table 5; Figure 23, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 0.0088 acre (0.0085 acre permanent/0.0003 acre temporary; refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 1,706.2 acres. The total known disturbed acreage, including the Project's LOD, is approximately 1,777.6 acres, which is approximately 13.00 percent of the watershed.

4.4.4 Upper Sutton Lake-Elk River

The Project's LOD would impact approximately 100.3 acres within the Upper Sutton Lake-Elk River HUC-12 watershed. Refer to Tables 11 through 13 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Upper Sutton Lake-Elk River HUC-12 watershed include 13 forestry projects, one mining project, and one other NPDES project (non-construction stormwater; this one project has one stream discharge outlet). No planned projects were identified in the available information (Table 5; Figure 24, Appendix S).

Additional aquatic resource impacts not associated with the Project were not identified in this watershed; refer to Appendix T. The total known disturbed acreage for the past and present projects in the watershed is approximately 921.0 acres. The total known disturbed acreage, including the Project's LOD, is approximately 1,021.3 acres, which is approximately 8.47 percent of the watershed.

4.4.5 Big Run-Elk River

The Project's LOD would impact approximately 26.8 acres within the Big Run-Elk River HUC-12 watershed. Refer to Tables 11 through 13 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Big Run-Elk River HUC-12 watershed include one utility line project (identified through one 404 permit with one stream/wetland crossing), 12 forestry projects, and one other NPDES project (non-construction stormwater; this one project has a total of three stream discharge outlets). The two planned projects identified include the Webster Springs PSD's Rehab Project and I&I

Rehabilitation Project (Table 5; Appendix O; Figure 25, Appendix S), which are both utility line projects.

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 0.0861 acre (all permanent impacts; refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 1,209.0 acres. Please note that the planned project disturbance acreage was not provided in the information available. The total known disturbed acreage, including the Project's LOD, is approximately 1,235.8 acres, which is approximately 6.90 percent of the watershed.

4.4.6 Outlet Laurel Creek

The Project's LOD would impact approximately 118.3 acres within the Outlet Laurel Creek HUC-12 watershed. Refer to Tables 11 through 13 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Outlet Laurel Creek HUC-12 watershed include 17 forestry projects, nine mining projects (identified through five mining and four mining NPDES permits with 55 stream discharge outlets), and one other NPDES project (non-construction stormwater; this one project has one stream discharge outlet). The only planned project identified is the Brooks Run Mining Company, LLC Seven Pines Mine modification, which is a mining project (Table 5; Appendix O; Figure 26, Appendix S).

Additional aquatic resource impacts not associated with the Project were not identified in this watershed (refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 2,495.1 acres. Please note that the planned project disturbance acreage was not provided in the information available. The total known disturbed acreage, including the Project's LOD, is approximately 2,613.4 acres, which is approximately 11.09 percent of the watershed.

4.4.7 Headwaters Laurel Creek

The Project's LOD would impact approximately 126.5 acres within the Headwaters Laurel Creek HUC-12 watershed. Refer to Tables 11 through 13 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Headwaters Laurel Creek HUC-12 watershed include 22 forestry projects, one mining project, and two other NPDES projects (non-construction stormwater; these two projects have a total of two stream discharge outlets). No planned projects were identified in the available information (Table 5; Figure 27, Appendix S).

Additional aquatic resource impacts not associated with the Project were not identified in this watershed (refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 1,924.2 acres. The total known disturbed acreage, including the Project's LOD, is approximately 2,050.7 acres, which is approximately 10.76 percent of the watershed.

4.4.8 Upper Birch River

The Project's LOD would impact approximately 85.9 acres within the Upper Birch River HUC-12 watershed. Refer to Tables 11 through 13 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Upper Birch River HUC-12 watershed include one transportation project (identified through one 404 permit with two stream/wetland crossings), 22 forestry projects, 20 mining projects (identified through 17 mining and five mining NPDES permits with 129 stream discharge outlets), and four other NPDES projects (non-construction stormwater; these four projects have a total of four stream discharge outlets). No planned projects were identified in the available information (Table 5; Figure 28, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 0.0334 acre (0.0031 acre permanent/0.0303 acre temporary; refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 3,160.1 acres. The total known disturbed acreage, including the Project's LOD, is approximately 3,246.0 acres, which is approximately 10.47 percent of the watershed.

Table 5
Summary of Past, Present, and Planned Projects in the HUC-12
Watersheds that Fall Within the Elk River HUC-8 Watershed Based on Available Information^a

HUC-12 Watershed	HUC-12 Watershed Acreage (2019)	Mountain Valley Pipeline Project		Utility Line Projects			Residential Development Projects			Commercial/Industrial Projects			Transportation Projects			Forestry Projects		Mining Projects		Oil and Gas Well Development Projects	Other NPDES Projects	Planned Projects
		Limit of Disturbance (LOD) (acres)	Aquatic Resource Impacts (acres)	#	LOD (acres)	Aquatic Resource Impacts ^b (acres)	#	LOD (acres)	Aquatic Resource Impacts ^b (acres)	#	LOD (acres)	Aquatic Resource Impacts ^b (acres)	#	LOD (acres)	Aquatic Resource Impacts ^b (acres)	#	LOD (acres)	#	LOD (acres)	#	#	#
Outlet Holly River	19,374	83.0	0.3412	0	---	---	0	---	---	0	---	---	1	NL	0.02	17	1,453	0	---	0	2	0
Headwaters Holly River (Left Fork Holly River)	34,968	9.5	0.1011	1	22.8	NL	0	---	---	1	NL	0.0321	0	---	---	34	3,528	0	---	0	5	0
Outlet Right Fork Holly River	13,679	71.4	0.2106	0	---	---	0	---	---	0	---	---	1	NL	0.0087	21	1,675	2	31.2	0	1	0
Upper Sutton Lake – Elk River	12,054	100.3	0.1272	0	---	---	0	---	---	0	---	---	0	---	---	13	921	1	NL	0	1	0
Big Run – Elk River	17,908	26.8	0.1283	1	NL	0.0861	0	---	---	0	---	---	0	---	---	12	1,209	0	---	0	1	2
Outlet Laurel Creek	23,572	118.3	1.2076	0	---	---	0	---	---	0	---	---	0	---	---	17	1,281	9	1,214.08	0	1	1
Headwaters Laurel Creek	19,066	126.5	0.6075	0	---	---	0	---	---	0	---	---	0	---	---	22	1,917	1	7.23	0	2	0
Upper Birch River	31,003	85.9	0.33	0	---	---	0	---	---	0	---	---	1	NL	0.0334	22	2,439	20	721.13	0	4	0

Notations

NL = LOD Acreage and/or Aquatic Resource Impact Acreage Not Available from Source(s), Not Listed.

^aPlease refer to Section 2.0 DATA SOURCE INFORMATION SUMMARY for descriptions of categories.

^bAquatic Resource Impacts include the total for both temporary and permanent impacts, per category, as listed in Appendix T.

4.5 Gauley River Watershed

The Project crosses ten 12-digit HUC watersheds in the Gauley River HUC-8 watershed (Figure 2) near the center of the watershed. These include Big Laurel Creek-Gauley River (050500050303), Big Beaver Creek (050500050801), Panther Creek-Gauley River (050500050804), the Outlet Hominy Creek (050500050502), the Headwaters Hominy Creek (050500050501), Anglins Creek (050500050607), Meadow Creek-Meadow River (050500050606), Mill Creek-Meadow River (050500050605), Sewell Creek (050500050604), and Otter Creek-Meadow River (050500050602) (Table 2). The Gauley watershed is approximately 1,419.7 mi² (908,604.4 acres). The combined drainage of the ten listed watersheds is approximately 465.8 mi² (298,110.8 acres).

