

## Baseline Assessment – Stream Attributes

### Reach S-G42 (Pipeline ROW) Intermittent Spread F Monroe County, West Virginia

Data	Included
Photos	✓
SWVM Form	✓
FCI Calculator and HGM Form	N/A – Intermittent Stream (<4% slope)
RBP Physical Characteristics Form	✓
Water Quality Data	N/A – No Flow
RBP Habitat Form*	✓
RBP Benthic Form	✓
Benthic Identification Sheet	N/A – No Flow
Wolman Pebble Count	✓
Reference Reach Software Pebble Count Data	✓
Longitudinal Profile and Cross Sections	✓

\*No Flow – Modified RBP.

37.472602° N, -80.675456° W



Photo Type: DS, US View

Location, Orientation, Photographer Initials: Downstream Edge of Right of Way, Upstream View, AK/WP/RA/EW

37.472602° N, -80.675456° W



Photo Type: DS, DS View

Location, Orientation, Photographer Initials: Downstream Edge of Right of Way, Downstream View, AK/WP/RA/EW



Photo Type: CP, US View  
Location, Orientation, Photographer Initials: Center Point, Upstream View, AK/WP/RA/EW



Photo Type: CP, DS View  
Location, Orientation, Photographer Initials: Center Point, Downstream View, AK/WP/RA/EW

37.472602° N, -80.675456° W



Photo Type: US, US View

Location, Orientation, Photographer Initials: Upstream Edge of Right of Way, Upstream View, AK/WP/RA/EW

37.472602° N, -80.675456° W



Photo Type: US, DS View

Location, Orientation, Photographer Initials: Upstream Edge of Right of Way, Downstream View, AK/WP/RA/EW

"Q:\Charleston\2021 Projects\21-0244- MVP- STREAM AND WETLAND CONDITIONS ASSESSMENT AND SURVEY PLAN\002 - Pre-Crossing Monitoring\Spread F\S-G42"

IMPACT STREAMSITE ID AND SITE DESCRIPTION: <small>(Intermittent and Ephemeral, intermittent or intermittent)</small>			IMPACT COORDINATES: <small>(in Decimal Degrees)</small>			Lat.	37.472802	Lon.	-80.875456	WEATHER:	Sunny	DATE:	8/26/21
STREAM IMPACT LENGTH:			FORM OF MITIGATION:			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: 0			Stream Classification: 0			Stream Classification: 0			Stream Classification: 0	
Percent Stream Channel Slope: 1.6			Percent Stream Channel Slope: 0			Percent Stream Channel Slope: 0			Percent Stream Channel Slope: 0			Percent Stream Channel Slope: 0	
HGM Score (attach data forms): Average			HGM Score (attach data forms): Average			HGM Score (attach data forms): Average			HGM Score (attach data forms): Average			HGM Score (attach data forms): Average	
Hydrology: 0			Hydrology: 0			Hydrology: 0			Hydrology: 0			Hydrology: 0	
Biogeochemical Cycling: 0			Biogeochemical Cycling: 0			Biogeochemical Cycling: 0			Biogeochemical Cycling: 0			Biogeochemical Cycling: 0	
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	
PHYSICAL INDICATOR (Applies to all stream classifications)			PHYSICAL INDICATOR (Applies to all stream classifications)			PHYSICAL INDICATOR (Applies to all stream classifications)			PHYSICAL INDICATOR (Applies to all stream classifications)			PHYSICAL INDICATOR (Applies to all stream classifications)	
SEPA RSP (High Gradient Data Sheet)			SEPA RSP (Low Gradient Data Sheet)			SEPA RSP (High Gradient Data Sheet)			SEPA RSP (High Gradient Data Sheet)			SEPA RSP (High Gradient Data Sheet)	
1. Erosional Substrata Available Cover: 0.00			1. Erosional Substrata Available Cover: 0.00			1. Erosional Substrata Available Cover: 0.00			1. Erosional Substrata Available Cover: 0.00			1. Erosional Substrata Available Cover: 0.00	
2. Embankment: 0.00			2. Embankment: 0.00			2. Embankment: 0.00			2. Embankment: 0.00			2. Embankment: 0.00	
3. Velocity Depth Regime: 0.00			3. Velocity Depth Regime: 0.00			3. Velocity Depth Regime: 0.00			3. Velocity Depth Regime: 0.00			3. Velocity Depth Regime: 0.00	
4. Sediment Accretion: 0.00			4. Sediment Accretion: 0.00			4. Sediment Accretion: 0.00			4. Sediment Accretion: 0.00			4. Sediment Accretion: 0.00	
5. Channel Flow Status: 0.00			5. Channel Flow Status: 0.00			5. Channel Flow Status: 0.00			5. Channel Flow Status: 0.00			5. Channel Flow Status: 0.00	
6. Channel Obstruction: 0.00			6. Channel Obstruction: 0.00			6. Channel Obstruction: 0.00			6. Channel Obstruction: 0.00			6. Channel Obstruction: 0.00	
7. Frequency of Refills (or berms): 0.00			7. Frequency of Refills (or berms): 0.00			7. Frequency of Refills (or berms): 0.00			7. Frequency of Refills (or berms): 0.00			7. Frequency of Refills (or berms): 0.00	
8. Bank Stability (L & R): 0.00			8. Bank Stability (L & R): 0.00			8. Bank Stability (L & R): 0.00			8. Bank Stability (L & R): 0.00			8. Bank Stability (L & R): 0.00	
9. Vegetative Protection (L & R): 0.00			9. Vegetative Protection (L & R): 0.00			9. Vegetative Protection (L & R): 0.00			9. Vegetative Protection (L & R): 0.00			9. Vegetative Protection (L & R): 0.00	
10. Riparian Invasive Zone Width (L & R): 0.00			10. Riparian Invasive Zone Width (L & R): 0.00			10. Riparian Invasive Zone Width (L & R): 0.00			10. Riparian Invasive Zone Width (L & R): 0.00			10. Riparian Invasive Zone Width (L & R): 0.00	
11. Total RSP Score: 0.00			11. Total RSP Score: 0.00			11. Total RSP Score: 0.00			11. Total RSP Score: 0.00			11. Total RSP Score: 0.00	
Sub-Total: 0.00			Sub-Total: 0.00			Sub-Total: 0.00			Sub-Total: 0.00			Sub-Total: 0.00	
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			100-199 = 85 points			100-199 = 85 points			100-199 = 85 points			100-199 = 85 points	
SC: 0.00			SC: 0.00			SC: 0.00			SC: 0.00			SC: 0.00	
5.6-5.9 = 45 points			5.6-5.9 = 45 points			5.6-5.9 = 45 points			5.6-5.9 = 45 points			5.6-5.9 = 45 points	
DO: 0.00			DO: 0.00			DO: 0.00			DO: 0.00			DO: 0.00	
Sub-Total: 0.00			Sub-Total: 0.00			Sub-Total: 0.00			Sub-Total: 0.00			Sub-Total: 0.00	
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			0-100			0-100			0-100	
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			Index			Index			Index			Index	
Linear Feet			Linear Feet			Linear Feet			Linear Feet			Linear Feet	
Unit Score			Unit Score			Unit Score			Unit Score			Unit Score	
0.568			79			44.625			0			0	

