# Baseline Assessment – Stream Attributes

## *Revisit*

***Additional information was collected on 01/11/2022. Water quality, benthic, and pebble count data were not collected because there was no assessable reach within the LOD.***

# Reach S-IJ19 - Upstream 43' (Temporary Access Road)
# Ephemeral
# Spread G
# Giles County, Virginia

| Data | Included |
|---|---|
| Photos | ✓* |
| SWVM Form | ✓* |
| FCI Calculator and HGM Form | N/A – No assessable reach within LOD |
| RBP Physical Characteristics Form | ✓* |
| Water Quality Data | N/A – No assessable reach within LOD |
| RBP Habitat Form | ✓* |
| RBP Benthic Form | ✓* |
| Benthic Identification Sheet | N/A – No assessable reach within LOD |
| Wolman Pebble Count | N/A – No assessable reach within LOD |
| RiverMorph Data Sheet | N/A – No assessable reach within LOD |
| USM Form (Virginia Only) | ✓ |
| Longitudinal Profile and Cross Sections | ✓ |


Photo Type: DS VIEW
Location, Orientation, Photographer Initials: Downstream view of LOC looking W (no stream bed present), KB


Photo Type: US VIEW
Location, Orientation, Photographer Initials: Upstream view of LOC looking E, KB


Photo Type: CL ACCESS 1
Location, Orientation, Photographer Initials: Standing in Access Road looking S, KB


Photo Type: CL ACCESS 2
Location, Orientation, Photographer Initials: Standing in Access Road looking N, KB


Photo Type: DS COND
Location, Orientation, Photographer Initials: Downstream conditions outside of LOC looking S, KB

*L:\22000s\22800\22865.06\Admin\05-ENVR\Field Data\Spread G\Field Forms\S-IJ19\Photo Document_Access Road_S-IJ19 US.docx*


Photo Type: DS VIEW
Location, Orientation, Photographer Initials: Downstream view of LOC looking S, KB

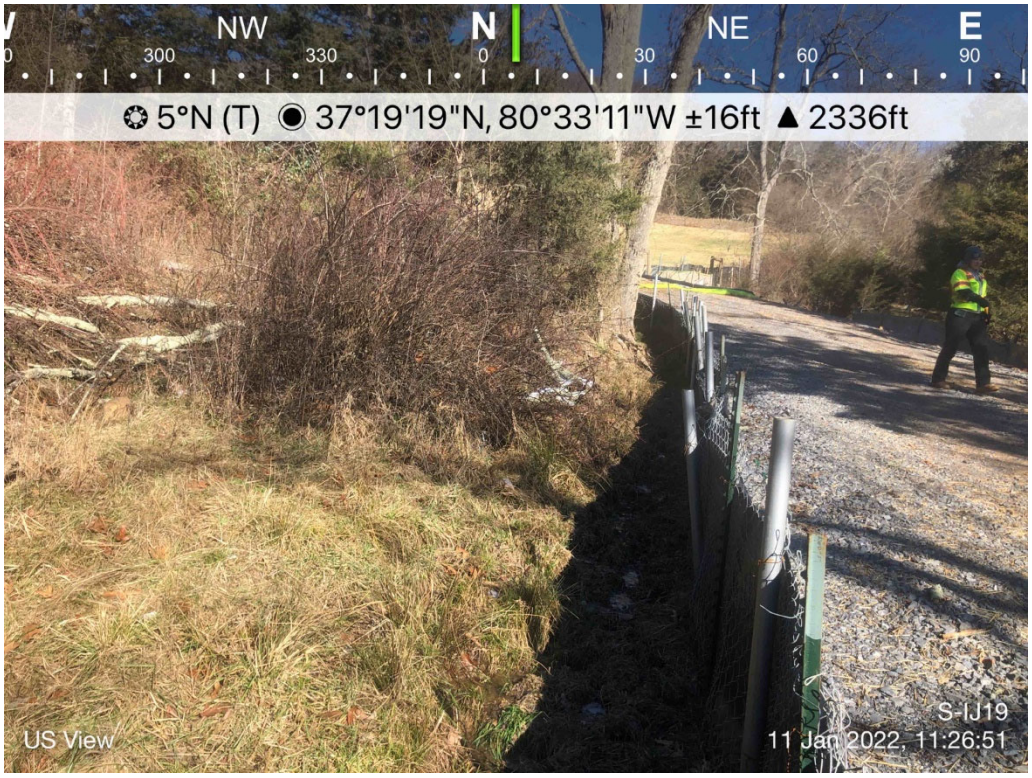



Photo Type: US VIEW
Location, Orientation, Photographer Initials: Upstream view of LOC looking N, KB


Photo Type: CL ACCESS 1
Location, Orientation, Photographer Initials: Standing off the Access Road looking E, KB


Photo Type: CL ACCESS 2
Location, Orientation, Photographer Initials: Standing off the Access Road looking W/SW, KB

