

## Baseline Assessment – Stream Attributes

### Reach S-I19 (Pipeline ROW) Perennial Spread F Summers County, West Virginia

Data	Included
Photos	✓
SWVM Form	✓
FCI Calculator and HGM Form	N/A – Perennial stream (not shadeable, slope >4%)
RBP Physical Characteristics Form	✓
Water Quality Data	✓
RBP Habitat Form	✓
RBP Benthic Form	✓
Benthic Identification Sheet	N/A – No Suitable Habitat
Wolman Pebble Count	✓
Reference Reach Software Pebble Count Data	✓
Longitudinal Profile and Cross Sections	✓



Photo Type: DS, US View

Location, Orientation, Photographer Initials: Downstream Edge of ROW, Upstream View, ABK/AG/WP/TA



Photo Type: DS, DS VIEW

Location, Orientation, Photographer Initials: Downstream Edge of ROW, Downstream View, ABK/AG/WP/TA



37.772089° N, -80.732901° W



Photo Type: ROW N

Location, Orientation, Photographer Initials: Right of Way, Facing North, ABK/AG/WP/TA

37.772089° N, -80.732901° W



Photo Type: ROW S

Location, Orientation, Photographer Initials: Right of Way, Facing South, ABK/AG/WP/TA



37.772089° N, -80.732901° W



Photo Type: CP, US View

Location, Orientation, Photographer Initials: Center Point of ROW, Upstream View, ABK/AG/WP/TA

37.772089° N, -80.732901° W



Photo Type: CP, DS View

Location, Orientation, Photographer Initials: Center Point of ROW, Downstream View, ABK/AG/WP/TA





Photo Type: US, US View

Location, Orientation, Photographer Initials: Upstream Edge of Right of Way, Upstream View, ABK/AG/WP/TA



Photo Type: US, DS View

Location, Orientation, Photographer Initials: Upstream Edge of Right of Way, Downstream View, ABK/AG/WP/TA

"Q:\Charleston\2021 Projects\21-0244- MVP- STREAM AND WETLAND CONDITIONS ASSESSMENT AND SURVEY PLAN\002 - Pre-Crossing Monitoring\Spread F\S-I19"



USCE FILE NO./ Project Name: (v2.1, Sept 2015)				Mountain Valley Pipeline				IMPACT COORDINATES: (in Decimal Degrees)				Lat.	37.772089				Lon.	-80.732901				WEATHER:				Cloudy				DATE:				10/5/2021																																																	
IMPACT STREAM/SITE ID AND SITE DESCRIPTION: (watershed size (acreage), unaltered or impairments)												S-119 Lick Creek												MITIGATION STREAM CLASS./SITE ID AND SITE DESCRIPTION: (watershed size (acreage), unaltered or impairments)																								Comments:																																			
STREAM IMPACT LENGTH:				77				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:				Perennial												Stream Classification:				0												Stream Classification:				0																																															
Percent Stream Channel Slope				11.4												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								0								Hydrology								0								Hydrology								0								Hydrology								0																											
Biogeochemical Cycling																Biogeochemical Cycling																Biogeochemical Cycling																Biogeochemical Cycling												Biogeochemical Cycling																							
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				12								1. Epifaunal Substrate/Available Cover				0-20				12								1. Epifaunal Substrate/Available Cover				0-20				12								1. Epifaunal Substrate/Available Cover				0-20				12								1. Epifaunal Substrate/Available Cover				0-20				12											
2. Embeddedness				0-20				16								2. Embeddedness				0-20				16								2. Embeddedness				0-20				16								2. Embeddedness				0-20				16								2. Embeddedness				0-20				16											
3. Velocity/ Depth Regime				0-20				8								3. Velocity/ Depth Regime				0-20				8								3. Velocity/ Depth Regime				0-20				8								3. Velocity/ Depth Regime				0-20				8								3. Velocity/ Depth Regime				0-20				8											
4. Sediment Deposition				0-20				15								4. Sediment Deposition				0-20				15								4. Sediment Deposition				0-20				15								4. Sediment Deposition				0-20				15								4. Sediment Deposition				0-20				15											
5. Channel Flow Status				0-20				14								5. Channel Flow Status				0-20				14								5. Channel Flow Status				0-20				14								5. Channel Flow Status				0-20				14								5. Channel Flow Status				0-20				14											
6. Channel Alteration				0-20				20								6. Channel Alteration				0-20				20								6. Channel Alteration				0-20				20								6. Channel Alteration				0-20				20								6. Channel Alteration				0-20				20											
7. Frequency of Riffles (or bends)				0-20				9								7. Frequency of Riffles (or bends)				0-20				9								7. Frequency of Riffles (or bends)				0-20				9								7. Frequency of Riffles (or bends)				0-20				9								7. Frequency of Riffles (or bends)				0-20				9											
8. Bank Stability (LB & RB)				0-20				18								8. Bank Stability (LB & RB)				0-20				18								8. Bank Stability (LB & RB)				0-20				18								8. Bank Stability (LB & RB)				0-20				18								8. Bank Stability (LB & RB)				0-20				18											
9. Vegetative Protection (LB &																																																																																			