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

STREAM NAMES-S-G42 UNT to Hans Creek		LOCATION Monroe/F
STATION # _____ RIVERMILE _____	STREAM CLASS Intermittent <input type="checkbox"/>	
LAT _____ LONG _____	COUNTY Monroe <input type="checkbox"/>	
STORET # _____	AGENCY Potesta/Edge	
INVESTIGATORS ABK/WP/RA/EW		
FORM COMPLETED BY <b>A. Kincaid</b>	DATE 8/26/2021 TIME 1:50 PM	REASON FOR SURVEY Preliminary Assessment

<b>WEATHER CONDITIONS</b>	<table style="width: 100%;"> <tr> <td style="width: 50%;"> <b>Now</b>  <input type="checkbox"/> storm (heavy rain)  <input type="checkbox"/> rain (steady rain)  <input type="checkbox"/> showers (intermittent)  <input checked="" type="checkbox"/> %cloud cover  <input checked="" type="checkbox"/> clear/sunny             </td> <td style="width: 50%;"> <b>Past 24 hours</b>  <input type="checkbox"/> 100 %  <input type="checkbox"/> 100 %             </td> </tr> <tr> <td colspan="2"> <b>Has there been a heavy rain in the last 7 days?</b>  <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No             </td> </tr> <tr> <td colspan="2"> <b>Air Temperature</b> 85 °F °C             </td> </tr> <tr> <td colspan="2"> <b>Other</b> _____             </td> </tr> </table>	<b>Now</b> <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny	<b>Past 24 hours</b> <input type="checkbox"/> 100 % <input type="checkbox"/> 100 %	<b>Has there been a heavy rain in the last 7 days?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<b>Air Temperature</b> 85 °F °C		<b>Other</b> _____	
<b>Now</b> <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input checked="" type="checkbox"/> %cloud cover <input checked="" type="checkbox"/> clear/sunny	<b>Past 24 hours</b> <input type="checkbox"/> 100 % <input type="checkbox"/> 100 %								
<b>Has there been a heavy rain in the last 7 days?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No									
<b>Air Temperature</b> 85 °F °C									
<b>Other</b> _____									
<b>SITE LOCATION/MAP</b>	<p>Draw a map of the site and indicate the areas sampled (or attach a photograph)</p> <p>The map shows a stream flowing from left to right. On the left bank, there are two sampling points labeled 'LDB' and 'RDB'. A large area on the left bank is labeled 'gravel/AR'. In the middle of the stream, there is a sampling point labeled 'G114'. The map is filled with numerous arrows pointing towards the stream, indicating flow direction or sampling locations. There is also a scribbled-out area on the right bank.</p>								
<b>STREAM CHARACTERIZATION</b>	<table style="width: 100%;"> <tr> <td style="width: 50%;"> <b>Stream Subsystem</b>  <input type="checkbox"/> Perennial <input checked="" type="checkbox"/> Intermittent <input type="checkbox"/> Tidal             </td> <td style="width: 50%;"> <b>Stream Type</b>  <input type="checkbox"/> Coldwater <input checked="" type="checkbox"/> Warmwater             </td> </tr> <tr> <td> <b>Stream Origin</b>  <input type="checkbox"/> Glacial <input type="checkbox"/> Spring-fed  <input type="checkbox"/> Non-glacial montane <input checked="" type="checkbox"/> Mixture of origins  <input type="checkbox"/> Swamp and bog <input type="checkbox"/> Other _____             </td> <td> <b>Catchment Area</b> _____ km<sup>2</sup> </td> </tr> </table>	<b>Stream Subsystem</b> <input type="checkbox"/> Perennial <input checked="" type="checkbox"/> Intermittent <input type="checkbox"/> Tidal	<b>Stream Type</b> <input type="checkbox"/> Coldwater <input checked="" type="checkbox"/> Warmwater	<b>Stream Origin</b> <input type="checkbox"/> Glacial <input type="checkbox"/> Spring-fed <input type="checkbox"/> Non-glacial montane <input checked="" type="checkbox"/> Mixture of origins <input type="checkbox"/> Swamp and bog <input type="checkbox"/> Other _____	<b>Catchment Area</b> _____ km <sup>2</sup>				
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<b>Stream Origin</b> <input type="checkbox"/> Glacial <input type="checkbox"/> Spring-fed <input type="checkbox"/> Non-glacial montane <input checked="" type="checkbox"/> Mixture of origins <input type="checkbox"/> Swamp and bog <input type="checkbox"/> Other _____	<b>Catchment Area</b> _____ km <sup>2</sup>								