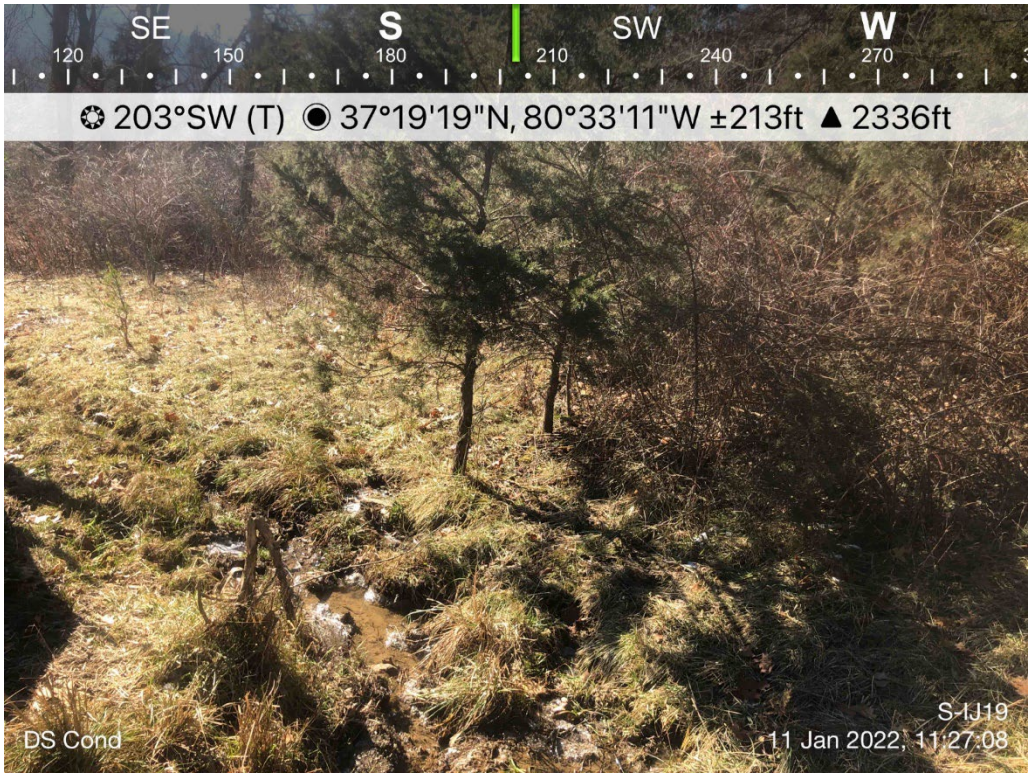



Photo Type: DS COND
Location, Orientation, Photographer Initials: Downstream conditions outside of LOC looking S/SW, KB


Photo Type: US COND
Location Orientation, Photographer Initials: Upstream conditions outside of LOC looking E/NE, KB

| USACE FILE NO./ Project Name: (v2.1, Sept 2015) | Mountain Valley Pipeline | IMPACT COORDINATES: (in Decimal Degrees) | Lat. | 37.322194 | Lon. | -80.443058 | WEATHER: | Sunny | DATE: | January 11, 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| IMPACT STREAM/SITE ID AND SITE DESCRIPTION: (watershed size (acreage), unaltered or impairments) | S-IJ19 | | | MITIGATION STREAM CLASS./SITE ID AND SITE DESCRIPTION: (watershed size (acreage), unaltered or impairments) | | | | | Comments: | |
| STREAM IMPACT LENGTH: | 43 | FORM OF MITIGATION: | RESTORATION (Levels I-III) | MIT COORDINATES: (in Decimal Degrees) | Lat. | | Lon. | | PRECIPITATION PAST 48 HRS: | 0.29" | Mitigation Length: | |

