Baseline Assessment – Stream Attributes

Reach S-C38 (Pipeline ROW)
Intermittent
Spread F
Monroe County, West Virginia

Data	Included
Photos	✓
SWVM Form	✓
FCI Calculator and HGM Form	N/A - Intermittent stream (slope <4%)
RBP Physical Characteristics Form	✓
Water Quality Data	✓
RBP Habitat Form	✓
RBP Benthic Form	✓
Benthic Identification Sheet*	N/A - Low flow
Wolman Pebble Count	✓
Reference Reach Software Pebble Count Data	✓
Longitudinal Profile and Cross Sections	✓

*No suitable habitat for benthic sample.

Photo Type: DS, US View
Location, Orientation, Photographer Initials: Downstream Edge of ROW, Upstream View, AK/TF/TA/WP

Photo Type: DS, DS View
Location, Orientation, Photographer Initials: Downstream Edge of ROW, Downstream View, AK/TF/TA/WP

Photo Type: CP, US View
Location, Orientation, Photographer Initials: Center ROW, Upstream View, AK/TF/TA/WP

Photo Type: CP, DS View
Location, Orientation, Photographer Initials: ROW Center, Downstream View, AK/TF/TA/WP

Photo Type: US, US View
Location, Orientation, Photographer Initials: Upstream Edge of ROW, Upstream View, AK/TF/TA/WP

Photo Type: US, DS View
Location, Orientation, Photographer Initials: Upstream Edge of ROW, Downstream View, AK/TF/TA/WP

Q:\Charleston\2021 Projects\21-0244- MVP- STREAM AND WETLAND CONDITIONS ASSESSMENT AND SURVEY PLAN\002 - Pre-Crossing Monitoring\Spread F\S-C38

West Virginia Stream and Wetland Valuation Metric (SWVM)
Version 2.1, September 2017

USACE FILE NO./ Project Name: (v2.1, Sept 2015)	**Mountain Valley Pipeline**		**IMPACT COORDINATES: (in Decimal Degrees)**	**Lat.**	**37.426915**	**Lon.**	**-80.694499**	**WEATHER:**	**Storm/Heavy Rain 75 °F**	**DATE:**	8/17/21
IMPACT STREAM/SITE ID AND SITE DESCRIPTION: (watershed size {acreage}, unaltered or impairments)	**S-C38 UNT to Painter Run**		**MITIGATION STREAM CLASS./SITE ID AND SITE DESCRIPTION:** (watershed size {acreage}, unaltered or impairments)							**Comments:**	
STREAM IMPACT LENGTH:	**89**	**FORM OF MITIGATION:**	**RESTORATION (Levels I-III)**	**MIT COORDINATES: (in Decimal Degrees)**	**Lat.**		**Lon.**	**PRECIPITATION PAST 48 HRS:**		**Mitigation Length:**	