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

<b>WATERSHED FEATURES</b>	<b>Predominant Surrounding Landuse</b> <input type="checkbox"/> Forest <input type="checkbox"/> Commercial <input checked="" type="checkbox"/> Field/Pasture <input type="checkbox"/> Industrial <input type="checkbox"/> Agricultural <input type="checkbox"/> Other _____ <input type="checkbox"/> Residential	<b>Local Watershed NPS Pollution</b> <input type="checkbox"/> No evidence <input checked="" type="checkbox"/> Some potential sources <input type="checkbox"/> Obvious sources <b>Local Watershed Erosion</b> <input checked="" type="checkbox"/> None <input type="checkbox"/> Moderate <input type="checkbox"/> Heavy
<b>RIPARIAN VEGETATION (18 meter buffer)</b>	<b>Indicate the dominant type and record the dominant species present</b> <input type="checkbox"/> Trees <input type="checkbox"/> Shrubs <input type="checkbox"/> Grasses <input type="checkbox"/> Herbaceous Dominant species present _____	
<b>INSTREAM FEATURES</b>	Estimated Reach Length <u>55 ft</u> m Estimated Stream Width <u>1 ft</u> m Sampling Reach Area <u>55 ft<sup>2</sup></u> m <sup>2</sup> Area in km <sup>2</sup> (m <sup>2</sup> x1000) _____ km <sup>2</sup> Estimated Stream Depth <u>0</u> m Surface Velocity <u>0</u> m/sec Stream Dry <input checked="" type="checkbox"/>	<b>Canopy Cover</b> <input checked="" type="checkbox"/> Partly open <input type="checkbox"/> Partly shaded <input type="checkbox"/> Shaded <b>High Water Mark</b> _____ m <b>Proportion of Reach Represented by Stream Morphology Types</b> Rifle <sup>o</sup> _____ %      Run <sup>o</sup> _____ % Pool <sup>o</sup> _____ % <b>Channelized</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <b>Dam Present</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b>LARGE WOODY DEBRIS</b>	LWD <u>0</u> m <sup>2</sup> Density of LWD <u>0</u> m <sup>2</sup> /km <sup>2</sup> (LWD/ reach area)	
<b>AQUATIC VEGETATION</b> dry stream	<b>Indicate the dominant type and record the dominant species present</b> <input type="checkbox"/> Rooted emergent <input type="checkbox"/> Rooted submergent <input type="checkbox"/> Rooted floating <input type="checkbox"/> Free floating <input type="checkbox"/> Floating Algae <input type="checkbox"/> Attached Algae Dominant species present _____ Portion of the reach with aquatic vegetation <u>0</u> %	
<b>WATER QUALITY</b>	Temperature _____ °C Specific Conductance _____ Dissolved Oxygen _____ pH _____ Turbidity _____ WQ Instrument Used _____	<b>Water Odors</b> <input type="checkbox"/> Normal/None <input type="checkbox"/> Sewage <input type="checkbox"/> Petroleum <input type="checkbox"/> Chemical <input type="checkbox"/> Fishy <input type="checkbox"/> Other _____ <b>Water Surface Oils</b> <input type="checkbox"/> Slick <input type="checkbox"/> Sheen <input type="checkbox"/> Globs    Flecks <input type="checkbox"/> None <input type="checkbox"/> Other _____ <b>Turbidity (if not measured)</b> <input type="checkbox"/> Clear <input type="checkbox"/> Slightly turbid <input type="checkbox"/> Turbid <input type="checkbox"/> Opaque <input type="checkbox"/> Stained <input type="checkbox"/> Other _____
<b>SEDIMENT/SUBSTRATE</b>	<b>Odors</b> <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Sewage <input type="checkbox"/> Petroleum <input type="checkbox"/> Chemical <input type="checkbox"/> Anaerobic <input type="checkbox"/> None <input type="checkbox"/> Other _____ <b>Oils</b> <input checked="" type="checkbox"/> Absent <input type="checkbox"/> Slight <input type="checkbox"/> Moderate <input type="checkbox"/> Profuse	<b>Deposits</b> <input type="checkbox"/> Sludge <input type="checkbox"/> Sawdust <input type="checkbox"/> Paper fiber <input type="checkbox"/> Sand <input type="checkbox"/> Relict shells <input type="checkbox"/> Other _____ <b>Looking at stones which are not deeply embedded, are the undersides black in color?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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)	50
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)	0	Marl	grey, shell fragments	0
Silt	0.004-0.06 mm	100			
Clay	< 0.004 mm (slick)	0			