| Column No. 1- Impact Existing Condition (Debit) | | | | Column No. 2- Mitigation Existing Condition - Baseline (Credit) | | | | Column No. 3- Mitigation Projected at Five Years Post Completion (Credit) | | | | Column No. 4- Mitigation Projected at Ten Years Post Completion (Credit) | | | | Column No. 5- Mitigation Projected at Maturity (Credit) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Stream Classification: | Ephemeral | | | Stream Classification: | | | | Stream Classification: | 0 | | | Stream Classification: | 0 | | | Stream Classification: | 0 | | |
| Percent Stream Channel Slope | | | | Percent Stream Channel Slope | | | | Percent Stream Channel Slope | 0 | | | Percent Stream Channel Slope | 0 | | | Percent Stream Channel Slope | 0 | | |
| HGM Score (attach data forms): | | | | HGM Score (attach data forms): | | | | HGM Score (attach data forms): | | | | HGM Score (attach data forms): | | | | HGM Score (attach data forms): | | | |
| | | | Average | | | | Average | | | | Average | | | | Average | | | | Average |
| Hydrology | | | | Hydrology | | | | Hydrology | | | | Hydrology | | | | Hydrology | | | |
| Biogeochemical Cycling | | | 0 | Biogeochemical Cycling | | | 0 | Biogeochemical Cycling | | | 0 | Biogeochemical Cycling | | | 0 | Biogeochemical Cycling | | | 0 |
| Habitat | | | | Habitat | | | | Habitat | | | | Habitat | | | | Habitat | | | |
| **PART I - Physical, Chemical and Biological Indicators** | | | | **PART I - Physical, Chemical and Biological Indicators** | | | | **PART I - Physical, Chemical and Biological Indicators** | | | | **PART I - Physical, Chemical and Biological Indicators** | | | | **PART I - Physical, Chemical and Biological Indicators** | | | |
| | Points Scale | Range | Site Score | | Points Scale | Range | Site Score | | Points Scale | Range | Site Score | | Points Scale | Range | Site Score | | Points Scale | Range | Site Score |
| **PHYSICAL INDICATOR** (Applies to all streams classifications) | | | | **PHYSICAL INDICATOR** (Applies to all streams classifications) | | | | **PHYSICAL INDICATOR** (Applies to all streams classifications) | | | | **PHYSICAL INDICATOR** (Applies to all streams classifications) | | | | **PHYSICAL INDICATOR** (Applies to all streams classifications) | | | |
| **USEPA RBP (High Gradient Data Sheet)** | | | | **USEPA RBP (Low Gradient Data Sheet)** | | | | **USEPA RBP (High Gradient Data Sheet)** | | | | **USEPA RBP (High Gradient Data Sheet)** | | | | **USEPA RBP (High Gradient Data Sheet)** | | | |
| 1. Epifaunal Substrate/Available Cover | 0-20 | | 5 | 1. Epifaunal Substrate/Available Cover | 0-20 | | | 1. Epifaunal Substrate/Available Cover | 0-20 | | | 1. Epifaunal Substrate/Available Cover | 0-20 | | | 1. Epifaunal Substrate/Available Cover | 0-20 | | |
| 2. Embeddedness | 0-20 | | 7 | 2. Pool Substrate Characterization | 0-20 | | | 2. Embeddedness | 0-20 | | | 2. Embeddedness | 0-20 | | | 2. Embeddedness | 0-20 | | |
| 3. Velocity/ Depth Regime | 0-20 | | 1 | 3. Pool Variability | 0-20 | | | 3. Velocity/ Depth Regime | 0-20 | | | 3. Velocity/ Depth Regime | 0-20 | | | 3. Velocity/ Depth Regime | 0-20 | | |
| 4. Sediment Deposition | 0-20 | | 4 | 4. Sediment Deposition | 0-20 | | | 4. Sediment Deposition | 0-20 | | | 4. Sediment Deposition | 0-20 | | | 4. Sediment Deposition | 0-20 | | |
| 5. Channel Flow Status | 0-20 | 0-1 | 3 | 5. Channel Flow Status | 0-20 | 0-1 | | 5. Channel Flow Status | 0-20 | 0-1 | | 5. Channel Flow Status | 0-20 | 0-1 | | 5. Channel Flow Status | 0-20 | 0-1 | |
| 6. Channel Alteration | 0-20 | | 20 | 6. Channel Alteration | 0-20 | | | 6. Channel Alteration | 0-20 | | | 6. Channel Alteration | 0-20 | | | 6. Channel Alteration | 0-20 | | |
| 7. Frequency of Riffles (or bends) | 0-20 | | 1 | 7. Channel Sinuosity | 0-20 | | | 7. Frequency of Riffles (or bends) | 0-20 | | | 7. Frequency of Riffles (or bends) | 0-20 | | | 7. Frequency of Riffles (or bends) | 0-20 | | |
| 8. Bank Stability (LB & RB) | 0-20 | | 15 | 8. Bank Stability (LB & RB) | 0-20 | | | 8. Bank Stability (LB & RB) | 0-20 | | | 8. Bank Stability (LB & RB) | 0-20 | | | 8. Bank Stability (LB & RB) | 0-20 | | |
| 9. Vegetative Protection (LB & RB) | 0-20 | | 11 | 9. Vegetative Protection (LB & RB) | 0-20 | | | 9. Vegetative Protection (LB & RB) | 0-20 | | | 9. Vegetative Protection (LB & RB) | 0-20 | | | 9. Vegetative Protection (LB & RB) | 0-20 | | |
| 10. Riparian Vegetative Zone Width (LB & RB) | 0-20 | | 11 | 10. Riparian Vegetative Zone Width (LB & RB) | 0-20 | | | 10. Riparian Vegetative Zone Width (LB & RB) | 0-20 | | | 10. Riparian Vegetative Zone Width (LB & RB) | 0-20 | | | 10. Riparian Vegetative Zone Width (LB & RB) | 0-20 | | |
| Total RBP Score | Suboptimal | | 68 | Total RBP Score | Poor | | 0 | Total RBP Score | Poor | | 0 | Total RBP Score | Poor | | 0 | Total RBP Score | Poor | | 0 |
| Sub-Total | | | 0.56666667 | Sub-Total | | | 0 | Sub-Total | | | 0 | Sub-Total | | | 0 | Sub-Total | | | 0 |
| **CHEMICAL INDICATOR** (Applies to Intermittent and Perennial Streams) | | | | **CHEMICAL INDICATOR** (Applies to Intermittent and Perennial Streams) | | | | **CHEMICAL INDICATOR** (Applies to Intermittent and Perennial Streams) | | | | **CHEMICAL INDICATOR** (Applies to Intermittent and Perennial Streams) | | | | **CHEMICAL INDICATOR** (Applies to Intermittent and Perennial Streams) | | | |
| **WVDEP Water Quality Indicators (General)** | | | | **WVDEP Water Quality Indicators (General)** | | | | **WVDEP Water Quality Indicators (General)** | | | | **WVDEP Water Quality Indicators (General)** | | | | **WVDEP Water Quality Indicators (General)** | | | |
| **Specific Conductivity** | | | | **Specific Conductivity** | | | | **Specific Conductivity** | | | | **Specific Conductivity** | | | | **Specific Conductivity** | | | |
| 100-199 - 85 points | 0-90 | | | | 0-90 | | | | 0-90 | | | | 0-90 | | | | 0-90 | | |
| **pH** | | 0-1 | | **pH** | | 0-1 | | **pH** | | 0-1 | | **pH** | | 0-1 | | **pH** | | 0-1 | |
| 5.6-5.9 = 45 points | 0-80 | | | | 5-90 | | | | 5-90 | | | | 5-90 | | | | 5-90 | | |
| **DO** | | | | **DO** | | | | **DO** | | | | **DO** | | | | **DO** | | | |
| | 10-30 | | | | 10-30 | | | | 10-30 | | | | 10-30 | | | | 10-30 | | |
| Sub-Total | | | | Sub-Total | | | 0 | Sub-Total | | | 0 | Sub-Total | | | 0 | Sub-Total | | | 0 |
| **BIOLOGICAL INDICATOR** (Applies to Intermittent and Perennial Streams) | | | | **BIOLOGICAL INDICATOR** (Applies to Intermittent and Perennial Streams) | | | | **BIOLOGICAL INDICATOR** (Applies to Intermittent and Perennial Streams) | | | | **BIOLOGICAL INDICATOR** (Applies to Intermittent and Perennial Streams) | | | | **BIOLOGICAL INDICATOR** (Applies to Intermittent and Perennial Streams) | | | |
| **WV Stream Condition Index (WVSCI)** | | | | **WV Stream Condition Index (WVSCI)** | | | | **WV Stream Condition Index (WVSCI)** | | | | **WV Stream Condition Index (WVSCI)** | | | | **WV Stream Condition Index (WVSCI)** | | | |
| 0 | 0-100 | 0-1 | | | 0-100 | 0-1 | | | 0-100 | 0-1 | | | 0-100 | 0-1 | | | 0-100 | 0-1 | |
| Sub-Total | | | 0 | Sub-Total | | | 0 | Sub-Total | | | 0 | Sub-Total | | | 0 | Sub-Total | | | 0 |