4.5.1 Big Laurel Creek-Gauley River

The Project's LOD would impact approximately 110.7 acres within the Big Laurel Creek-Gauley River HUC-12 watershed. Refer to Tables 14 through 16 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Big Laurel Creek-Gauley River HUC-12 watershed include two commercial/industrial projects (identified through two construction stormwater), 19 forestry projects, one mining project, and seven other NPDES projects (non-construction stormwater; these seven projects have a total of 22 stream discharge outlets). No planned projects were identified in the available information (Table 6; Figure 29, Appendix S).

Additional aquatic resource impacts not associated with the Project were not identified in this watershed (refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 980.0 acres. The total known disturbed acreage, including the Project's LOD, is approximately 1,090.7 acres, which is approximately 3.01 percent of the watershed.

4.5.2 Big Beaver Creek

The Project's LOD would impact approximately 92.6 acres within the Big Beaver Creek HUC-12 watershed. Refer to Tables 14 through 16 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Big Beaver Creek HUC-12 watershed include one commercial/industrial project (identified through one 404 permit with two stream/wetland crossings), 24 forestry projects, 22 mining project (one project listed in two HUC-12s) (identified through ten mining and 12 mining NPDES permits with 159 stream discharge outlets), and ten other NPDES projects (non-construction stormwater; these ten projects have a total of ten stream discharge outlets). No planned projects were identified in the available information (Table 6; Figure 30, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 0.0644 acre (all permanent impacts; refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 3,116.3 acres. The total known disturbed acreage, including the

Project's LOD, is approximately 3,208.9 acres, which is approximately 12.98 percent of the watershed.

4.5.3 Panther Creek-Gauley River

The Project's LOD would impact approximately 139.5 acres within the Panther Creek-Gauley River HUC-12 watershed. Refer to Tables 14 through 16 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Panther Creek-Gauley River HUC-12 watershed include 30 forestry projects, four mining projects (one project listed in two HUC-12s) (identified through two mining and two mining NPDES permits with 35 stream discharge outlets), and four other NPDES projects (non-construction stormwater; these four projects have a total of four stream discharge outlets). No planned projects were identified in the available information (Table 6; Figure 31, Appendix S).

Additional aquatic resource impacts not associated with the Project were not identified in this watershed; refer to Appendix T. The total known disturbed acreage for the past and present projects in the watershed is approximately 1,380.3 acres. The total known disturbed acreage, including the Project's LOD, is approximately 1,519.8 acres, which is approximately 5.00 percent of the watershed.

4.5.4 Outlet Hominy Creek

The Project's LOD would impact approximately 86.1 acres within the Outlet Hominy Creek HUC-12 watershed. Refer to Tables 14 through 16 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Outlet Hominy Creek HUC-12 watershed include 37 forestry projects, one mining project (one project listed in two HUC-12s), and eight other NPDES projects (non-construction stormwater; these eight projects have a total of eight stream discharge outlets). The only planned project identified is the Nettie-Leivasy PSD Ward Road/McCutchen Lane Water Line Replacement, which is a utility line project (Table 6; Appendix O; Figure 32, Appendix S).

Additional aquatic resource impacts not associated with the Project were not identified in this watershed (refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 2,259.0 acres. Please note that the planned project disturbance acreage was not provided in the information available. The total known disturbed acreage, including the Project's LOD, is approximately 2,345.1 acres, which is approximately 7.32 percent of the watershed.

4.5.5 Headwaters Hominy Creek

The Project's LOD would impact approximately 228.3 acres within the Headwaters Hominy Creek HUC-12 watershed. Refer to Tables 14 through 16 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Headwaters Hominy Creek HUC-12 watershed include four commercial/industrial projects (identified through one construction stormwater and three 404 permits with five

stream/wetland crossings), 44 forestry projects, and eight mining projects. No planned projects were identified in the available information (Table 6; Figure 33, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 0.453 acre (0.43 acre permanent/0.0230 acre temporary; refer to Appendix T). The total disturbed acreage (as available and identified) for the past and present projects in the watershed is approximately 1,935.7 acres. The total disturbed acreage, including the Project's LOD, is approximately 2,164.0 acres, which is approximately 6.35 percent of the watershed.

4.5.6 Anglins Creek

The Project's LOD would impact approximately 41.5 acres within the Anglins Creek HUC-12 watershed. Refer to Tables 14 through 16 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Anglins Creek HUC-12 watershed include 20 forestry projects, two mining projects (one project listed in two HUC-12s) (identified through two mining NPDES permits with four stream discharge outlets), and one other NPDES project (non-construction stormwater; this one projects has one stream discharge outlet). No planned projects were identified in the available information (Table 6; Figure 34, Appendix S).

Additional aquatic resource impacts not associated with the Project were not identified in this watershed (refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 1,464.0 acres. The total known disturbed acreage, including the Project's LOD, is approximately 1,505.5 acres, which is approximately 7.13 percent of the watershed.

4.5.7 Meadow Creek-Meadow River

The Project's LOD would impact approximately 139.0 acres within the Meadow Creek-Meadow River HUC-12 watershed. Refer to Tables 14 through 16 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Meadow Creek-Meadow River HUC-12 watershed include three commercial/industrial projects (identified through one construction stormwater and two 404 permits with 30 stream/wetland crossings), 44 forestry projects, three mining projects (one project listed in two HUC-12s) (identified through two mining and one mining NPDES permits with ten stream discharge outlets), and two other NPDES projects (non-construction stormwater; these two projects have a total of nine stream discharge outlets) (one project listed in two HUC-12s). No planned projects were identified in the available information (Table 6; Figure 35, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 1.026 acres and 350 lf (1.026 acres permanent/350 lf temporary; temporary impacts associated with one commercial/industrial development project) (refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 1,708.5 acres. The total known disturbed

acreage, including the Project's LOD, is approximately 1,847.5 acres, which is approximately 5.67 percent of the watershed.

4.5.8 Mill Creek-Meadow River (Big Clear Creek-Meadow River)

The Project's LOD would impact approximately 58.4 acres within the Mill Creek-Meadow River HUC-12 watershed. Refer to Tables 14 through 16 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Mill Creek-Meadow River HUC-12 watershed include one utility line project (one project in two HUC-12s) (identified through one 404 permit with four stream/wetland crossings), two commercial/industrial projects (identified through two 404 permits with seven stream/wetland crossings), one transportation project (identified through one 404 permit with two stream/wetland crossings), 26 forestry projects, 14 mining projects (one project listed in two HUC-12s) (identified through 12 mining and two mining NPDES permits with five stream discharge outlets), and two other NPDES projects (non-construction stormwater; these two projects have a total of two stream discharge outlets). The only planned project identified is the WVDEP Office of Special Reclamation, Royal Scot Minerals modification, which is a mining project (Table 6; Appendix O; Figure 36, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 0.5530 acre (0.5543 acre permanent/0.0087 acre), plus an additional 10 lf of temporary impacts associated with a commercial/industrial development project requiring a USACE 404 permit (refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 1,357.8 acres. Please note that the planned project disturbance acreage was not provided in the information available. The total known disturbed acreage, including the Project's LOD, is approximately 1,416.2 acres, which is approximately 5.57 percent of the watershed.