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

STREAM NAMES-G42 UNT to Hans Creek		LOCATION	
STATION # _____ RIVERMILE _____		STREAM CLASS Intermittent <input type="checkbox"/>	
LAT _____ LONG _____		COUNTY Monroe <input type="checkbox"/>	
STORET # _____		AGENCY Potesta/Edge	
INVESTIGATORSABK/WP/RA/EW			
FORM COMPLETED BY A. Kincaid		DATE 8/26/2021 TIME 1350 PM AM PM	REASON FOR SURVEY Preliminary Assessment

	Habitat Parameter	Condition Category					
		Optimal	Suboptimal	Marginal	Poor		
Parameters to be evaluated in sampling reach	<b>1. Epifaunal Substrate/ Available Cover</b>  <input checked="" type="checkbox"/> N/A  SCORE 0 <input type="checkbox"/>	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 <u>not</u> new fall and <u>not</u> 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.		
		20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0		
		2. <b>Embeddedness</b>	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 1 <input type="checkbox"/>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	<span style="background-color: purple; border-radius: 50%; padding: 2px;">1</span>
		3. <b>Velocity/Depth Regime</b>	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 0 <input type="checkbox"/>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0		
	4. <b>Sediment Deposition</b>	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 2 <input type="checkbox"/>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	<span style="background-color: purple; border-radius: 50%; padding: 2px;">2</span>	
	5. <b>Channel Flow Status</b>	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 0 <input type="checkbox"/>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0		

Embeddedness and Sediment Disposition rated low because channel was hardly recognizable. Loam/dirt was sparse between all the vegetation that had grown in the stream bed. Clear indication of the stream at DS edge of LOD. Modified RBP.



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

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
<b>6. Channel Alteration</b>  SCORE <u>14</u>	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.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
<b>7. Frequency of Riffles (or bends)</b>  <input checked="" type="checkbox"/> N/A  SCORE <u>0</u>	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.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
<b>8. Bank Stability (score each bank)</b>  Note: determine left or right side by facing downstream. SCORE <u>8</u> SCORE <u>8</u>	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.
	Left Bank 10 9	8 7 6	5 4 3	2 1 0
	Right Bank 10 9	8 7 6	5 4 3	2 1 0
<b>9. Vegetative Protection (score each bank)</b>  SCORE <u>9</u> SCORE <u>9</u>	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.
	Left Bank 10 9	8 7 6	5 4 3	2 1 0
	Right Bank 10 9	8 7 6	5 4 3	2 1 0
<b>10. Riparian Vegetative Zone Width (score each bank riparian zone)</b>  SCORE <u>6</u> SCORE <u>6</u>	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.
	Left Bank 10 9	8 7 6	5 4 3	2 1 0
	Right Bank 10 9	8 7 6	5 4 3	2 1 0

**Total Score** 63

Channel alteration may have been done in the past. This is in an agricultural field. Land owners have mowed around the US edge and the stream appears to disappear US out of LOD.

## BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAMES-G42 UNT to Hans Creek		LOCATION
STATION # _____ RIVERMILE _____	STREAM CLASS Intermittent <input type="checkbox"/>	
LAT _____ LONG _____	COUNTY Monroe <input type="checkbox"/>	
STORET # _____	AGENCY Potesta/Edge	
INVESTIGATORS ABK/WP/RA/EW		LOT NUMBER
FORM COMPLETED BY <b>A. Kincaid</b>	DATE <u>8/26/2021</u> TIME <u>1:30 PM</u>	REASON FOR SURVEY Preliminary Assessment

<b>HABITAT TYPES</b>	<b>Indicate the percentage of each habitat type present</b> <input type="checkbox"/> Cobble _____% <input type="checkbox"/> Snags _____% <input type="checkbox"/> Vegetated Banks _____% <input type="checkbox"/> Sand _____% <input type="checkbox"/> Submerged Macrophytes _____% <input type="checkbox"/> Other ( _____ ) _____%
<b>SAMPLE COLLECTION</b>	<b>Gear used</b> <input type="checkbox"/> D-frame <input type="checkbox"/> kick-net <input type="checkbox"/> Other _____  <b>How were the samples collected?</b> <input type="checkbox"/> wading <input type="checkbox"/> from bank <input type="checkbox"/> from boat  <b>Indicate the number of jabs/kicks taken in each habitat type.</b> <input type="checkbox"/> Cobble _____ <input type="checkbox"/> Snags _____ <input type="checkbox"/> Vegetated Banks _____ <input type="checkbox"/> Sand _____ <input type="checkbox"/> Submerged Macrophytes _____ <input type="checkbox"/> Other ( _____ ) _____
<b>GENERAL COMMENTS</b>	No Benthic Sample due to lack of 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-6742

Monroe / F

DATE: 26 August 2021

COLLECTOR(S): E. Waver

Wolman Pebble Count (Reach Wide)