| PART II - Index and Unit Score | | | PART II - Index and Unit Score | | | PART II - Index and Unit Score | | | PART II - Index and Unit Score | | | PART II - Index and Unit Score | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Index | Linear Feet | Unit Score | Index | Linear Feet | Unit Score | Index | Linear Feet | Unit Score | Index | Linear Feet | Unit Score | Index | Linear Feet | Unit Score |
| 0.683 | 43 | 29.3833333 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

| | | |
|---|---|---|
| STREAM NAME S-IJ19 | LOCATION Giles County | |
| STATION # AR-44 RIVERMILE | STREAM CLASS Ephemeral | |
| LAT 37.321823 LONG -80.55311 | RIVER BASIN Middle New | |
| STORET # | AGENCY VADEQ | |
| INVESTIGATORS KB AB | | |
| FORM COMPLETED BY KB | DATE 1/11/22<br>TIME 11:30 AM | REASON FOR SURVEY Baseline Assessment |

**WEATHER CONDITIONS**

| Now | | Past 24 hours |
|---|---|---|
| ☐ | storm (heavy rain) | ☐ |
| ☐ | rain (steady rain) | ☐ |
| ☐ | showers (intermittent) | ☐ |
| ____% | %cloud cover | ____% |
| ☑ | clear/sunny | ☑ |

**Has there been a heavy rain in the last 7 days?** ☐ Yes ☑ No

**Air Temperature** -5.6 $^0$ C

**Other**_____

**SITE LOCATION/MAP**

**Draw a map of the site and indicate the areas sampled (or attach a photograph)**


**STREAM CHARACTERIZATION**

**Stream Subsystem**
☐ Perennial ☑ Intermittent ☐ Tidal

**Stream Type**
☐ Coldwater ☑ Warmwater

**Stream Origin**
☐ Glacial
☐ Non-glacial montane
☐ Swamp and bog
☐ Spring-fed
☑ Mixture of origins
☐ Other_____

**Catchment Area** 0.02 km$^2$

# PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

**WATERSHED FEATURES**

**Predominant Surrounding Landuse**
☐ Forest ☐ Commercial
☑ Field/Pasture ☐ Industrial
☐ Agricultural ☐ Other _____
☐ Residential