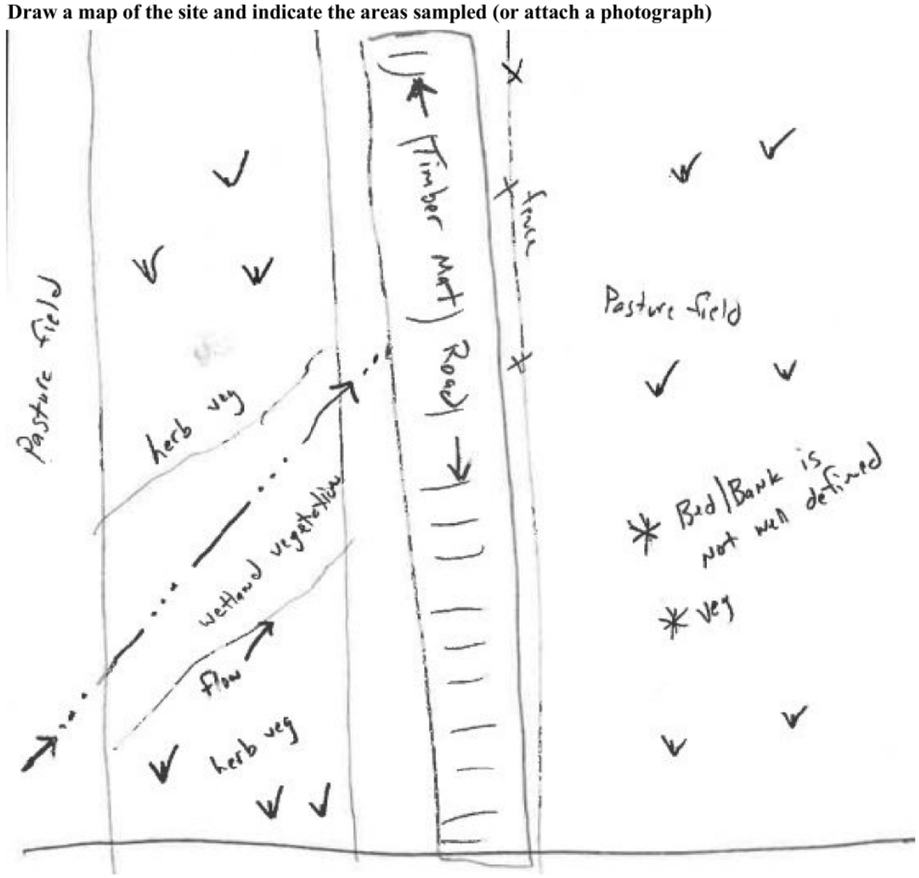
Column No. 1- Impact Existing Condition (Debit)				**Column No. 2- Mitigation Existing Condition - Baseline (Credit)**				**Column No. 3- Mitigation Projected at Five Years Post Completion (Credit)**				**Column No. 4- Mitigation Projected at Ten Years Post Completion (Credit)**				**Column No. 5- Mitigation Projected at Maturity (Credit)**			
Stream Classification:	**Intermittent**			**Stream Classification:**				**Stream Classification:**	**0**			**Stream Classification:**	**0**			**Stream Classification:**	**0**		
Percent Stream Channel Slope	**3.6**			**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	0-1	**2**	1. Epifaunal Substrate/Available Cover	0-20	0-1		1. Epifaunal Substrate/Available Cover	0-20	0-1		1. Epifaunal Substrate/Available Cover	0-20	0-1		1. Epifaunal Substrate/Available Cover	0-20	0-1	
2. Embeddedness	0-20		**2**	2. Pool Substrate Characterization	0-20			2. Embeddedness	0-20			2. Embeddedness	0-20			2. Embeddedness	0-20		
3. Velocity/ Depth Regime	0-20		**5**	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		**5**	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		**8**	5. Channel Flow Status	0-20			5. Channel Flow Status	0-20			5. Channel Flow Status	0-20			5. Channel Flow Status	0-20		
6. Channel Alteration	0-20		**9**	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		**9**	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		**16**	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		**18**	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		**8**	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	Marginal		**82**	Total RBP Score	Poor		**0**	Total RBP Score	Poor		**0**	Total RBP Score	Poor		**0**	Total RBP Score	Poor		**0**
Sub-Total			**0.41**	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	0-1	**192.9**		0-90	0-1			0-90	0-1			0-90	0-1			0-90	0-1	
pH				**pH**				**pH**				**pH**				**pH**			
6.0-8.0 = 80 points	0-80		**7**		5-90				5-90				5-90				5-90		
DO				**DO**				**DO**				**DO**				**DO**			
<5.0 = 10 points	10-30		**3.61**		10-30				10-30				10-30				10-30		
Sub-Total			**0.875**	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**
0.643	**89**	**57.1825**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME UNT to Painter Run	LOCATION S-C38 Monroe/Spread F
STATION #________ RIVERMILE________	STREAM CLASS Intermittent
LAT 37.426915 LONG -80.694499	COUNTY Monroe
STORET #	AGENCY Potesta
INVESTIGATORS Tim Ferguson/Allyson Kincaid	
FORM COMPLETED BY Tim Ferguson/Allyson Kincaid	DATE 8/18/21 TIME 1045 AM / REASON FOR SURVEY Preliminary Assessment

WEATHER CONDITIONS	**Now** / **Past 24 hours** Now: [x] storm (heavy rain) [ ] rain (steady rain) [ ] showers (intermittent) ___% [ ] %cloud cover [ ] clear/sunny 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?** [x] Yes [ ] No **Air Temperature** 75 F °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 [x] Intermittent [ ] Tidal **Stream Type** [ ] Coldwater [x] Warmwater **Stream Origin** [ ] Glacial [ ] Non-glacial montane [ ] Swamp and bog [ ] Spring-fed [x] Mixture of origins [ ] Other________ **Catchment Area**________ 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 _____