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

STREAM NAME S-119		LOCATION LICK CREEK
STATION # _____ RIVERMILE _____		STREAM CLASS Perennial
LAT 37.772089 LONG -80.732901		COUNTY Summers
STORET # _____		AGENCY POTESTA
INVESTIGATORS ABK, AG		
FORM COMPLETED BY <b>ABK</b>	DATE 10-5-2021 TIME 1120	REASON FOR SURVEY PRELIM. ASSESSMENT

<b>WEATHER CONDITIONS</b>	<div style="display: flex; justify-content: space-between;"> <div> <p><b>Now</b></p> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; width: 10px; height: 10px; margin-right: 5px;"></div> <div style="border: 1px solid black; width: 10px; height: 10px; margin-right: 5px;"></div> <div style="border: 1px solid black; width: 10px; height: 10px; margin-right: 5px;"></div> <div style="border: 1px solid black; width: 10px; height: 10px; margin-right: 5px;"></div> <div style="border: 1px solid black; width: 10px; height: 10px; margin-right: 5px;"></div> </div> <p>90 % <input checked="" type="checkbox"/></p> </div> <div> <p>storm (heavy rain) rain (steady rain) showers (intermittent) %cloud cover clear/sunny</p> </div> <div> <p><b>Past 24 hours</b></p> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; width: 10px; height: 10px; margin-right: 5px;"></div> <div style="border: 1px solid black; width: 10px; height: 10px; margin-right: 5px;"></div> <div style="border: 1px solid black; width: 10px; height: 10px; margin-right: 5px;"></div> <div style="border: 1px solid black; width: 10px; height: 10px; margin-right: 5px;"></div> <div style="border: 1px solid black; width: 10px; height: 10px; margin-right: 5px;"></div> </div> <p><input checked="" type="checkbox"/> %</p> </div> </div> <div style="margin-top: 10px;"> <p><b>Has there been a heavy rain in the last 7 days?</b>  <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No              Air Temperature 70 °C              Other _____</p> </div>	
<b>SITE LOCATION/MAP</b>	<p><b>Draw a map of the site and indicate the areas sampled (or attach a photograph)</b></p>	
<b>STREAM CHARACTERIZATION</b>	<div style="display: flex; justify-content: space-between;"> <div> <p><b>Stream Subsystem</b>  <input checked="" type="checkbox"/> Perennial <input type="checkbox"/> Intermittent <input type="checkbox"/> Tidal</p> <p><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 _____</p> </div> <div> <p><b>Stream Type</b>  <input type="checkbox"/> Coldwater <input checked="" type="checkbox"/> Warmwater</p> <p><b>Catchment Area</b> _____ km<sup>2</sup></p> </div> </div>	