SF	SL	SL	SL	SL	SL	SL	SL	SL	SL
SL	SL	SL	SL	SL	SL	SL	SL	SL	SL
SL	SL	SL	SL	SL	SL	SL	SL	SL	SL
SL	SL	SL	SL	SL	SL	SL	SL	SL	SL
SL	SL	SL	SL	SL	SL	SL	SL	SL	SL
SL	SL	SL	SL	SL	SL	SL	SL	SL	SL
SL	SL	SL	SL	SL	SL	SL	SL	SL	SL
SL	SL	SL	SL	SL	SL	SL	SL	SL	SL
SL	SL	SL	SL	SL	SL	SL	SL	SL	SL
SL	SL	SL	SL	SL	SL	SL	SL	SL	SL

NOTES:

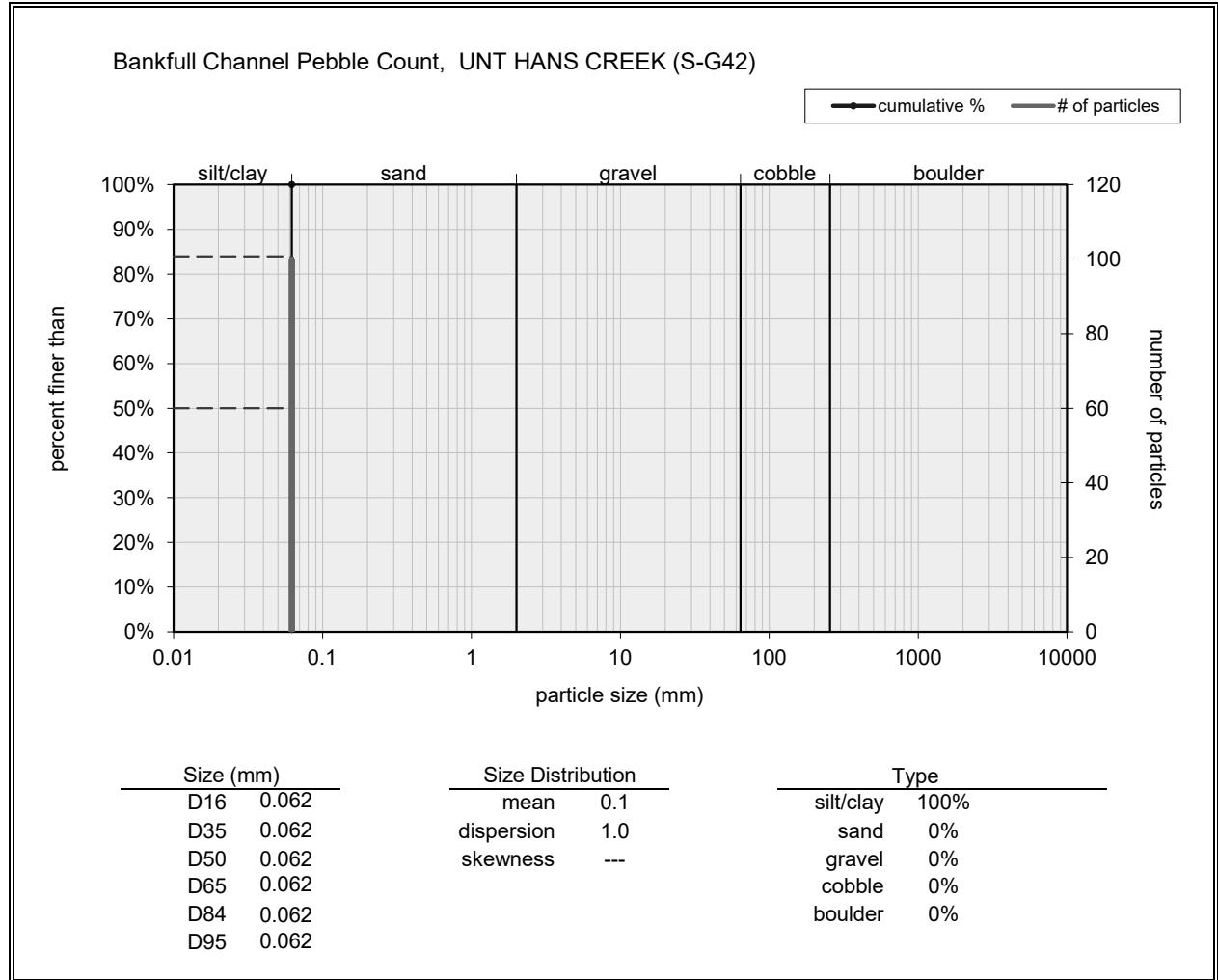
Riffle Pebble Count

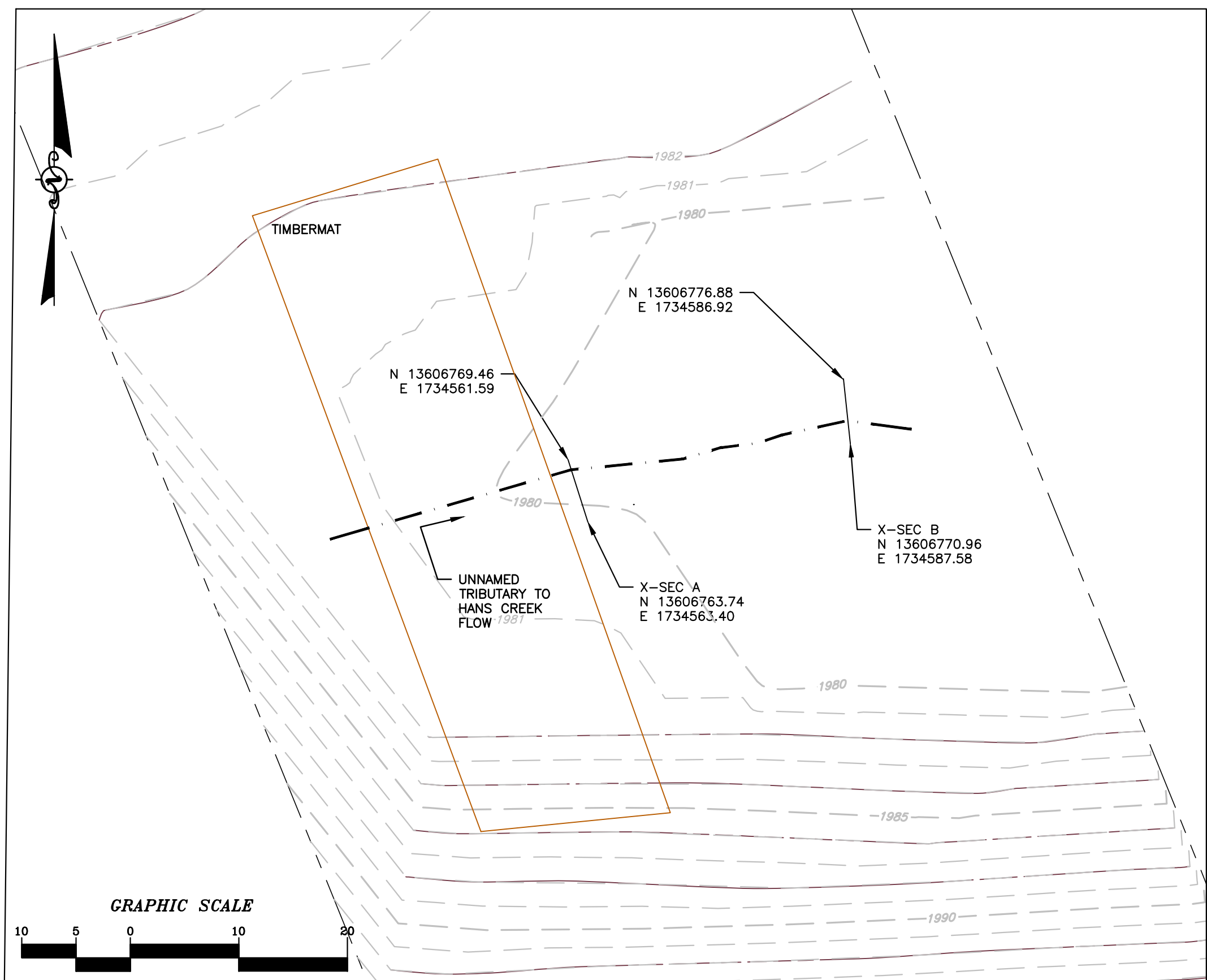

NOTES:


NOTES:

Inches	PARTICLE	Millimeters	S/C
	Silt / Clay	< .062	SAND
	Very Fine	.062 - .125	
	Fine	.125 - .25	
	Medium	.25 - .50	
	Coarse	.50 - 1.0	
.04 - .08	Very Coarse	1.0 - 2	GRAVEL
.08 - .16	Very Fine	2 - 4	
.16 - .22	Fine	4 - 5.7	
.22 - .31	Fine	5.7 - 8	
.31 - .44	Medium	8 - 11.3	
.44 - .63	Medium	11.3 - 16	
.63 - .89	Coarse	16 - 22.5	BDRK
.89 - 1.3	Coarse	22.6 - 32	
1.3 - 1.8	Very Coarse	32 - 45	
1.8 - 2.5	Very Coarse	45 - 64	
2.5 - 3.5	Small	64 - 90	
3.5 - 5.0	Small	90 - 128	
5.0 - 7.1	Large	128 - 180	BDRK
7.1 - 10.1	Large	180 - 256	
10.1 - 14.3	Small	256 - 362	
14.3 - 20	Small	362 - 512	
20 - 40	Medium	512 - 1024	
40 - 80	Large-Vry Large	1024 - 2048	
	Bedrock		BDRK

Bankfull Channel		
Material	Size Range (mm)	Count
silt/clay	0 - 0.062	<b>100</b>
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: <input type="text"/>		