INSTREAM FEATURES

Estimated Reach Length 60 ft _____ m

Estimated Stream Width 1.6 ft _____ m

Sampling Reach Area 96 ft^2 _____ m^2

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

Estimated Stream Depth 0.2 ft _____ m

Surface Velocity (at thalweg) see flow data m/sec

Stream Dry ☐

Canopy Cover
☐ Partly open ☐ Partly shaded ☐ Shaded

High Water Mark _____ 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 21.6 °C

Specific Conductance 192.9 us/cm

Dissolved Oxygen 3.61 mg/L

pH 7.00 SU

Turbidity 14.6 ntu

WQ Instrument Used YSI

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")	0	Muck-Mud	black, very fine organic (FPOM)	0
Gravel	2-64 mm (0.1"-2.5")	0			
Sand	0.06-2mm (gritty)	20	Marl	grey, shell fragments	0
Silt	0.004-0.06 mm	80			
Clay	< 0.004 mm (slick)	0			

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

STREAM NAME UNT to Painter Run	LOCATION	
STATION # _____ RIVERMILE _____	STREAM CLASS Intermittent	
LAT 37.426915 LONG -80.694499	COUNTY Monroe	
STORET #	AGENCY Potesta	
INVESTIGATORS Tim Ferguson/Allyson Kincaid		
FORM COMPLETED BY Tim Ferguson/Allyson Kincaid	DATE 8/18/21 TIME 1045 AM AM PM	REASON FOR SURVEY Preliminary Assessment

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
1. Epifaunal Substrate/ Available Cover ☐ N/A	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 2	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 2	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 ☐ N/A	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 5	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 5	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 ☐ N/A	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 8	20 19 18 17 16	15 14 13 12 11	10 9 **8** 7 6	5 4 3 2 1 0

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 9	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) ☐ N/A	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 9	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 8	Left Bank 10 9	**8** 7 6	5 4 3	2 1 0
SCORE 8	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 9	Left Bank 10 **9**	8 7 6	5 4 3	2 1 0
SCORE 9	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 4	Left Bank 10 9	8 7 6	5 **4** 3	2 1 0
SCORE 4	Right Bank 10 9	8 7 6	5 **4** 3	2 1 0

Total Score 82

BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAME UNT to Painter Run	LOCATION	
STATION #_____ RIVERMILE_____	STREAM CLASS Intermittent	
LAT 37.426915 LONG -80.694499	COUNTY Monroe	
STORET #	AGENCY Potesta	
INVESTIGATORS Tim Ferguson/Allyson Kincaid		LOT NUMBER
FORM COMPLETED BY Tim Ferguson/Allyson Kincaid	DATE 8/18/21 TIME 1045 AM	REASON FOR SURVEY Preliminary Assessment

HABITAT TYPES	**Indicate the percentage of each habitat type present** ☐ Cobble_____% ☐ Snags _____% ☐ Vegetated Banks_____% ☐ Sand_____% ☐ Submerged Macrophytes_____% ☐ Other ( )_____%
SAMPLE COLLECTION	**Gear used** ☐ D-frame ☐ kick-net ☐ Other _____ **How were the samples collected?** ☐ wading ☐ from bank ☐ from boat **Indicate the number of jabs/kicks taken in each habitat type.** ☐ Cobble_____ ☐ Snags_____ ☐ Vegetated Banks_____ ☐ Sand_____ ☐ Submerged Macrophytes_____ ☐ Other ( )_____
GENERAL COMMENTS	Benthic data/sample not collected due to no suitable habitat

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						

SITE ID: S-C38 UNT to Painter Run

DATE: 8/18/21

COLLECTOR(S): A. Kincaid / T. Ferguson

Wolman Pebble Count (Reach Wide)

<.062	<0.062	0.062	<0.062	<0.062	0.062	0.062	<0.062	<0.062	<0.062
<.062	<0.062	<0.062	<0.062	<0.062	<0.062	<0.062	<0.062	<0.062	<0.062
<.062	<0.062	<0.062	<0.062	<0.062	<0.062	<0.062	<0.062	<0.062	<0.062
<.062	0.062	<0.062	<0.062	<0.062	0.062	<0.062	<0.062	<0.062	<0.062
5.0	0.062	<0.062	<0.062	<0.062	0.062	<0.062	<0.062	<0.062	<0.062
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<.062	<0.062	<0.062	0.062	<0.062	<0.062	<0.062	<0.062	<0.062	<0.062

NOTES:

Entire Reach is silt / with plant growth in stream bed.