**Local Watershed NPS Pollution**
☑ No evidence ☐ Some potential sources
☐ Obvious sources

**Local Watershed Erosion**
☑ None ☐ Moderate ☐ Heavy

**RIPARIAN VEGETATION (18 meter buffer)**

**Indicate the dominant type and record the dominant species present**
☑ Trees ☐ Shrubs ☐ Grasses ☐ Herbaceous

**Dominant species present** Juniperus virginiana

**INSTREAM FEATURES**

**Estimated Reach Length** 5 m

**Estimated Stream Width** 0.25 m

**Sampling Reach Area** 1 $m^2$

**Area in $km^2$ ($m^2$x1000)** _____ $km^2$

**Estimated Stream Depth** 0.05 m

**Surface Velocity (at thalweg)** N/A m/sec

**Canopy Cover**
☑ Partly open ☐ Partly shaded ☐ Shaded

**High Water Mark** 0.10 m

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

**Channelized** ☐ Yes ☑ No

**Dam Present** ☐ Yes ☑ No

**LARGE WOODY DEBRIS**

**LWD** 0 $m^2$

**Density of LWD** 0 $m^2/km^2$ **(LWD/ reach area)**

**AQUATIC VEGETATION**

**Indicate the dominant type and record the dominant species present**
☐ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating
☐ Floating Algae ☐ Attached Algae

**Dominant species present** N/A

**Portion of the reach with aquatic vegetation** 0 %

**WATER QUALITY**

**Temperature** N/A $^0$ C

**Specific Conductance** N/A

**Dissolved Oxygen** N/A

**pH** N/A

**Turbidity** N/A

**WQ Instrument Used** N/A

**Water Odors**
☑ Normal/None ☐ Sewage
☐ Petroleum ☐ Chemical
☐ Fishy ☐ Other _____

**Water Surface Oils**
☐ Slick ☐ Sheen ☐ Globs Flecks
☑ None ☐ Other _____

**Turbidity (if not measured)**
☐ Clear ☑ Slightly turbid ☐ Turbid
☐ Opaque ☐ Stained ☐ Other _____

**SEDIMENT/ SUBSTRATE**

**Odors**
☑ Normal ☐ Sewage ☐ Petroleum
☐ Chemical ☐ Anaerobic ☐ None
☐ Other _____

**Oils**
☑ Absent ☐ Slight ☐ Moderate ☐ Profuse

**Deposits**
☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand
☐ Relict shells ☐ Other _____

**Looking at stones which are not deeply embedded, are the undersides black in color?**
☐ Yes ☑ No

| INORGANIC SUBSTRATE COMPONENTS (should add up to 100%) | | | ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%) | | |
|---|---|---|---|---|---|
| **Substrate Type** | **Diameter** | **% Composition in Sampling Reach** | **Substrate Type** | **Characteristic** | **% Composition in Sampling Area** |
| Bedrock | | 0 | Detritus | sticks, wood, coarse plant materials (CPOM) | 0 |
| Boulder | > 256 mm (10") | 0 | | | |
| Cobble | 64-256 mm (2.5"-10") | 20 | Muck-Mud | black, very fine organic (FPOM) | 0 |
| Gravel | 2-64 mm (0.1"-2.5") | 0 | | | |
| Sand | 0.06-2mm (gritty) | 0 | Marl | grey, shell fragments | 0 |
| Silt | 0.004-0.06 mm | 80 | | | |
| Clay | < 0.004 mm (slick) | 0 | | | |

Note: No assessable reach within LOD

## HABITAT ASSESSMENT FIELD DATA SHEET - HG - USE ON ALL STREAMS (FRONT)

| | | |
|---|---|---|
| STREAM NAME S-IJ19 | LOCATION Giles County | |
| STATION # AR-44 RIVERMILE | STREAM CLASS Ephemeral | |
| LAT 37.321823 LONG -80.55311 | RIVER BASIN Middle New | |
| STORET # | AGENCY VADEQ | |
| INVESTIGATORS KB AB | | |
| FORM COMPLETED BY KB | DATE 1/11/22 TIME 11:30 AM AM PM | REASON FOR SURVEY Baseline Assessment |

Parameters to be evaluated in sampling reach

| Habitat Parameter | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| **1. Epifaunal Substrate/ Available Cover** | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient). | 40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. | Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. |
| **SCORE** 5 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| **2. Embeddedness** | Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. | Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment. | Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment. | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. |
| **SCORE** 7 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| **3. Velocity/Depth Regime** | All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.) | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). | Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low). | Dominated by 1 velocity/ depth regime (usually slow-deep). |
| **SCORE** 1 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| **4. Sediment Deposition** | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. |
| **SCORE** 4 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| **5. Channel Flow Status** | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | Water fills >75% of the available channel; or <25% of channel substrate is exposed. | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. | Very little water in channel and mostly present as standing pools. |
| **SCORE** 3 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |

Notes:Stream completely off LOD likely begins under bridge. Assessment made from within limits visually.

## HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (BACK)

**Parameters to be evaluated broader than sampling reach**

| Habitat Parameter | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| **6. Channel Alteration** | Channelization or dredging absent or minimal; stream with normal pattern. | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. |
| **SCORE** 20 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| **7. Frequency of Riffles (or bends)** | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25. |
| **SCORE** 1 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| **8. Bank Stability (score each bank)** Note: determine left or right side by facing downstream. | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected. | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. |
| SCORE 5 | Left Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 |
| SCORE 10 | Right Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 |
| **9. Vegetative Protection** (score each bank) | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. |
| SCORE 1 | Left Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 |
| SCORE 10 | Right Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 |
| **10. Riparian Vegetative Zone Width** (score each bank riparian zone) | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. | Width of riparian zone 6-12 meters; human activities have impacted zone a great deal. | Width of riparian zone <6 meters: little or no riparian vegetation due to human activities. |
| SCORE 1 | Left Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 |
| SCORE 10 | Right Bank 10 9 | 8 7 6 | 5 4 3 | 2 1 0 |

**Total Score** 68

Notes: Left bank impacted by ESC super silt fence on AR-245.

# BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

| | | |
|---|---|---|
| STREAM NAME S-IJ19 | LOCATION Giles County | |
| STATION # AR-44 RIVERMILE_____ | STREAM CLASS Ephemeral | |
| LAT 37.321823 LONG -80.55311 | RIVER BASIN Middle New | |
| STORET # | AGENCY VADEQ | |
| INVESTIGATORS KB AB | | LOT NUMBER |
| FORM COMPLETED BY KB | DATE 1/11/22<br>TIME 11:30 AM | REASON FOR SURVEY Baseline Assessment |

| | |
|---|---|
| **HABITAT TYPES** | **Indicate the percentage of each habitat type present**<br>☐Cobble_____% ☐Snags_____% ☐Vegetated Banks_____% ☐Sand_____%<br>☐Submerged Macrophytes_____% ☐Other (  )_____% |
| **SAMPLE COLLECTION** | **Gear used** ☐D-frame ☐kick-net ☐Other _____<br>**How were the samples collected?** ☐wading ☐from bank ☐from boat<br>**Indicate the number of jabs/kicks taken in each habitat type.**<br>☐Cobble_____ ☐Snags_____ ☐Vegetated Banks_____ ☐Sand_____<br>☐Submerged Macrophytes_____ ☐Other (  )_____ |
| **GENERAL COMMENTS** | N/A - No assessable reach within LOD |

**QUALITATIVE LISTING OF AQUATIC BIOTA**
**Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare, 2 = Common, 3= Abundant, 4 = Dominant**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Periphyton | 0 | 1 | 2 | 3 | 4 | Slimes | 0 | 1 | 2 | 3 | 4 |
| Filamentous Algae | 0 | 1 | 2 | 3 | 4 | Macroinvertebrates | 0 | 1 | 2 | 3 | 4 |
| Macrophytes | 0 | 1 | 2 | 3 | 4 | Fish | 0 | 1 | 2 | 3 | 4 |

**FIELD OBSERVATIONS OF MACROBENTHOS**
**Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare (1-3 organisms), 2 = Common (3-9 organisms), 3= Abundant (>10 organisms), 4 = Dominant (>50 organisms)**

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Porifera | 0 | 1 | 2 | 3 | 4 | Anisoptera | 0 | 1 | 2 | 3 | 4 | Chironomidae | 0 | 1 | 2 | 3 | 4 |
| Hydrozoa | 0 | 1 | 2 | 3 | 4 | Zygoptera | 0 | 1 | 2 | 3 | 4 | Ephemeroptera | 0 | 1 | 2 | 3 | 4 |
| Platyhelminthes | 0 | 1 | 2 | 3 | 4 | Hemiptera | 0 | 1 | 2 | 3 | 4 | Trichoptera | 0 | 1 | 2 | 3 | 4 |
| Turbellaria | 0 | 1 | 2 | 3 | 4 | Coleoptera | 0 | 1 | 2 | 3 | 4 | Other | 0 | 1 | 2 | 3 | 4 |
| Hirudinea | 0 | 1 | 2 | 3 | 4 | Lepidoptera | 0 | 1 | 2 | 3 | 4 | | | | | | |
| Oligochaeta | 0 | 1 | 2 | 3 | 4 | Sialidae | 0 | 1 | 2 | 3 | 4 | | | | | | |
| Isopoda | 0 | 1 | 2 | 3 | 4 | Corydalidae | 0 | 1 | 2 | 3 | 4 | | | | | | |
| Amphipoda | 0 | 1 | 2 | 3 | 4 | Tipulidae | 0 | 1 | 2 | 3 | 4 | | | | | | |
| Decapoda | 0 | 1 | 2 | 3 | 4 | Empididae | 0 | 1 | 2 | 3 | 4 | | | | | | |
| Gastropoda | 0 | 1 | 2 | 3 | 4 | Simuliidae | 0 | 1 | 2 | 3 | 4 | | | | | | |
| Bivalvia | 0 | 1 | 2 | 3 | 4 | Tabinidae | 0 | 1 | 2 | 3 | 4 | | | | | | |
| | | | | | | Culcidae | 0 | 1 | 2 | 3 | 4 | | | | | | |