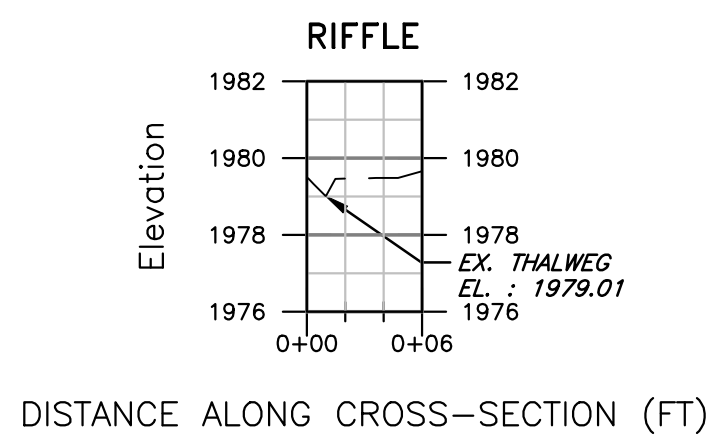
S-G42

### LEGEND

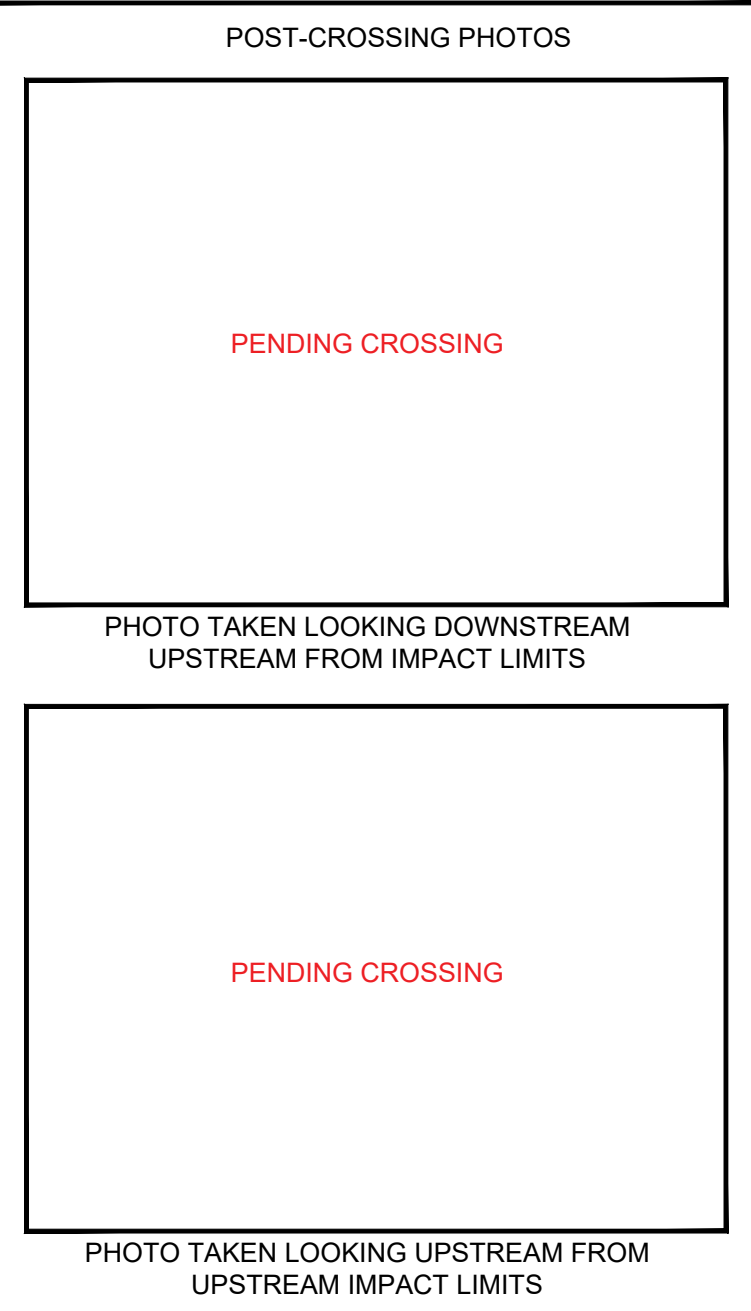
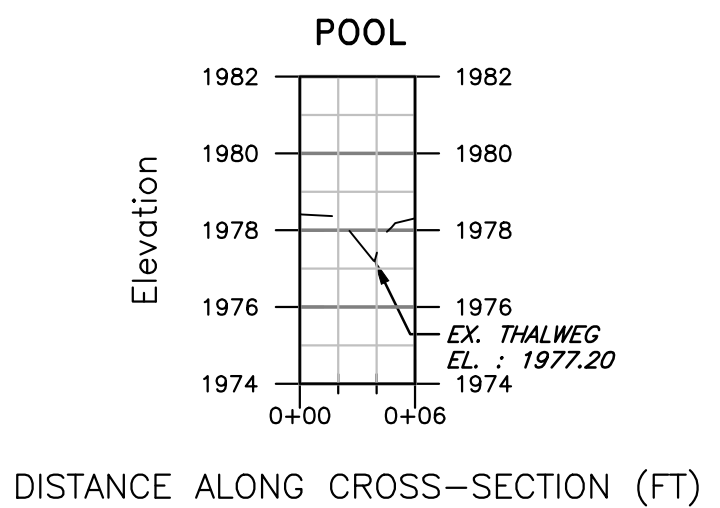
- STUDY AREA (EASEMENT)
- EXISTING SURVEY--LOCATED THALWEG
- 1176.87 + EXISTING SURVEYED GROUND SHOT ELEVATION

- SURVEY NOTES:
- 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 8-19-2021.
  - EASEMENT LINES SHOWN ON PLAN VIEW WERE PROVIDED BY MOUNTAIN VALLEY PIPELINE.
  - 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.
  - ALL SECTION VIEWS SHOWN LEFT TO RIGHT FACING DOWNSTREAM.
  - POST-CROSSING SURVEY INFORMATION SHOWN IN RED. DATA PENDING.
  - POST-CROSSING SURVEY POINTS FOR CROSS SECTIONS AND THALWEG ARE PROJECTED ONTO PRE-CROSSING SECTION AND PROFILE VIEWS FOR COMPARISON.