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

<b>WATERSHED FEATURES</b>	<b>Predominant Surrounding Landuse</b> <input checked="" type="checkbox"/> Forest <input type="checkbox"/> Commercial <input type="checkbox"/> Field/Pasture <input type="checkbox"/> Industrial <input type="checkbox"/> Agricultural <input checked="" type="checkbox"/> Other <u>Pipeline ROW</u> <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 checked="" type="checkbox"/> Herbaceous Dominant species present _____	
<b>INSTREAM FEATURES</b>	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <b>Estimated Reach Length</b> <u>75 ft</u> m  <b>Estimated Stream Width</b> <u>7 ft</u> m  <b>Sampling Reach Area</b> <u>525 ft<sup>2</sup></u> m<sup>2</sup>  <b>Area in km<sup>2</sup> (m<sup>2</sup>x1000)</b> _____ km<sup>2</sup>  <b>Estimated Stream Depth</b> <u>0.7 ft</u> m  <b>Surface Velocity</b> <u>0.58 ft/sec</u> m/sec  <b>Stream Dry</b> <input type="checkbox"/> </div> <div style="width: 45%;"> <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>            Riffle<sup>10</sup> _____ %    Run<sup>80</sup> _____ %            Pool<sup>30</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         </div> </div>	
<b>LARGE WOODY DEBRIS</b>	<b>LWD</b> _____ m <sup>2</sup> <b>Density of LWD</b> _____ m <sup>2</sup> /km <sup>2</sup> (LWD/ reach area) <span style="font-size: 2em; float: right;">N/A</span>	
<b>AQUATIC VEGETATION</b>	<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 <u>N/A</u> Portion of the reach with aquatic vegetation <u>0</u> %	
<b>WATER QUALITY</b>	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <b>Temperature</b> <u>15.1</u> °C  <b>Specific Conductance</b> <u>43.9</u> us/cm  <b>Dissolved Oxygen</b> <u>9.42</u> mg/L  <b>pH</b> <u>6.62</u> su  <b>Turbidity</b> <u>9.20</u> NTU  <b>WQ Instrument Used</b> <u>YSI</u> </div> <div style="width: 45%;"> <b>Water Odors</b>  <input checked="" 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    <input type="checkbox"/> Flecks  <input checked="" type="checkbox"/> None    <input type="checkbox"/> Other _____  <b>Turbidity (if not measured)</b>  <input checked="" type="checkbox"/> Clear    <input type="checkbox"/> Slightly turbid    <input type="checkbox"/> Turbid  <input type="checkbox"/> Opaque    <input type="checkbox"/> Stained    <input type="checkbox"/> Other _____         </div> </div>	
<b>SEDIMENT/ SUBSTRATE</b>	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <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         </div> <div style="width: 45%;"> <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         </div> </div>	

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		10	Detritus	sticks, wood, coarse plant materials (CPOM)	25
Boulder	> 256 mm (10")	25			
Cobble	64-256 mm (2.5"-10")	30	Muck-Mud	black, very fine organic (FPOM)	-
Gravel	2-64 mm (0.1"-2.5")	20			
Sand	0.06-2mm (gritty)	10	Marl	grey, shell fragments	-
Silt	0.004-0.06 mm	5			
Clay	< 0.004 mm (slick)	-			



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

STREAM NAME S-119		LOCATION LICK CREEK	
STATION # _____ RIVERMILE _____		STREAM CLASS Perennial	
LAT 37.772089 LONG -80.732901		COUNTY Summers	
STORET # _____		AGENCY POTESTA	
INVESTIGATORS ABK, AG			
FORM COMPLETED BY <b>ABK</b>		DATE 10-5-2021 TIME 1120 AM PM	REASON FOR SURVEY <b>PRELIM. ASSESSMENT</b>

	Habitat Parameter	Condition Category			
		Optimal	Suboptimal	Marginal	Poor
Parameters to be evaluated in sampling reach	<b>1. Epifaunal Substrate/ Available Cover</b>  <input type="checkbox"/> N/A  <b>SCORE 12</b>	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
	<b>2. Embeddedness</b>  <b>SCORE 16</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.
		20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	<b>3. Velocity/Depth Regime</b>  <input type="checkbox"/> N/A  <b>SCORE 8</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).
		20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
<b>4. Sediment Deposition</b>  <b>SCORE 15</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.	
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
<b>5. Channel Flow Status</b> <input type="checkbox"/> N/A  <b>SCORE 14</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.	
	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)

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
<b>6. Channel Alteration</b>  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 <b>20</b>	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 type="checkbox"/> 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 <b>9</b>	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.	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 <b>9</b> SCORE <b>9</b>	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>  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 <b>8</b> SCORE <b>8</b>	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>  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 <b>3</b> SCORE <b>3</b>	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 **134**



## BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAME S-119		LOCATION LICK CREEK	
STATION # _____ RIVERMILE _____		STREAM CLASS Perennial	
LAT 37.772089 LONG -80.732901		COUNTY Summers	
STORET # _____		AGENCY POTESTA	
INVESTIGATORS ABK, AG		LOT NUMBER	
FORM COMPLETED BY <b>ABK</b>		DATE 10-5-2021 TIME 1120	REASON FOR SURVEY PRELIM. 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>	Lack of suitable habitat, no sample collected.