# Ephemeral Stream Assessment Form (Form 1a)

**Unified Stream Methodology for use in Virginia**

**For use in ephemeral streams**

| Project # | Project Name | Locality | Cowardin Class. | HUC | Date | SAR # | Impact Length | Impact Factor |
|---|---|---|---|---|---|---|---|---|
| 22865.06 | Mountain Valley Pipeline (Mountain Valley Pipeline, LLC) | Giles County | R6 | 05050002 | 8/17/2021 | S-IJ19 | 43 | 1 |

| Name(s) of Evaluator(s) | Stream Name and Information | SAR Length |
|---|---|---|
| ES/AW/KD/EM | UNT to Sinking Creek | 43 |

**2. RIPARIAN BUFFERS:** Assess both bank's 100 foot riparian areas along the entire SAR. (rough measurements of length & width may be acceptable)

| Conditional Category | | | | | | | | NOTES>> |
|---|---|---|---|---|---|---|---|---|
| | Optimal | Suboptimal | | Marginal | | Poor | | |
| Riparian Buffers | Tree stratum (dbh > 3 inches) present, with > 60% tree canopy cover and an non-maintained understory. Wetlands areas. | **High Suboptimal:** Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | **Low Suboptimal:** Riparian areas with tree stratum (dbh > 3 inches) present, with >30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). | **High Marginal:** Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. | **Low Marginal:** Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory. | **High Poor:** Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. | **Low Poor:** Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. | |
| | | High | Low | High | Low | High | Low | |
| Condition Scores | 1.5 | 1.2 | 1.1 | 0.85 | 0.75 | 0.6 | 0.5 | |

1. Delineate riparian areas along each stream bank into Condition Categories and Condition Scores using the descriptors.
2. Determine square footage for each by measuring or estimating length and width. Calculators are provided for you below.
3. Enter the % Riparian Area and Score for each riparian category in the blocks below.

Ensure the sums of % Riparian Blocks equal 100

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Right Bank | % Riparian Area> | 75% | 25% | | | | | 100% | | | |
| | Score > | 0.5 | 1.1 | | | | | | | | |
| | | | | | | | | | CI= (Sum % RA * Scores*0.01)/2 | | |
| Left Bank | % Riparian Area> | 40% | 40% | 20% | | | | 100% | Rt Bank CI > | 0.65 | CI |
| | Score > | 1.2 | 0.85 | 0.5 | | | | | Lt Bank CI > | 0.92 | 0.79 |

**REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH**

*NOTE:* **The CIs and RCI should be rounded to 2 decimal places. The CR should be rounded to a whole number.**

| | |
|---|---|
| **THE REACH CONDITION INDEX (RCI) >>** | **0.40** |

RCI= (Riparian CI)/2

| | |
|---|---|
| **COMPENSATION REQUIREMENT (CR) >>** | **17** |

CR = RCI X LF X IF

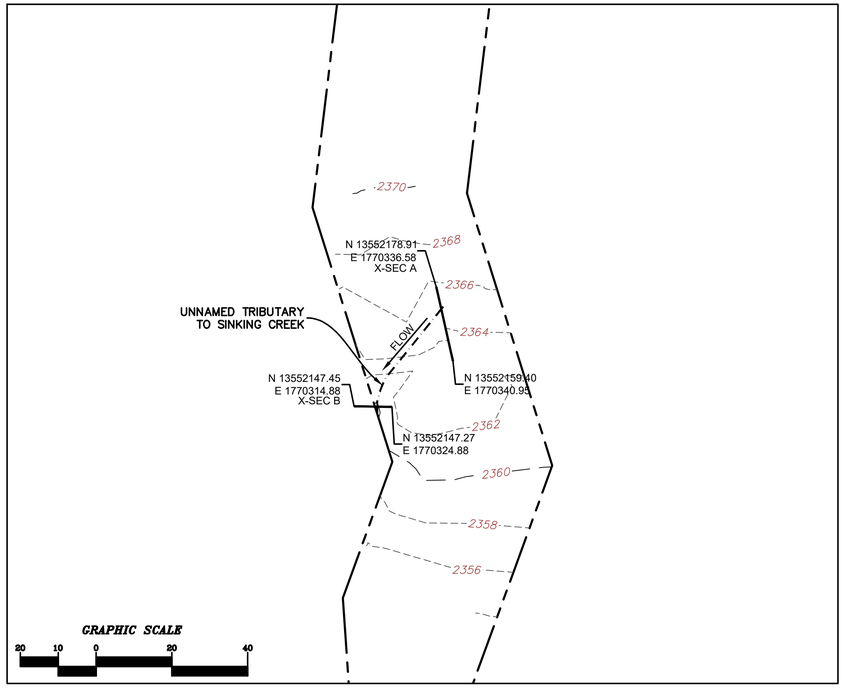
**INSERT PHOTOS:**

*(WSSI Photo Location "L:\22000s\22800\22865.06\Admin\05-ENVR\Field Data\Spread G\Field Forms\S-IJ19\Photos\DS VIEW.jpeg")*


Downstream view looking S within access road. Stream was not found in the field, however, riparian buffer scores were assigned based on best professional judgement. Assessment is limited to areas within the temporary ROW.