Riffle Pebble Count

NOTES:

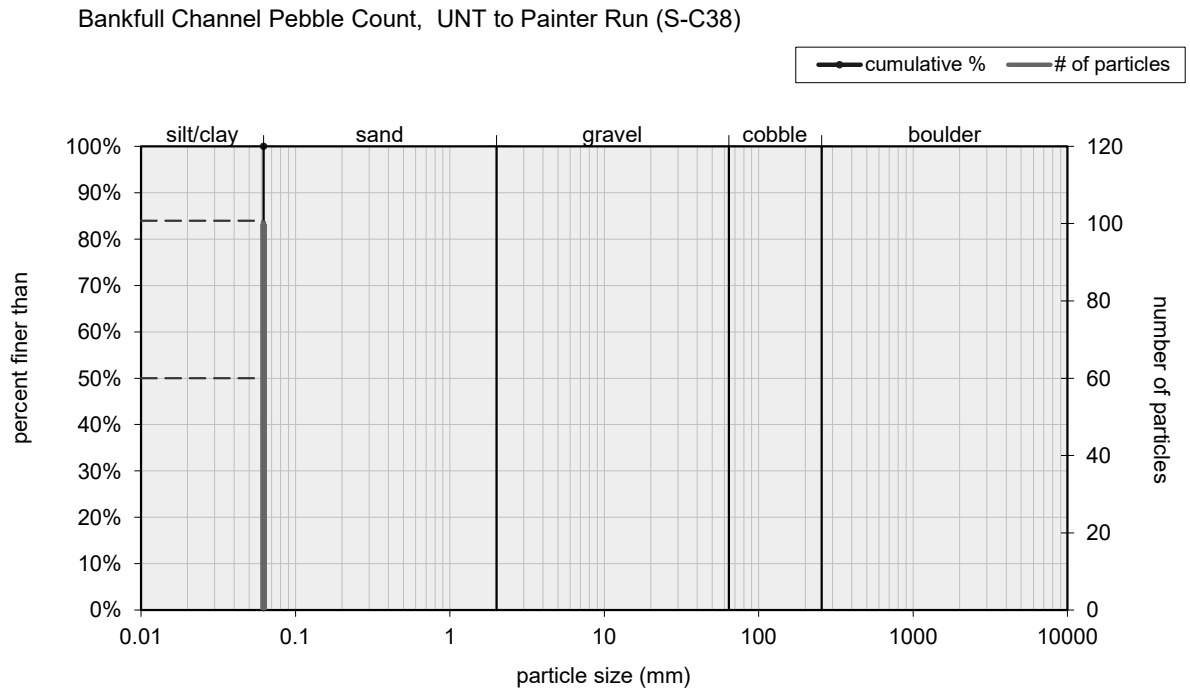
NOTES:

Inches	PARTICLE	Millimeters	
	Silt / Clay	< .062	S/C
	Very Fine	.062 - .125	SAND
	Fine	.125 - .25	SAND
	Medium	.25 - .50	SAND
	Coarse	.50 - 1.0	SAND
.04 - .08	Very Coarse	1.0 - 2	SAND
.08 - .16	Very Fine	2 - 4	GRAVEL
.16 - .22	Fine	4 - 5.7	GRAVEL
.22 - .31	Fine	5.7 - 8	GRAVEL
.31 - .44	Medium	8 - 11.3	GRAVEL
.44 - .63	Medium	11.3 - 16	GRAVEL
.63 - .89	Coarse	16 - 22.6	GRAVEL
.89 - 1.3	Coarse	22.6 - 32	GRAVEL
1.3 - 1.8	Very Coarse	32 - 45	GRAVEL
1.8 - 2.5	Very Coarse	45 - 64	GRAVEL
2.5 - 3.5	Small	64 - 90	COBBLE
3.5 - 5.0	Small	90 - 128	COBBLE
5.0 - 7.1	Large	128 - 180	COBBLE
7.1 - 10.1	Large	180 - 256	COBBLE
10.1 - 14.3	Small	256 - 362	BOULDER
14.3 - 20	Small	362 - 512	BOULDER
20 - 40	Medium	512 - 1024	BOULDER
40 - 80	Large-Vry Large	1024 - 2048	BOULDER
	Bedrock		BDRK