### 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: 3011

DATE: 10/5/21

COLLECTOR(S): AG

**Wolman Pebble Count (Reach Wide)**

BR	BR	BR	BR	BR	BR	BR	BR	BR	BR
BR	BR	BR	BR	BR	BR	BR	BR	BR	BR
BR	BR	BR	BR	BR	BR	BR	BR	BR	BR
BR	BR	BR	BR	BR	BR	BR	BR	BR	BR
22	84	16	21	172	155	26	50	20	FS
12	20	16	28	58	110	18	10	22	35
10	8	6	12	65	65	110	110	9	11
670	670	670	670	620	670	560	560	560	560
4/0	4/0	4/0	FS	22	8	255	255	130	50
30	20	10	8	9	22	71	122	6	8

**NOTES:**

**Riffle Pebble Count**[illegible]

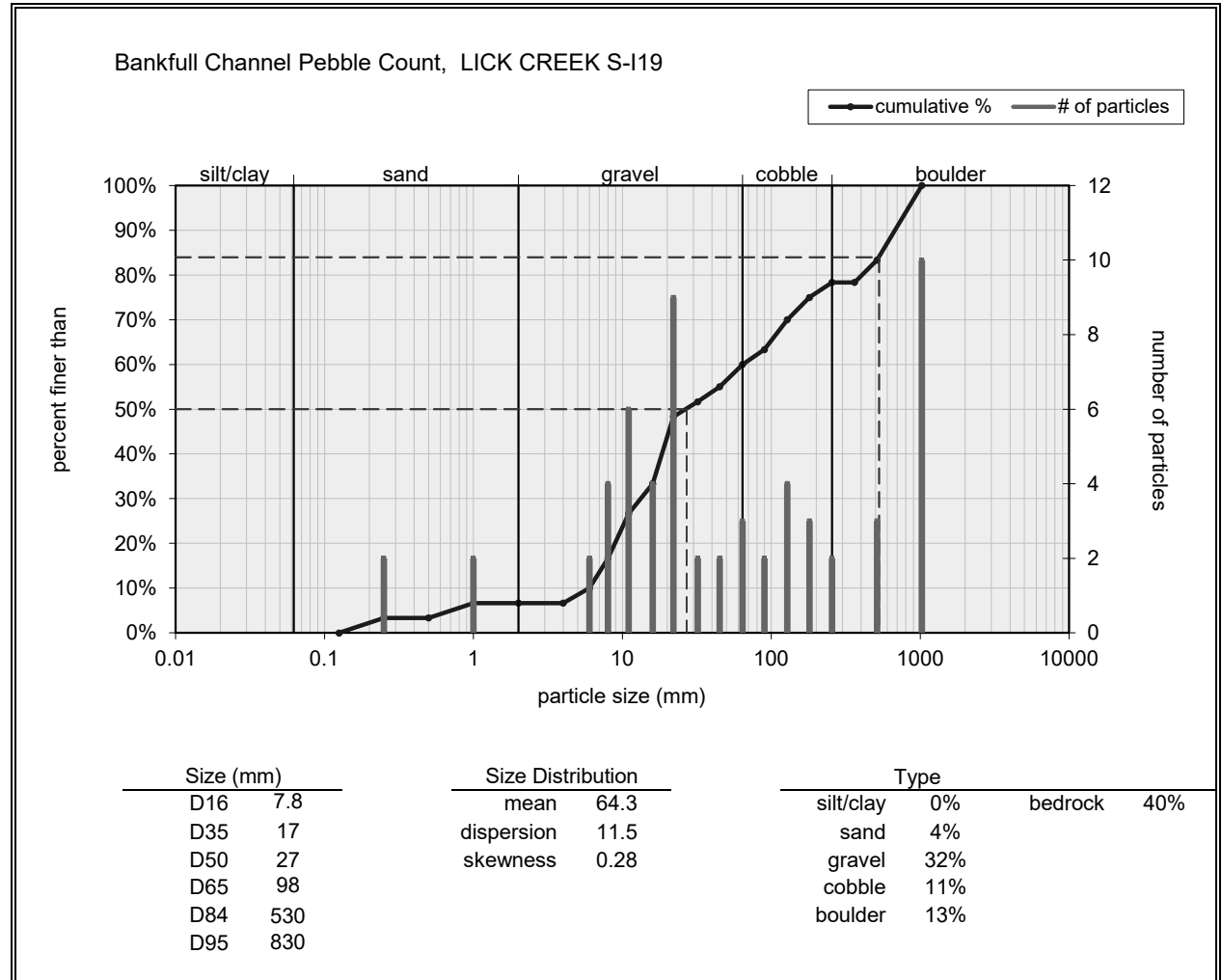
**NOTES:**

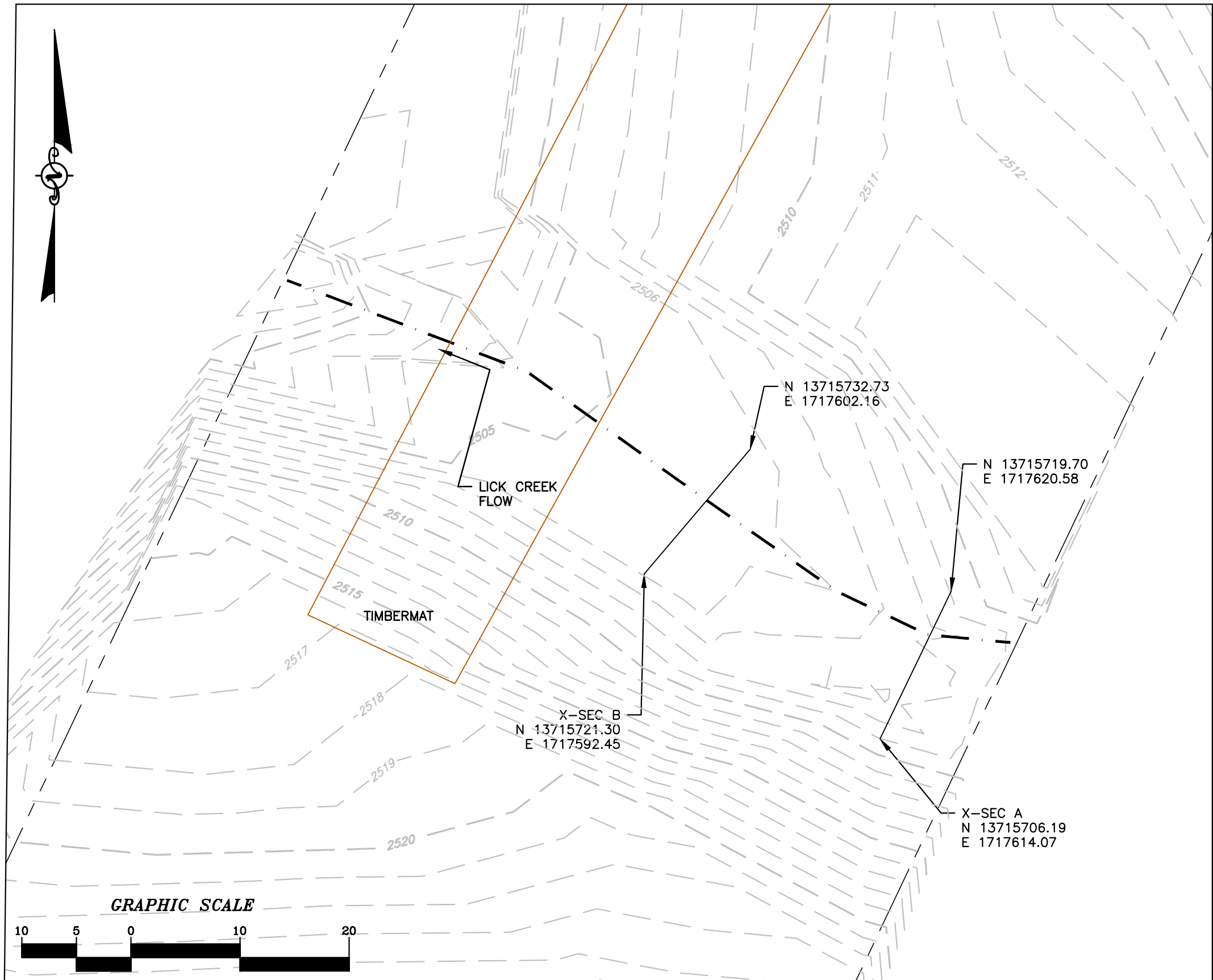
**NOTES:**

Incher	Millimeters	
	Soft Clay	0-100
	Very Fine	100-125