4.5.9 Sewell Creek

The Project's LOD would impact approximately 145.0 acres within the Sewell Creek HUC-12 watershed. Refer to Tables 14 through 16 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Sewell Creek HUC-12 watershed include three commercial/industrial projects (identified through three 404 permits with 15 stream/wetland crossings), 50 forestry projects, three mining projects (identified as two mining and one mining NPDES permit with one stream discharge outlet), and three other NPDES projects (non-construction stormwater; these three projects have a total of five stream discharge outlets) (one project listed in two HUC-12s). The only planned project identified is the Rainelle Medical Center, Inc's Midland Trail Health Center, which is a commercial/industrial project (Table 6; Appendix O; Figure 37, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 0.4279 acre (0.4059 acre permanent/0.0220 acre temporary; refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 1,800.8 acres. Please note that the

planned project disturbance acreage was not provided in the information available. The total known disturbed acreage, including the Project's LOD, is approximately 1,945.8 acres, which is approximately 7.51 percent of the watershed.

4.5.10 Otter Creek-Meadow River

The Project's LOD would impact approximately 148.5 acres within the Otter Creek-Meadow River HUC-12 watershed. Refer to Tables 14 through 16 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Otter Creek-Meadow River HUC-12 watershed include one utility line project (one project listed in two HUC-12s) (identified through one 404 permit with four stream/wetland crossings), one commercial/industrial project (identified as one 404 permit with one stream/wetland crossing), 22 forestry projects, and 13 other NPDES projects (non-construction stormwater; these 13 projects have a total of 17 stream discharge outlets). The two planned projects identified include the Greenbrier PSD #2's Sam Black Church Water Extension and Phase II Water Extension, both which are utility line projects (Table 6; Appendix O; Figure 38, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 0.0953 acre (0.092 acre permanent/0.0033 acre temporary), plus an additional 12 lf of temporary impacts associated with a commercial/industrial development project requiring a USACE 404 permit (refer to Appendix T). The total known disturbed acreage (as available and identified) for the past and present projects in the watershed is approximately 1,142.0 acres. Please note that the planned project disturbance acreage was not provided in the information available. The total known disturbed acreage, including the Project's LOD, is approximately 1,290.5 acres, which is approximately 3.62 percent of the watershed.

Table 6
Summary of Past, Present, and Planned Projects in the HUC-12
Watersheds that Fall Within the Gauley River HUC-8 Watershed Based on Available Information^a

HUC-12 Watershed	HUC-12 Watershed Acreage (2019)	Mountain Valley Pipeline Project		Utility Line Projects			Residential Development Projects			Commercial/Industrial Projects			Transportation Projects			Forestry Projects		Mining Projects		Oil and Gas Well Development Projects	Other NPDES Projects	Planned Projects
		Limit of Disturbance (LOD) (acres)	Aquatic Resource Impacts (acres)	#	LOD (acres)	Aquatic Resource Impacts ^d (acres)	#	LOD (acres)	Aquatic Resource Impacts ^d (acres)	#	LOD (acres)	Aquatic Resource Impacts ^d (acres)	#	LOD (acres)	Aquatic Resource Impacts ^d (acres)	#	LOD (acres)	#	LOD (acres)	#	#	#
Big Laurel Creek – Gauley River	36,238	110.7	0.8806	0	---	---	0	---	---	4	11	NL	0	---	---	19	969	1	0	0	7	0
Big Beaver Creek	24,725	92.6	0.6552	0	---	---	0	---	---	1	NL	0.0644	0	---	---	24	1,237	21 ^b	1,879.25	0	10	0
Panther Creek – Gauley River	30,376	139.5	0.3073	1	---	---	0	---	---	0	---	---	0	---	---	30	1,351	4 ^b	29.31	0	4	0
Outlet Hominy Creek	32,032	86.1	0.1128	0	---	---	0	---	---	0	---	---	0	---	---	37	2,259	1 ^b	NL	0	8	1
Headwaters Hominy Creek	34,057	228.3	0.6877	0	---	---	0	---	---	4	48.85	0.4530	0	---	---	44	1,734	8	152.81	0	0	0
Anglins Creek	21,112	41.5	0.105	0	---	---	0	---	---	0	---	---	0	---	---	20	1,464	2 ^b	NL	0	1	0
Meadow Creek – Meadow River	32,563	139.0	0.2102	0	---	---	0	---	---	3	12.4	1.026 ^c	0	---	---	44	1,595	3 ^b	101.11	0	2 ^b	0
Mill Creek-Meadow River (Big Clear Creek-Meadow River)	25,405	58.4	0.5177	1 ^b	NL	0.0007 ^c	0	--	---	2	NL	0.5043 ^c	1	NL	0.048	26	1,095	14 ^b	262.78	0	2	1
Sewell Creek	25,910	145.0	0.431	0	---	---	0	---	---	3	NL	0.4279	0	---	---	50	1,794	3	6.8	0	3 ^b	1
Otter Creek-Meadow River	35,683	148.5	1.8131	1 ^b	NL	0.0033 ^c	0	---	---	1	NL	0.092 ^c	0	---	---	22	1,142	0	NL	0	13	2

Notations

NL = LOD Acreage and/or Aquatic Resource Impact Acreage Not Available from Source(s), Not Listed.

^aPlease refer to Section 2.0 DATA SOURCE INFORMATION SUMMARY for descriptions of categories.

^bPast and present project(s) listed in multiple HUC 12 watersheds are counted as separate projects in each HUC-12. Please note that for LOD acreage values, each HUC-12 value includes the total past and present project LOD.

^cAdditional If impacts are listed in the accompanying HUC-12 section in the text.

^dAquatic Resource Impacts include the total for both temporary and permanent impacts, per category, as listed in Appendix T.

4.6 Lower New River Watershed

The Project crosses one 12-digit HUC watershed in the Lower New River HUC-8 watershed (Figure 2), Lick Creek (050500040203) (Table 2). The Lower New River watershed is approximately 690.9 mi² (442,174.2 acres). The drainage of the Lick Creek watershed is approximate 39.2 mi² (25,088 acres).

4.6.1 Lick Creek

The Project's LOD would impact approximately 114.2 acres within the Lick Creek HUC-12 watershed. Refer to Tables 17 through 19 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Lick Creek HUC-12 watershed include 15 forestry projects. No planned projects were identified in the available information (Table 7; Figure 39, Appendix S).

Additional aquatic resource impacts not associated with the Project were not identified in this watershed (refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 795.0 acres. The total known disturbed acreage, including the Project's LOD, is approximately 909.2 acres, which is approximately 3.62 percent of the watershed.