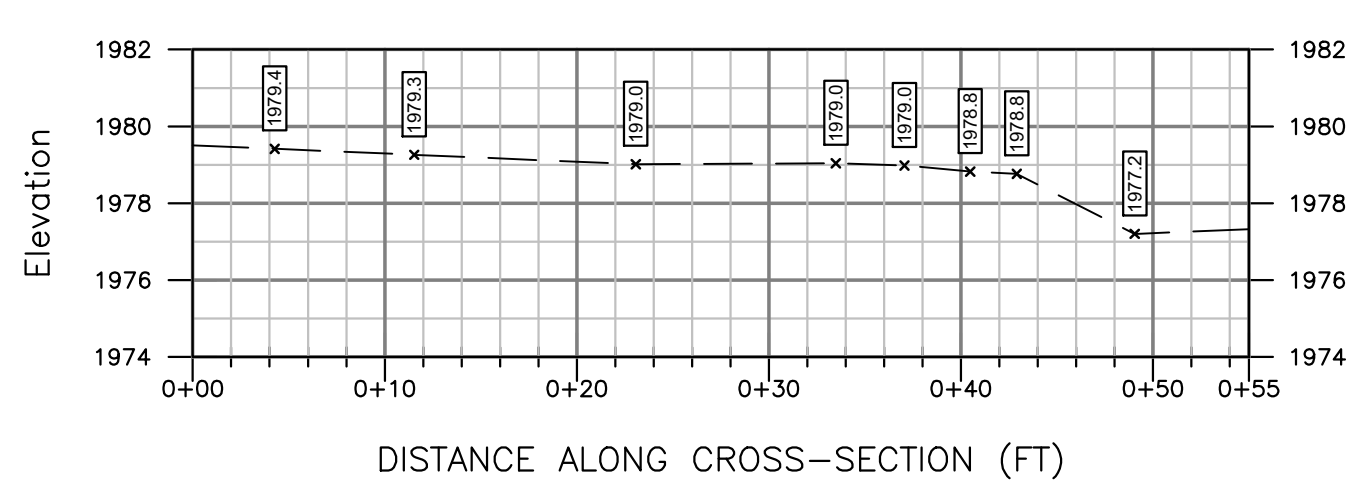
### S-G42 BASELINE CROSS-SECTION A



### S-G42 BASELINE CROSS-SECTION B



### S-G42 BASELINE THALWEG PROFILE

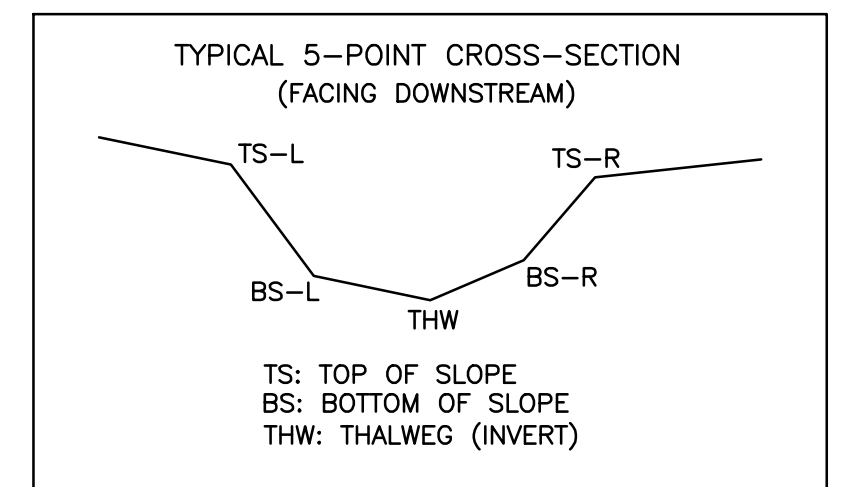


**PROFILE LEGEND**

- EXISTING STREAM PROFILE
- INVERT ALONG THALWEG

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

AS-BUILT TABLE: S-G42 CROSS SECTION A					
	PRE-CROSSING			AS-BUILT	
PT. LOC.	NORTHING	EASTING	ELEV.	VERT. DIFF.	HORZ. DIFF.
TS-L	13606769.41	1734561.63	1979.46		
BS-L	13606769.11	1734561.69	1979.31		
THW	13606768.53	1734561.83	1979.01		
BS-R	13606768.30	1734561.94	1979.28		
TS-R	13606768.04	1734562.022	1979.46		



**CROSS SECTION LEGEND**

- EXISTING GRADE

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

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

-S-G42  
CAD File No.

MBS  
Drawn

CHH  
Checked

BB/JLY  
Approved

NOTED  
Scale:

SEPT. 2021  
Date:

21-0244-005  
Project No.

**POTESTA & ASSOCIATES, INC.**  
ENGINEERS AND ENVIRONMENTAL CONSULTANTS  
7012 MacCorkle Avenue SE, Charleston, WV 25304  
TEL: (304) 342-1400 FAX: (304) 343-9831  
E-Mail: [potesta@potesta.com](mailto:potesta@potesta.com)

POTESTA

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

DATE ISSUED 9/27/2021

Title:  
PROFILE AND CROSS-SECTIONS  
BASELINE SURVEY  
CROSSING S-G42 - UNNAMED TRIB. OF  
HANS CREEK (MP 190.07)  
MONROE COUNTY, WV

1

Drawing No.

File: S:\CD\Proj\21-0244-MVA\21-0244-S-G42.dwg  
Date: 9/27/2021 10:58:00 AM  
Plot: 9/27/2021 10:58:00 AM

PRE-CROSSING