	Fine	125-250
	Medium	250-500
	Coarse	500-1000
0.42-0.85	Very Coarse	1000-2000
0.85-1.75	Very Fine	2-4
1.75-2.8	Fine	4-5.7
2.8-3.6	Fine	5.7-9
3.6-4.75	Medium	9-13
4.75-6.3	Medium	13-19
6.3-7.5	Coarse	19-25
7.5-10	Coarse	25-30
10-18	Very Coarse	30-45
18-25	Very Coarse	45-60
25-35	Small	60-75
35-50	Small	75-100
50-75	Large	100-150
75-100	Large	150-200
100-150	Small	200-300
150-200	Small	300-500
200-300	Medium	500-1000
300-600	Very Large	1000-2000
	Bedrock	



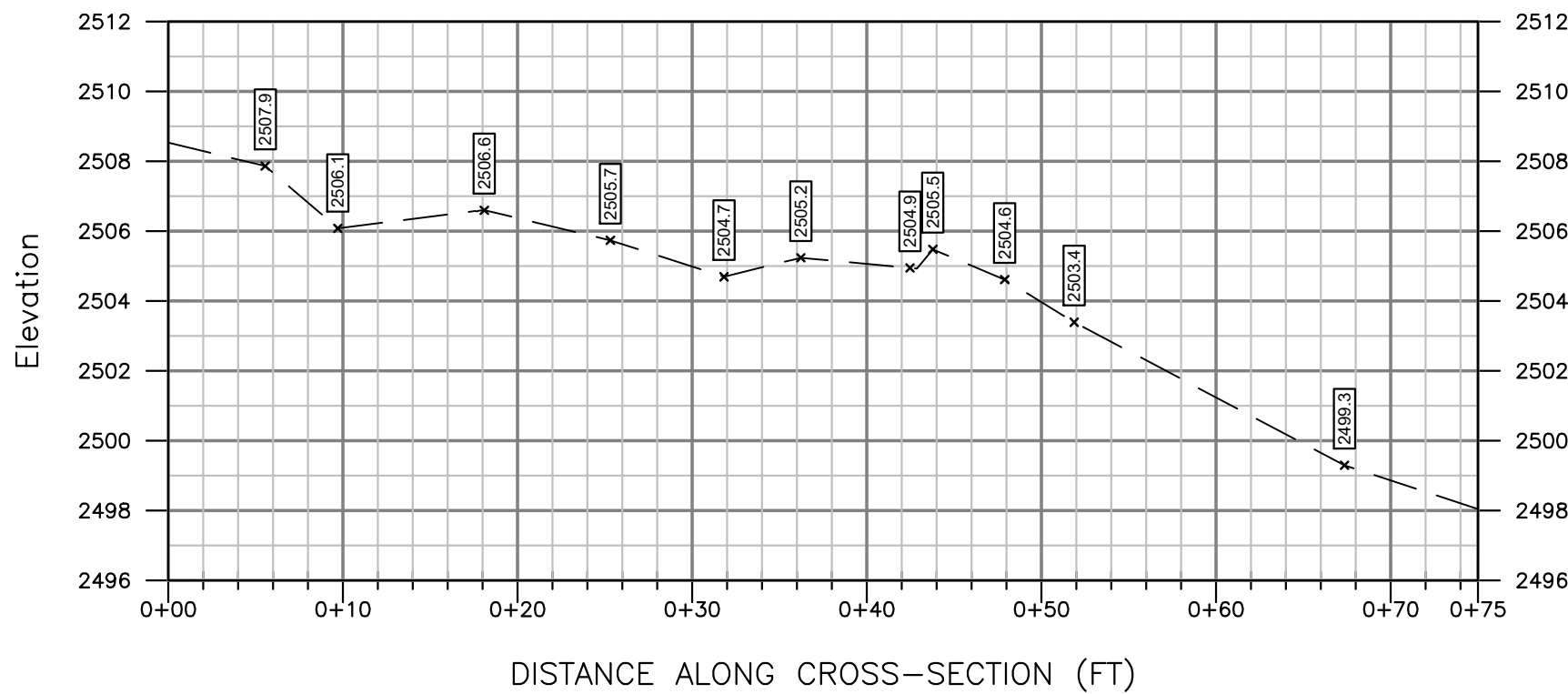
Bankfull Channel		
Material	Size Range (mm)	Count
silt/clay	0 - 0.062	
very fine sand	0.062 - 0.125	
fine sand	0.125 - 0.25	2
medium sand	0.25 - 0.5	
coarse sand	0.5 - 1	2
very coarse sand	1 - 2	
very fine gravel	2 - 4	
fine gravel	4 - 6	2
fine gravel	6 - 8	4
medium gravel	8 - 11	6
medium gravel	11 - 16	4
coarse gravel	16 - 22	9
coarse gravel	22 - 32	2
very coarse gravel	32 - 45	2
very coarse gravel	45 - 64	3
small cobble	64 - 90	2
medium cobble	90 - 128	4
large cobble	128 - 180	3
very large cobble	180 - 256	2
small boulder	256 - 362	
small boulder	362 - 512	3
medium boulder	512 - 1024	10
large boulder	1024 - 2048	
very large boulder	2048 - 4096	
total particle count:		60
bedrock -----		40
clay hardpan -----		
detritus/wood -----		
artificial -----		
total count:		100
Note:		