Table 7
Summary of Past, Present, and Planned Projects in the HUC-12
Watersheds that Fall Within the Lower New River HUC-8 Watershed Based on Available Information^a

HUC-12 Watershed	HUC-12 Watershed Acreage (2019)	Mountain Valley Pipeline Project		Utility Line Projects			Residential Development Projects			Commercial/Industrial Projects			Transportation Projects			Forestry Projects		Mining Projects		Oil and Gas Well Development Projects	Other NPDES Projects	Planned Projects
		Limit of Disturbance (LOD) (acres)	Aquatic Resource Impacts (acres)	#	LOD (acres)	Aquatic Resource Impacts ^b (acres)	#	LOD (acres)	Aquatic Resource Impacts ^b (acres)	#	LOD (acres)	Aquatic Resource Impacts ^b (acres)	#	LOD (acres)	Aquatic Resource Impacts ^b (acres)	#	LOD (acres)	#	LOD (acres)	#	#	#
Lick Creek	25,087	114.2	0.3345	0	--	---	0	---	---	0	---	---	0	---	---	15	795	0	---	0	0	0

Notations

NL = LOD Acreage and/or Aquatic Resource Impact Acreage Not Available from Source(s), Not Listed.

^aPlease refer to Section 2.0 DATA SOURCE INFORMATION SUMMARY for descriptions of categories.

^bAquatic Resource Impacts include the total for both temporary and permanent impacts, per category, as listed in Appendix T.

4.7 Greenbrier River Watershed

The Project crosses two 12-digit HUC watersheds in the Greenbrier HUC-8 watershed (Figure 2), Hungard Creek-Greenbrier River (050500030906) and Stony Creek-Greenbrier River (050500030907) (Table 2). The Greenbrier River Watershed is approximately 1,678.5 mi² (1,074,236 acres). The combined drainage of the two listed watersheds is approximately 51.2 mi² (32,768 acres).

4.7.1 Hungard Creek-Greenbrier River

The Project's LOD would impact approximately 248.3 acres within the Hungard Creek-Greenbrier River HUC-12 watershed. Refer to Tables 20 through 22 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Hungard Creek-Greenbrier River HUC-12 watershed include one transportation project (identified through one 404 permit with two stream/wetland crossings), 23 forestry projects, and seven other NPDES projects (non-construction stormwater; these seven projects have a total of nine stream discharge outlets). The one planned project identified is the Big Bend PSD Water System Improvements, which is a commercial/industrial project (Table 8; Appendix O; Figure 40, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 0.0038 acre (all permanent impacts; refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 2,364.0 acres. Please note that the planned project disturbance acreage was not provided in the information available. The total known disturbed acreage, including the Project's LOD, is approximately 2,612.3 acres, which is approximately 11.85 percent of the watershed.

4.7.2 Stony Creek-Greenbrier River

The Project's LOD would impact approximately 75.9 acres within the Stony Creek-Greenbrier River HUC-12 watershed. Refer to Tables 20 through 22 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Stony Creek-Greenbrier River HUC-12 watershed include two forestry projects. No planned projects were identified in the available information (Table 8; Figure 41, Appendix S).

Additional aquatic resource impacts not associated with the Project were not identified in this watershed (refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 21.0 acres. The total known disturbed acreage, including the Project's LOD, is approximately 96.9 acres, which is approximately 0.90 percent of the watershed.

Table 8
Summary of Past, Present, and Planned Projects in the HUC-12
Watersheds that Fall Within the Greenbrier River HUC-8 Watershed Based on Available Information^a

HUC-12 Watershed	HUC-12 Watershed Acreage (2019)	Mountain Valley Pipeline Project		Utility Line Projects			Residential Development Projects			Commercial/Industrial Projects			Transportation Projects			Forestry Projects		Mining Projects		Oil and Gas Well Development Projects	Other NPDES Projects	Planned Projects
		Limit of Disturbance (LOD) (acres)	Aquatic Resource Impacts (acres)	#	LOD (acres)	Aquatic Resource Impacts ^b (acres)	#	LOD (acres)	Aquatic Resource Impacts ^b (acres)	#	LOD (acres)	Aquatic Resource Impacts ^b (acres)	#	LOD (acres)	Aquatic Resource Impacts ^b (acres)	#	LOD (acres)	#	LOD (acres)	#	#	
Hungard Creek – Greenbrier River	22,038	248.3	0.7945	0	---	---	0	---	---	0	---	---	1	NL	0.0038	23	2,364	0	---	0	7	1
Stony Creek – Greenbrier River	10,775	75.9	0.2143	0	---	---	0	---	---	0	---	---	0	---	---	2	21	0	---	0	0	0

Notations

NL = LOD Acreage and/or Aquatic Resource Impact Acreage Not Available from Source(s), Not Listed.

^aPlease refer to Section 2.0 DATA SOURCE INFORMATION SUMMARY for descriptions of categories.

^b Resource Impacts include the total for both temporary and permanent impacts, per category, as listed in Appendix T.

4.8 Upper/Middle New Watershed

The Project crosses six 12-digit HUC watersheds in the Upper/Middle New HUC-8 watershed (Figure 2). These include Middle Indian Creek (050500020704), Rich Creek (050500020601), Stony Creek (050500020305), Little Stony Creek-New River (050500020304), Lower Sinking Creek (050500020303), and Upper Sinking Creek (050500020302) (Table 2). The Middle/Upper New watershed is approximately 1,687.8 mi² (1,080,188 acres). The combined drainage of the six listed watersheds is approximately 282.2 mi² (180,607 acres).

4.8.1 Middle Indian Creek

The Project's LOD would impact approximately 183.8 acres within the Middle Indian Creek HUC-12 watershed. Refer to Tables 23 through 25 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Middle Indian Creek HUC-12 watershed include six forestry projects and two other NPDES projects (non-construction stormwater; these two projects have a total of three stream discharge outlets). No planned projects were identified in the available information (Table 9; Figure 42, Appendix S).

Additional aquatic resource impacts not associated with the Project were not identified in this watershed (refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 240.0 acres. The total known disturbed acreage, including the Project's LOD, is approximately 423.8 acres, which is approximately 1.22 percent of the watershed.

4.8.2 Rich Creek

The Project's LOD would impact approximately 114.1 acres within the Rich Creek HUC-12 watershed. Refer to Tables 23 through 25 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Rich Creek HUC-12 watershed include, one commercial/industrial project (identified through one construction stormwater permit), 15 forestry projects, and one other NPDES project (non-construction stormwater; this one project has a total of three stream discharge outlets). The two planned projects identified include the Peterstown PK-8 School (a commercial/industrial development project) and the Red Sulphur PSD Adair Road/Little Rich Creek Valley Road and Pinhook Water Line Extension (a utility line project) (Table 9; Appendix O; Figure 43, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 150 lf of permanent impacts associated with a transportation project requiring a VADEQ permit (refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 527.7 acres. Please note that the planned project disturbance acreage was not provided in the information available. The total known disturbed acreage, including the Project's LOD, is approximately 641.8 acres, which is approximately 1.88 percent of the watershed.

4.8.3 Stony Creek

The Project's LOD would impact approximately 119 acres within the Stony Creek HUC-12 watershed. Refer to Tables 23 through 25 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Stony Creek HUC-12 watershed include four transportation projects and three mining projects. The only planned project identified is referred to as the Norfolk Southern/Bridge PV-4.37 Rehab/Giles, which is a transportation project (Table 9; Appendix P; Figure 44, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 200 linear feet of permanent impacts associated with transportation projects requiring a DEQ permit; refer to Appendix T. The total known disturbed acreage for the past and present projects in the watershed is approximately 218.22 acres. Please note that the planned project disturbance acreage was not provided in the information available. The total known disturbed acreage, including the Project's LOD, is approximately 337.20 acres, which is approximately 1.08 percent of the watershed.