Bankfull Channel

Material	Size Range (mm)	Count
silt/clay	0 - 0.062	**100**
very fine sand	0.062 - 0.125	
fine sand	0.125 - 0.25	
medium sand	0.25 - 0.5	
coarse sand	0.5 - 1	
very coarse sand	1 - 2	
very fine gravel	2 - 4	
fine gravel	4 - 6	
fine gravel	6 - 8	
medium gravel	8 - 11	
medium gravel	11 - 16	
coarse gravel	16 - 22	
coarse gravel	22 - 32	
very coarse gravel	32 - 45	
very coarse gravel	45 - 64	
small cobble	64 - 90	
medium cobble	90 - 128	
large cobble	128 - 180	
very large cobble	180 - 256	
small boulder	256 - 362	
small boulder	362 - 512	
medium boulder	512 - 1024	
large boulder	1024 - 2048	
very large boulder	2048 - 4096	
total particle count:		100
bedrock	----------	
clay hardpan	----------	
detritus/wood	----------	
artificial	----------	
total count:		100

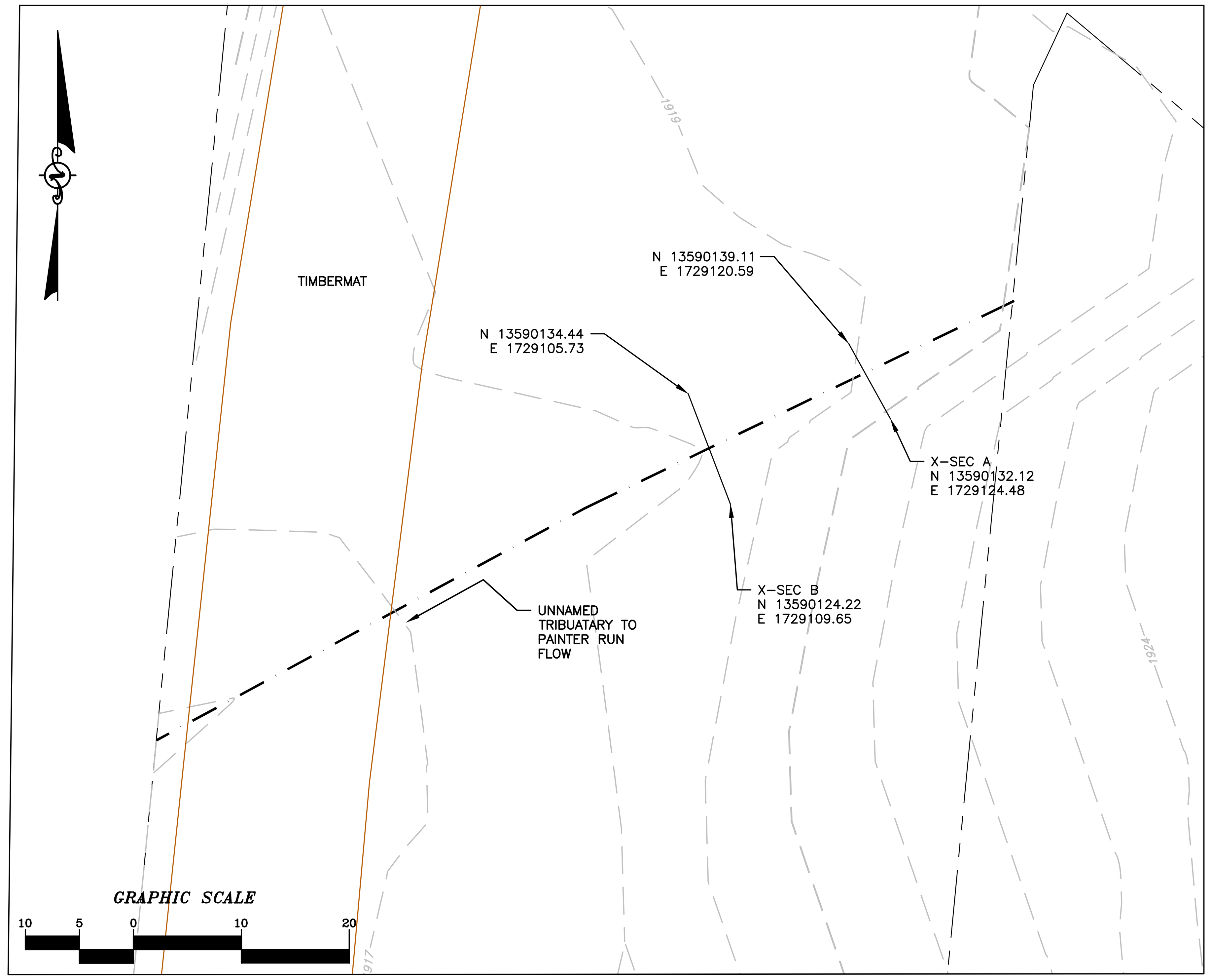
Note:



Size (mm)	
D16	0.062
D35	0.062
D50	0.062
D65	0.062
D84	0.062
D95	0.062

Size Distribution	
mean	0.1
dispersion	1.0
skewness	---

Type	
silt/clay	100%
sand	0%
gravel	0%
cobble	0%
boulder	0%



S-C38

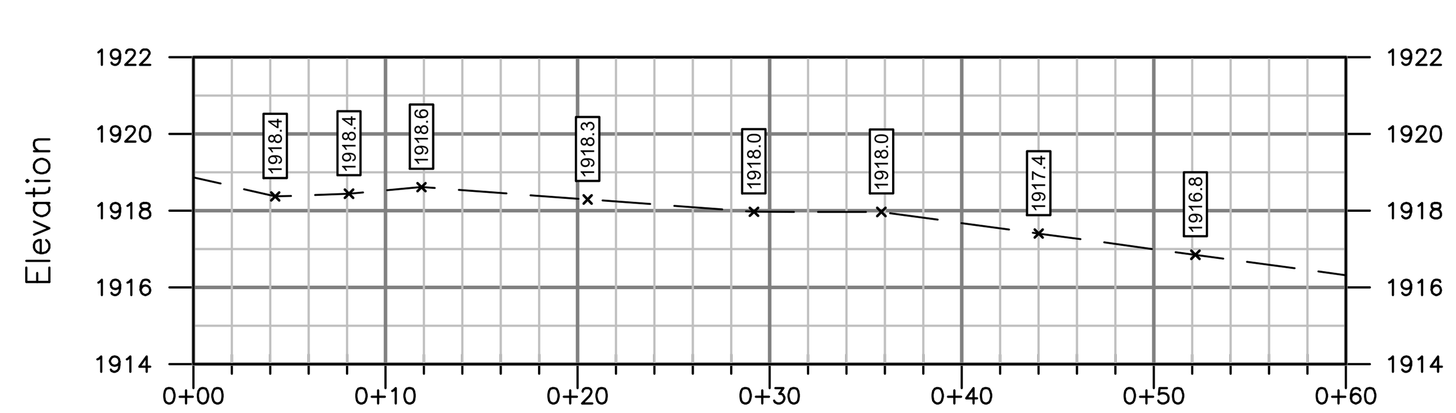
LEGEND

— - - —	STUDY AREA (EASEMENT)
— - —	EXISTING SURVEY-LOCATED THALWEG
1176.87 +	EXISTING SURVEYED GROUND SHOT ELEVATION

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 8-17-2021.
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 AND COLLECTED PREVIOUSLY IN 2020 IN ORDER TO GENERATE THE PRE-CROSSING SURFACE SHOWN IN PLAN. DUE TO NATURAL EROSIONAL STREAM PROCESSES THAT 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. POST-CROSSING SURVEY INFORMATION SHOWN IN RED. DATA PENDING.
6. POST-CROSSING SURVEY POINTS FOR CROSS SECTIONS AND THALWEG ARE PROJECTED ONTO PRE-CROSSING SECTION AND PROFILE VIEWS FOR COMPARISON.