**DESCRIBE PROPOSED IMPACT:**

| |
|---|
| **PROVIDED UNDER SEPARATE COVER** |
| |




S-IJ19

## LEGEND

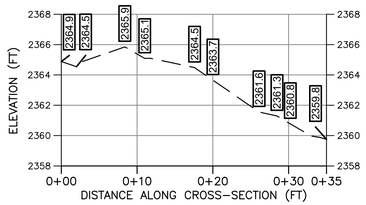
- STUDY AREA (EASEMENT)
- EXISTING SURVEY-LOCATED THALWEG
- 1900 EXISTING MAJOR CONTOUR
- 1904 EXISTING MINOR CONTOUR

SURVEY NOTES:

1. THIS MAP HAS BEEN ORIENTED TO NAD 1983 UTM ZONE 17N, AND VERTICALLY TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88), USING REAL TIME DGPS. FIELD LOCATIONS WERE COMPLETED ON SEPTEMBER 21, 2021.
2. EASEMENT LINES SHOWN ON PLAN VIEW WERE PROVIDED BY MOUNTAIN VALLEY PIPELINE.
3. SURVEY POINTS FOR CROSS SECTIONS AND THALWEG PROFILES COLLECTED IN 2021 HAVE BEEN USED IN COMBINATION WITH SURVEY POINTS COLLECTED PREVIOUSLY IN 2020 IN ORDER TO GENERATE THE PRE-CROSSING SURFACE SHOWN IN PLAN. DUE TO NATURAL EROSIONAL STREAM PROCESSES THAT CAN OCCUR OVER TIME, MINOR ADJUSTMENTS TO THE PROFILE ALIGNMENTS MAY HAVE BEEN REQUIRED IN ORDER TO GENERATE A CLEAN PRE-CROSSING SURFACE.
4. ALL SECTION VIEWS SHOWN LEFT TO RIGHT FACING DOWNSTREAM.
5. CROSS SECTION A & B WERE GENERATED FROM SURVEY DATA.

| No. | Date | Eng. | Revision |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

## S-IJ19 BASELINE THALWEG PROFILE




PROFILE LEGEND

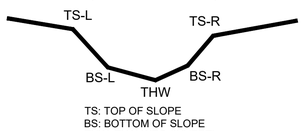
EXISTING STREAM PROFILE
INVERT ALONG THALWEG

**PROFILE**
**SCALE: H: 1"=10'**
**V: 1"=5'**

**CL STEAKOUT POINTS: S-IJ19 CROSS SECTION B (DOWNSTREAM)**

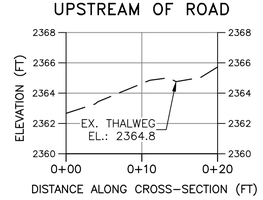
| | PRE-CROSSING | | | POST-CROSSING | |
|---|---|---|---|---|---|
| PT. LOC. | NORTHING | EASTING | ELEV | VERT. DIFF. | HORZ. DIFF. |
| TS-L | 13552147.3030 | 1770323.1060' | 2360.725' | | |
| BS-L | 13552147.3190 | 1770321.5060' | 2360.064' | | |
| THW | 13552147.4340 | 1770321.0620' | 2359.885' | | |
| BS-R | 13552147.5380 | 1770319.1330' | 2360.021' | | |
| TS-R | 13552147.4220 | 1770316.6470' | 2361.281' | | |

TYPICAL 5-POINT CROSS-SECTION
(FACING DOWNSTREAM)

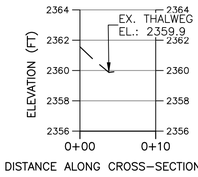



TS: TOP OF SLOPE
BS: BOTTOM OF SLOPE
THW: THALWEG (INVERT)

## S-IJ19 BASELINE CROSS-SECTION A
UPSTREAM OF ROAD




## S-IJ19 BASELINE CROSS-SECTION B
DOWNSTREAM OF ROAD




CROSS SECTION LEGEND

EXISTING GRADE

**CROSS SECTION**
**SCALE: H: 1"=10'**
**V: 1"=5'**

NOTE: ALL SECTIONS VIEWS SHOWN LEFT TO RIGHT FACING DOWNSTREAM.

PRE-CROSSING PHOTOS


PHOTO TAKEN SEPTEMBER 21, 2021 LOOKING DOWNSTREAM FROM UPSTREAM IMPACT LIMITS


PHOTO TAKEN SEPTEMBER 21, 2021 LOOKING UPSTREAM FROM DOWNSTREAM IMPACT LIMITS

POST-CROSSING PHOTOS

PENDING CROSSING

PHOTO TAKEN LOOKING DOWNSTREAM FROM UPSTREAM IMPACT LIMITS

PENDING CROSSING

PHOTO TAKEN LOOKING UPSTREAM FROM DOWNSTREAM IMPACT LIMITS

CAD File No. –
Drawn JZ
Checked GH
Approved DW
Scale: NOTED
Date: SEPT. 2021
Project No. 112IC07157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CANONSBURG, PA 15317

Title PROFILE AND CROSS-SECTIONS
BASELINE SURVEY
CROSSING S-IJ19 - UNNAMED TRIBUTARY
TO SINKING CREEK (MP 208.60)
GILES COUNTY, VA

Drawing No. 1