4.8.4 Little Stony Creek-New River

The Project's LOD would impact approximately 110.5 acres within the Little Stony Creek-New River HUC-12 watershed. Refer to Tables 23 through 25 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Little Stony Creek-New River HUC-12 watershed include four utility line projects, one residential development project, one commercial/industrial project, four transportation projects, four forestry projects, and two other NPDES projects (non-construction stormwater). No planned projects were identified in the available information. (Table 9; Figure 45, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 0.04 acres, plus an additional 80 linear feet of permanent impacts associated with transportation projects requiring a VADEQ permit; refer to Appendix T. The total known disturbed acreage for the past and present projects in the watershed is approximately 215.7 acres. The total known disturbed acreage, including the Project's LOD, is approximately 326.2 acres, which is approximately 1.12 percent of the watershed.

4.8.5 Lower Sinking Creek

The Project's LOD would impact approximately 111 acres within the Lower Sinking Creek HUC-12 watershed. Refer to Tables 23 through 25 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Lower Sinking Creek HUC-12 watershed include one utility line project, two residential development projects, two transportation projects, and eleven forestry projects. The one planned project that was identified is the Kevin Brown Bridge/Chestnut Hill project, which is a residential development project (Table 9; Appendix P; Figure 46, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the project are approximately 0.02 acres, plus an additional 75 linear feet of permanent impacts associated with transportation projects requiring a VADEQ permit; refer to Appendix T. The total known disturbed acreage for the past and present projects in the watershed is approximately 147.77 acres. The total known disturbed acreage, including the Project's LOD, is approximately 258.77 acres, which is approximately 1.38 percent of the watershed.

4.8.6 Upper Sinking Creek

The Project's LOD would impact approximately 108.4 acres within the Upper Sinking Creek HUC-12 watershed. Refer to Tables 23 through 25 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Upper Sinking Creek HUC-12 watershed include one utility line project, two commercial/industrial projects, and seven forestry projects. No planned projects were identified in the available information (Table 9; Figure 47, Appendix S).

Additional aquatic resource impacts, not associated with the Project, were not identified in this watershed; refer to Appendix T. The total known disturbed acreage for the past and present projects in the watershed is approximately 202.09 acres. The total known disturbed acreage, including the Project's LOD, is approximately 310.49 acres, which is approximately 0.92 percent of the watershed.

Table 9
Summary of Past, Present, and Planned Projects in the HUC-12
Watersheds that Fall Within the Upper/ Middle New HUC-8 Watershed Based on Available Information^a

HUC-12 Watershed	HUC-12 Watershed Acreage (2019)	Mountain Valley Pipeline Project		Utility Line Projects			Residential Development Projects			Commercial/Industrial Projects			Transportation Projects			Forestry Projects		Mining Projects		Oil and Gas Well Development Projects	Other NPDES Projects	Planned Projects
		Limit of Disturbance (LOD) (acres)	Aquatic Resource Impacts (acres)	#	LOD (acres)	Aquatic Resource Impacts ^c (acres)	#	LOD (acres)	Aquatic Resource Impacts ^c (acres)	#	LOD (acres)	Aquatic Resource Impacts ^c (acres)	#	LOD (acres)	Aquatic Resource Impacts ^c (acres)	#	LOD (acres)	#	LOD (acres)	#	#	#
Middle Indian Creek	34,866	183.8	1.1361	0	---	---	0	---	---	0	---	---	0	---	---	6	240	0	---	0	2	0
Rich Creek	34,114	114.1	0.3628	1	1.80	NL	0	---	---	1	16.92	NL	1 ^b	NL	NL ^b	15	509	0	---	0	1	2
Stony Creek	31,289	119	0.07	0	---	---	0	---	---	0	---	---	4 ^b	NL	NL ^b	0	---	3	218.22	0	1	0
Little Stony Creek-New River	29,250	110.5	0.24	4	7.70	NL	1	NL	0.04	1	NL	NL	4 ^b	NL	NL	4	208	0	---	0	2	0
Lower Sinking Creek	18,795	111	0.16	1	NL	NL	2	2.77	NL	0	---	---	2 ^b	NL	0.02	11	145	0	---	0	0	1
Upper Sinking Creek	33,803	108.4	0.19	1	NL	0.001	0	---	---	2	1.09	NL	0	---	---	7	201	0	---	0	0	0

Notations

NL = LOD Acreage and/or Aquatic Resource Impact Acreage Not Available from Source(s), Not Listed.

^aPlease refer to Section 2.0 DATA SOURCE INFORMATION SUMMARY for descriptions of categories.

^bAdditional If impacts are listed in the accompanying HUC-12 section in the text.

^cAquatic Resource Impacts include the total for both temporary and permanent impacts, per category, as listed in Appendix T.

4.9 Upper James Watershed

The Project crosses one 12-digit HUC watershed in the Upper James HUC-8 Watershed (Figures 1-2, Appendix S), Trout Creek-Craig Creek (020802011001) (Table 11). The Upper James Watershed is approximately 2,210.7 mi²(1,414,842 acres) while the one 12-digit HUC watershed totals approximately 51.9 mi² (33,194 acres).

4.9.1 Trout Creek - Craig Creek

The Project's LOD would impact approximately 34.9 acres within the Trout Creek-Craig Creek HUC-12 watershed. Refer to Tables 26 through 28 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Trout Creek - Craig Creek HUC-12 watershed include one transportation project and three forestry projects. No planned projects were identified in the available information (Table 10; Figure 48, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 210 linear feet of permanent impacts associated with transportation projects requiring a VADEQ permit; refer to Appendix T. The total known disturbed acreage for the past and present projects in the watershed is approximately 52.2 acres. The total known disturbed acreage, including the Project's LOD, is approximately 87.1 acres, which is approximately .26 percent of the watershed.

Table 10
Summary of Past, Present, and Planned Projects in the HUC-12
Watersheds that Fall Within the Upper James HUC-8 Watershed Based on Available Information^a

HUC-12 Watershed	HUC-12 Watershed Acreage (2019)	Mountain Valley Pipeline Project		Utility Line Projects			Residential Development Projects			Commercial/Industrial Projects			Transportation Projects			Forestry Projects		Mining Projects		Oil and Gas Well Development Projects	Other NPDES Projects	Planned Projects
		Limit of Disturbance (LOD) (acres)	Aquatic Resource Impacts (acres)	#	LOD (acres)	Aquatic Resource Impacts ^c (acres)	#	LOD (acres)	Aquatic Resource Impacts ^c (acres)	#	LOD (acres)	Aquatic Resource Impacts ^c (acres)	#	LOD (acres)	Aquatic Resource Impacts ^c (acres)	#	LOD (acres)	#	LOD (acres)	#	#	#
Trout Creek-Craig Creek	33,194	34.9	0.12	0	---	---	0	---	---	0	---	---	1 ^b	NL	NL	3	52.2	0	---	0	0	0

Notations

NL = LOD Acreage and/or Aquatic Resource Impact Acreage Not Available from Source(s), Not Listed.

^aPlease refer to Section 2.0 DATA SOURCE INFORMATION SUMMARY for descriptions of categories.

^bAdditional linear feet impacts are listed in the accompanying HUC-12 section in the text.

^cAquatic Resource Impacts include the total for both temporary and permanent impacts, per category, as listed in Appendix T.