S-C38 BASELINE THALWEG PROFILE

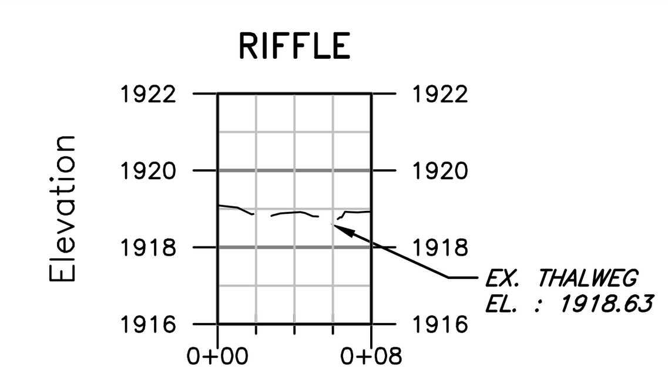


PROFILE LEGEND

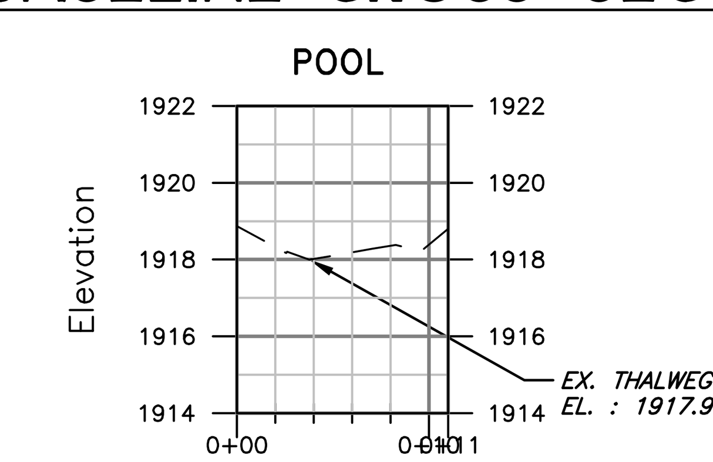
EXISTING STREAM PROFILE INVERT ALONG THALWEG

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

S-C38 BASELINE CROSS-SECTION A



S-C38 BASELINE CROSS-SECTION B



CROSS SECTION LEGEND

— — EXISTING GRADE

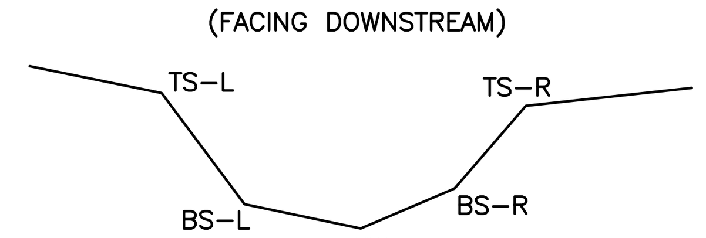
CROSS SECTION SCALE: H: 1"=10' V: 1"=5'

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

AS-BUILT TABLE: S-C38 CROSS SECTION B

PT. LOC.	PRE-CROSSING NORTHING	PRE-CROSSING EASTING	PRE-CROSSING ELEV.	AS-BUILT VERT. DIFF.	AS-BUILT HORZ. DIFF.
TS-L	13590124.21	1729109.68	1918.89		
BS-L	13590126.30	1729108.87	1918.29		
THW	13590127.84	1729108.24	1917.97		
BS-R	13590133.04	1729106.28	1918.36		
TS-R	13590134.39	1729105.74	1918.79		

TYPICAL 5-POINT CROSS-SECTION (FACING DOWNSTREAM)



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

PRE-CROSSING PHOTOS

PHOTO TAKEN LOOKING DOWNSTREAM FROM UPSTREAM IMPACT LIMITS

PHOTO TAKEN LOOKING UPSTREAM FROM DOWNSTREAM IMPACT LIMITS

POST-CROSSING PHOTOS

PENDING CROSSING

PHOTO TAKEN LOOKING DOWNSTREAM UPSTREAM FROM IMPACT LIMITS

PENDING CROSSING

PHOTO TAKEN LOOKING UPSTREAM FROM UPSTREAM IMPACT LIMITS

PRE-CROSSING

DATE ISSUED 9/27/2021

-S-C38	CAD File No.
MBS	Drawn
CHH	Checked
BB/JLY	Approved
NOTED	Scale:
SEPT. 2021	Date:
21-0244-005	Project No.

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POTESTA

Client: MOUNTAIN VALLEY PIPELINE, LLC
2200 ENERGY DRIVE, 2ND FLOOR
CANONSBURG, PA 15317

Title: PROFILE AND CROSS-SECTIONS BASELINE SURVEY
CROSSING S-C38 - UNNAMED TRIB. OF PAINTER RUN. (MP 194.55)
MONROE COUNTY, WV

1

Drawing No.

File: S:\C3D-Proj-YR\2021\21-0244-MVP\21-0244-S-C38.dwg
Plot Date/Time: Sep 24, 2021 - 3:47pm
Plotted By: MBSonkoff