4.10 Upper Roanoke

The Project crosses thirteen 12-digit HUC watersheds in the Upper Roanoke HUC-8 Watershed (Figures 1-2, Appendix S). These include Dry Run-North Fork Roanoke River (030101010201), Wilson Creek-North Fork Roanoke River (030101010202), Bradshaw Creek-North Fork Roanoke River (030101010203), Brake Branch-South Fork Roanoke River (030101010105), Sawmill Hollow-Roanoke River (030101010301), Bottom Creek (030101010102), South Fork Blackwater River (030101010502), North Fork Blackwater River (030101010501), Madcap Creek-Blackwater River (030101010503), Maggodee Creek (030101010504), Standiford Creek-Smith Mountain Lake (030101010601), Owens Creek-Pigg River (030101010804), and Tomahawk Creek-Pigg River (030101011001) Watersheds. (Table 12). The Upper Roanoke Watershed is approximately 2,189.9 mi² (1,401,530 acres) while the thirteen 12-digit HUC watersheds total 529.5 mi² (338,877 acres)

4.10.1 Dry Run-North Fork Roanoke River

The Project's LOD would impact approximately 129.5 acres within the Dry Run-North Fork Roanoke River HUC-12 watershed. Refer to Tables 29 through 31 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Dry Run-North Fork Roanoke River HUC-12 watershed include two utility line projects, four residential projects, one commercial/industrial project, two transportation projects, two forestry projects and one other NPDES project (non-construction stormwater). No planned projects were identified in the available information (Table 11; Figure 49, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 4.73 acres, plus an additional 550 linear feet of permanent impacts associated with transportation projects requiring a VADEQ permit, and 60 linear feet of impacts associated with residential development projects requiring a VMRC permit; refer to Appendix T. The total known disturbed acreage for the past and present projects in the watershed is approximately 62.62 acres. The total known disturbed acreage, including the Project's LOD, is approximately 192.12 acres, which is approximately 0.59 percent of the watershed.

4.10.2 Bradshaw Creek-North Fork Roanoke River

The Project's LOD would impact approximately 101.2 acres within the Bradshaw Creek-North Fork Roanoke River HUC-12 watershed. Refer to Tables 29 through 31 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Bradshaw Creek-North Fork Roanoke River HUC-12 watershed include one utility line project, nine transportation projects, and one other NPDES project (non-construction stormwater). No planned projects were identified in the available information (Table 11; Figure 50, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 0.14 acres (0.1052

permanent and 0.0347 temporary), plus an additional 190 linear feet of permanent impacts associated with transportation projects requiring a VADEQ permit; refer to Appendix T. The total known disturbed acreage for the past and present projects in the watershed is approximately 1.84 acres. The total known disturbed acreage, including the Project's LOD, is approximately 103.04 acres, which is approximately 0.67 percent of the watershed.

4.10.3 Wilson Creek-North Fork Roanoke River

The Project's LOD would impact approximately 33.3 acres within the Wilson Creek-North Fork Roanoke River HUC-12 watershed. Refer to Tables 29 through 31 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Wilson Creek-North Fork Roanoke River HUC-12 watershed include one utility line project, five residential projects, 25 commercial/industrial projects, nine transportation projects, three forestry projects, one mining project, and six other NPDES projects (non-construction stormwater). The planned project that was identified is the Spencer Wilhelm/Very Good Gym/ Commercial Development/ Blacksburg/ Montgomery, which is a commercial/industrial project (Table 11; Appendix P; Figure 51, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 0.39 acre, 0.356 acre of which is permanent impact, plus an additional 259 linear feet of permanent impacts associated with residential developments and 45 linear feet of permanent impacts associated with transportation projects, both types requiring a VADEQ permit; refer to Appendix T. The total known disturbed acreage for the past and present projects in the watershed is approximately 466.81 acres. Please note that the planned project disturbance acreage was not provided in the information available. The total known disturbed acreage, including the Project's LOD, is approximately 500.11 acres, which is approximately 1.93 percent of the watershed.

4.10.4 Sawmill Hollow-Roanoke River

The Project's LOD would impact approximately 147.3 acres within the Sawmill Hollow-Roanoke River HUC-12 watershed. Refer to Tables 29 through 31 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Sawmill Hollow-Roanoke River HUC-12 watershed include nine utility line projects, 13 residential projects, 18 commercial/industrial projects, 14 transportation projects, nine forestry projects, one mining project, one oil and gas well development project, and 15 other NPDES projects (non-construction stormwater). Six planned projects were identified: Downtown Salem-Main Street-Union Street to Broad Street, Apperson Drive Bridge Replacement, Elizabeth Greenway, Colorado St Bridge Replacement, Downtown Salem- Roanoke Boulevard, and Archer Western/I-81 Corridor Improvement Project/Roanoke County and City of Salem, all of which are transportation projects (Table 11; Appendix P; Figure 52, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 0.1739 acre of permanent impacts, plus an additional 574 linear feet of impacts associated with commercial/industrial

projects requiring a VMRC permit and 400 linear feet of permanent associated with transportation projects requiring a VADEQ permit; refer to Appendix T. The total known disturbed acreage for the past and present projects in the watershed is approximately 377.38 acres. Please note that the planned project disturbance acreage was not provided in the information available. The total known disturbed acreage, including the Project's LOD, is approximately 524.68 acres, which is approximately 1.29 percent of the watershed.

4.10.5 Brake Branch-South Fork Roanoke River

The Project's LOD would impact approximately 22.6 acres within the Brake Branch-South Fork Roanoke River HUC-12 watershed. Refer to Tables 29 through 31 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Brake Branch-South Fork Roanoke River HUC-12 watershed include one residential project, five commercial/industrial projects, five transportation projects, six forestry projects, one mining project, and four other NPDES projects (non-construction stormwater). No planned projects were identified in the available information (Table 11; Figure 53, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 0.02 acres, 0.01 acres of which are permanent impact; refer to Appendix T. The total known disturbed acreage for the past and present projects in the watershed is approximately 473.97 acres. The total known disturbed acreage, including the Project's LOD, is approximately 496.57 acres, which is approximately 2.27 percent of the watershed.

4.10.6 Bottom Creek

The Project's LOD would impact approximately 117 acres within the Bottom Creek HUC-12 watershed. Refer to Tables 29 through 31 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Bottom Creek HUC-12 watershed include one utility line project, two residential projects, three commercial/industrial projects, two transportation projects, and four forestry projects. No planned projects were identified in the available information (Table 11; Figure 54, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 0.03 acre, plus an additional 542 linear feet of impacts associated with commercial/industrial projects and 35 linear feet of impacts associated with residential development projects requiring a VMRC permit; refer to Appendix T. The total known disturbed acreage for the past and present projects in the watershed is approximately 134.2 acres. The total known disturbed acreage, including the Project's LOD, is approximately 251.2 acres, which is approximately 1.39 percent of the watershed.

4.10.7 South Fork Blackwater River

The Project's LOD would impact approximately 30.8 acres within the South Fork Blackwater River HUC-12 watershed. Refer to Tables 29 through 31 of the May 2022 CIA located in

Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the South Fork Blackwater River HUC-12 watershed include 24 forestry projects, one mining project and one other NPDES project (non-construction stormwater). No planned projects were identified in the available information (Table 11; Figure 55, Appendix S).

Additional aquatic resource impacts, not associated with the Project were not identified in this watershed; refer to Appendix T. The total known disturbed acreage for the past and present projects in the watershed is approximately 687.5 acres. The total known disturbed acreage, including the Project's LOD, is approximately 718.3 acres, which is approximately 3.99 percent of the watershed.

4.10.8 North Fork Blackwater River

The Project's LOD would impact approximately 111 acres within the North Fork Blackwater River HUC-12 watershed. Refer to Tables 29 through 31 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the North Fork Blackwater River HUC-12 watershed include one transportation project and 21 forestry projects. No planned projects were identified in the available information (Table 11; Figure 56, Appendix S).

Additional aquatic resource impacts not associated with the Project were not identified in this watershed; refer to Appendix T. The total known disturbed acreage for the past and present projects in the watershed is approximately 659 acres. The total known disturbed acreage, including the Project's LOD, is approximately 770 acres, which is approximately 3.76 percent of the watershed.

4.10.9 Maggodee Creek

The Project's LOD would impact approximately 26.1 acres within the Maggodee Creek HUC-12 watershed. Refer to Tables 29 through 31 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Maggodee Creek HUC-12 watershed include one utility line project, three residential projects, two commercial/industrial projects, six transportation projects, 30 forestry projects, and four other NPDES projects (non-construction stormwater). The only planned project identified is listed as SMART20 – Int Imprv on Rtes 220/919 (Grassy Hill) which is a transportation project (Table 11; Appendix P; Figure 57, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 0.14 acre, plus an additional 160 linear feet of permanent impacts associated with transportation projects requiring a VADEQ permit; refer to Appendix T. The total known disturbed acreage for the past and present projects in the watershed is approximately 351.65 acres. Please note that the planned project disturbance acreage was not provided in the information available. The total known disturbed acreage, including the Project's LOD, is approximately 377.75 acres, which is approximately 1.30 percent of the watershed.

4.10.10 Madcap Creek-Blackwater River

The Project's LOD would impact approximately 245 acres within the Madcap Creek-Blackwater River HUC-12 watershed. Refer to Tables 29 through 31 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Madcap Creek-Blackwater River HUC-12 watershed include 14 utility line projects, two residential projects, 11 commercial/industrial projects, nine transportation projects, 43 forestry projects, and three other NPDES projects (non-construction stormwater). The two planned projects that were identified are the SMART18 – Summit View Business Park Intersection Improvements and SMART18 – Summit View Regional Business Park Projects, both of which are transportation projects (Table 11; Appendix P; Figure 58, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 1.77 acres, 1.11 acres of which are permanent, and 0.06 acre of which are temporary, the remainder of which are unknown. There are also 5,379 linear feet of impacts, of which 2,407 linear feet are associated with utility projects requiring a VMRC permit, 1,491 linear feet are associated with commercial projects, and 1,481 linear feet are associated with transportation projects requiring a VADEQ permit (refer to Appendix T). The total known disturbed acreage for the past and present projects in the watershed is approximately 951.15 acres. Please note that the planned project disturbance acreage was not provided in the information available. The total known disturbed acreage, including the Project's LOD, is approximately 1196.15 acres, which is approximately 3.23 percent of the watershed.

4.10.11 Standiford Creek-Smith Mountain Lake

The Project's LOD would impact approximately 142.4 acres within the Standiford Creek-Smith Mountain Lake HUC-12 watershed. Refer to Tables 29 through 31 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Standiford Creek-Smith Mountain Lake HUC-12 watershed include two utility line projects, 21 residential projects, one commercial/industrial project, three transportation projects, 30 forestry projects, and two other NPDES projects (non-construction stormwater). The only planned project identified is the Barnhart/Wirtz/Franklin bank stabilization, which is a residential development project (Table 11; Appendix P; Figure 59, Appendix S).

The total impacts to aquatic resources (as available and identified) for the past and present projects not associated with the Project are approximately 0.32 acre, 0.07 acre of which is temporary impacts; refer to Appendix T. The total known disturbed acreage in the watershed for the past and present projects not associated with the Project in the watershed is approximately 432.8 acres. Please note that the planned project disturbance acreage was not provided in the information available. The total known disturbed acreage, including the Project's LOD, is approximately 575.2 acres, which is approximately 1.93 percent of the watershed.

4.10.12 Owens Creek-Pigg River

The Project's LOD would impact approximately 117 acres within the Owens Creek-Pigg River HUC-12 watershed. Refer to Tables 29 through 31 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Owens Creek-Pigg River HUC-12 watershed include one residential project, three commercial/industrial projects, 26 forestry projects, one mining project, and one other NPDES project (non-construction stormwater). No planned projects were identified in the available information (Table 11; Figure 60, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 0.003 acre, plus an additional 10 linear feet of impacts associated with residential development projects requiring a VMRC permit; refer to Appendix T. The total known disturbed acreage for the past and present projects in the watershed is approximately 1,811.52 acres. The total known disturbed acreage, including the Project's LOD, is approximately 1,928.52 acres, which is approximately 8.31 percent of the watershed.

4.10.13 Tomahawk Creek-Pigg River

The Project's LOD would impact approximately 188.4 acres within the Tomahawk Creek-Pigg River HUC-12 watershed. Refer to Tables 29 through 31 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Tomahawk Creek-Pigg River HUC-12 watershed include 28 forestry projects.

Additional aquatic resource impacts not associated with the Project were not identified in this watershed; refer to Appendix T. The total known disturbed acreage for the past and present projects in the watershed is approximately 778 acres. The total known disturbed acreage, including the Project's LOD, is approximately 966.4 acres, which is approximately 3.63 percent of the watershed (Table 11; Figure 61, Appendix S).

Table 11
Summary of Past, Present, and Planned Projects in the HUC-12
Watersheds that Fall Within the Upper Roanoke HUC-8 Watershed Based on Available Information^a

HUC-12 Watershed	HUC-12 Watershed Acreage (2019)	Mountain Valley Pipeline Project		Utility Line Projects			Residential Development Projects			Commercial/Industrial Projects			Transportation Projects			Forestry Projects		Mining Projects		Oil and Gas Well Development Projects	Other NPDES Projects	Planned Projects
		Limit of Disturbance (LOD) (acres)	Aquatic Resource Impacts (acres)	#	LOD (acres)	Aquatic Resource Impacts ^d (acres)	#	LOD (acres)	Aquatic Resource Impacts ^d (acres)	#	LOD (acres)	Aquatic Resource Impacts ^d (acres)	#	LOD (acres)	Aquatic Resource Impacts ^d (acres)	#	LOD (acres)	#	LOD (acres)	#	#	#
Dry Run-North Fork Roanoke River	32,811	129.5	0.19	2	5.31	NL	4 ^c	NL	4.73	1	13.41	NL	2 ^c	13.90	NL	2	30	0	---	0	1	0
Bradshaw Creek-North Fork Roanoke River	15,320	101.2	0.07	1	1.84	NL	0	---	---	0	---	---	9 ^c	144.18	0.14	0	---	0	---	0	1	0
Wilson Creek-North Fork Roanoke River	25,895	33.3	W0.42	1	1.75	NL	5 ^c	41.35	NL	25	133.11	0.37	9 ^{bc}	7.00	0.02	3	99	1	191.60	0	6	1
Sawmill Hollow-Roanoke River	40,523	147.3	0.22	13	8.43	0.02	13	41.72	0.12	18 ^c	52.53	0.01	14 ^c	4.45	NL	9	254	1	16.25	1	15	6
Brake Branch-South Fork Roanoke River	21,870	22.6	0.05	0	---	---	1	8.57	NL	5	30.80	NL	5 ^b	37.10	0.02	6	295	1	102.50	0	4	0
Bottom Creek	18,129	117	2.29	1	6.90	NL	2 ^c	NL	0.03	3 ^c	3.10	NL	2	12.20	NL	4	112	0	---	0	0	0
South Fork Blackwater River	18,019	30.8	0.26	0	---	---	0	---	---	0	---	---	0	---	---	24	660.5	1	27	0	1	0
North Fork Blackwater River	20,475	111	0.31	0	---	---	0	---	---	0	---	---	1	NL	NL	21	659	0	---	0	0	0
Maggodee Creek	29,144	26.1	0.18	3	NL	0.02	3	NL	0.11	2	14.05	NL	6 ^{bc}	NL	0.01	30	337.6	0	---	0	4	1
Madcap Creek-Blackwater River	37,059	245	1.42	14 ^c	9.02	0.01	2	NL	0.02	11 ^c	234.85	0.57	9 ^{bc}	40.87	NL	43	666.41	0	---	0	3	2
Standiford Creek-Smith Mountain Lake	29,829	142.4	0.65	2	7.70	0.01	21	37.50	0.31	1	8.00	NL	3	7.50	0.01	30	372.1	0	---	0	2	2
Owens Creek-Pigg River	23,204	117	0.35	0	---	---	1 ^c	NL	NL	3	23.56	0.003	0	---	---	26	1,653.3	1	134.66	0	1	0
Tomahawk Creek-Pigg River	26,599	188.4	0.48	0	---	---	0	---	---	0	---	---	0	---	---	28	778	0	---	0	0	0

^aNotations: NL = LOD Acreage and/or Aquatic Resource Impact Acreage Not Available from Source(s), Not Listed.

^bPlease refer to Section 2.0 DATA SOURCE INFORMATION SUMMARY for descriptions of categories.

^cPast and present project(s) listed in multiple HUC 12 watersheds are counted as separate projects in each HUC-12. Please note that for LOD acreage values, each HUC-12 value includes the total past and present project LOD.

^dAdditional linear feet impacts are listed in the accompanying HUC-12 section in the text.

^eAquatic Resource Impacts include the total for both temporary and permanent impacts, per category, as listed in Appendix T.

4.11 Banister Watershed

The Project crosses three 12-digit HUC watersheds in the Banister HUC-8 watershed (Figures 1-2, Appendix S). These include Cherrystone Creek (030101050104), Mill Creek-Whitehorn Creek (030101050201), and Shockoe Creek-Banister River (030101050203). The Banister watershed is approximately 596.7 mi² (381,887 acres) the smallest in the Project area. The combined drainage of the three listed watersheds is approximately 116.7 mi² (74,672 acres). This includes the Shockoe Creek-Banister River watershed that has no stream impacts.

4.11.1 Cherrystone Creek

The Project's LOD would impact approximately 175.01 acres within the Cherrystone Creek HUC-12 watershed. Refer to Tables 42 through 44 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Cherrystone Creek HUC-12 watershed include three utility line projects, two residential development projects, four commercial/industrial projects, two transportation projects, 23 forestry projects, one oil and gas well project, and three other NPDES projects (non-construction stormwater). No planned projects were identified in the available information (Table 12; Figure 62, Appendix S).

The total impacts to aquatic resources (as available and identified) for the past and present projects not associated with the Project is approximately 0.01 acre permanent or temporary, plus an additional 116.5 feet of permanent impacts associated with transportation projects requiring a VADEQ permit; refer to Appendix T. The total known disturbed acreage for the past and present projects in the watershed is approximately 1,586.81 acres. The total known disturbed acreage, including the Project's LOD, is approximately 1,761.82 acres which is approximately 6.05 percent of the watershed.

4.11.2 Mill Creek-Whitehorn Creek

The Project's LOD would impact approximately 33.5 acres within the Mill Creek-Whitehorn Creek HUC-12 watershed. Refer to Tables 42 through 44 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Mill Creek-Whitehorn Creek HUC-12 watershed include one utility line project, four commercial/industrial projects, one transportation project, 26 forestry projects, and one mining project. No planned projects were identified in the available information (Table 12; Figure 63, Appendix S).

Additional aquatic resource impacts, not associated with the Project were not identified in this watershed; refer to Appendix T. The total known disturbed acreage for the past and present projects in the watershed is approximately 1,399.48 acres. The total known disturbed acreage, including the Project's LOD, is approximately 1,432.98 acres, which is approximately 5.37 percent of the watershed.

4.11.3 Shockoe Creek-Banister River

The Project's LOD would impact approximately 11.9 acres within the Shockoe Creek-Banister River HUC-12 watershed. Refer to Tables 42 through 44 of the May 2022 CIA located in Appendix Q for a summary of land cover changes and aquatic resource impacts. Past and present projects identified in the Shockoe Creek-Banister River HUC-12 watershed include two transportation projects and 32 forestry projects. No planned projects were identified in the available information (Table 12; Figure 64, Appendix S).

The total impacts to aquatic resources (as available and identified) in the watershed for the past and present projects not associated with the Project are approximately 140 linear feet of permanent impacts associated with transportation projects requiring a VADEQ permit; refer to Appendix T. The total known disturbed acreage for the past and present projects in the watershed is approximately 1,551.5 acres. The total known disturbed acreage is the Project's approximately 1,563.4 acres, which is approximately 8.31 percent of the watershed.

Table 12
Summary of Past, Present, and Planned Projects in the HUC-12
Watersheds that Fall Within the Banister HUC-8 Watershed Based on Available Information^a

HUC-12 Watershed	HUC-12 Watershed Acreage (2019)	Mountain Valley Pipeline Project		Utility Line Projects			Residential Development Projects			Commercial/Industrial Projects			Transportation Projects			Forestry Projects		Mining Projects		Oil and Gas Well Development Projects	Other NPDES Projects	Planned Projects
		Limit of Disturbance (LOD) (acres)	Aquatic Resource Impacts (acres)	#	LOD (acres)	Aquatic Resource Impacts ^c (acres)	#	LOD (acres)	Aquatic Resource Impacts ^c (acres)	#	LOD (acres)	Aquatic Resource Impacts ^c (acres)	#	LOD (acres)	Aquatic Resource Impacts ^c (acres)	#	LOD (acres)	#	LOD (acres)	#	#	#
Cherrystone Creek	29,138	175.01	1.92	3	11.75	NL	2	28.69	0.01	4	882.37	NL	2	NL	NL	23	674	0	---	1	3	0
Mill Creek-Whitehorn Creek	26,718	33.5	0.04	1	3.26	NL	0	0.00	---	4	450.32	NL	1	2.90	NL	26	943	1	2	0	0	0
Shockoe Creek-Banister River	18,816	11.9	0.04	0	---	---	0	0.00	---	0	---	---	2 ^b	NL	NL	32	1,551.5	0	---	0	0	0

Notations

NL = LOD Acreage and/or Aquatic Resource Impact Acreage Not Available from Source(s), Not Listed.

^aPlease refer to Section 2.0 DATA SOURCE INFORMATION SUMMARY for descriptions of categories.

^bAdditional linear feet impacts are listed in the accompanying HUC-12 section in the text.

^cAquatic Resource Impacts include the total for both temporary and permanent impacts, per category, as listed in Appendix T.