S-119

### S-119 BASELINE THALWEG PROFILE



#### PROFILE LEGEND

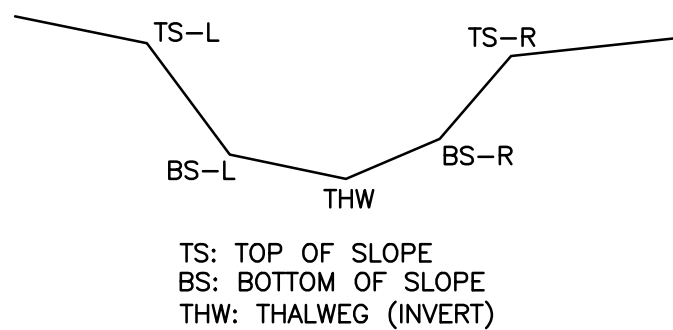
EXISTING STREAM PROFILE  
INVERT ALONG THALWEG

#### PROFILE

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

AS-BUILT TABLE: S-119 CROSS SECTION B					
PT. LOC.	PRE-CROSSING			AS-BUILT	
	NORTHING	EASTING	ELEV.	VERT. DIFF.	HORZ. DIFF.
TS-L	13715722.07	1717592.75	2507.97		
BS-L	13715722.59	1717593.39	2505.59		
THW	13715726.07	1717595.79	2505.23		
BS-R	13715730.27	1717600.32	2505.98		
TS-R	14000678.25	1717601.13	2505.99		

#### TYPICAL 5-POINT CROSS-SECTION (FACING DOWNSTREAM)



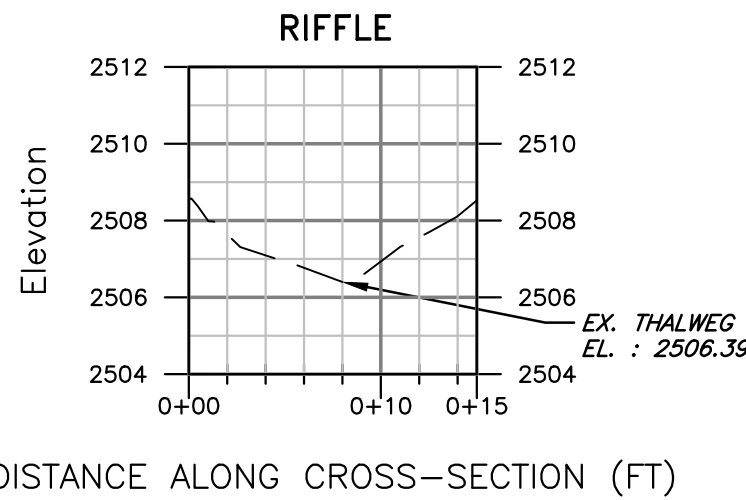
### LEGEND

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

#### SURVEY NOTES:

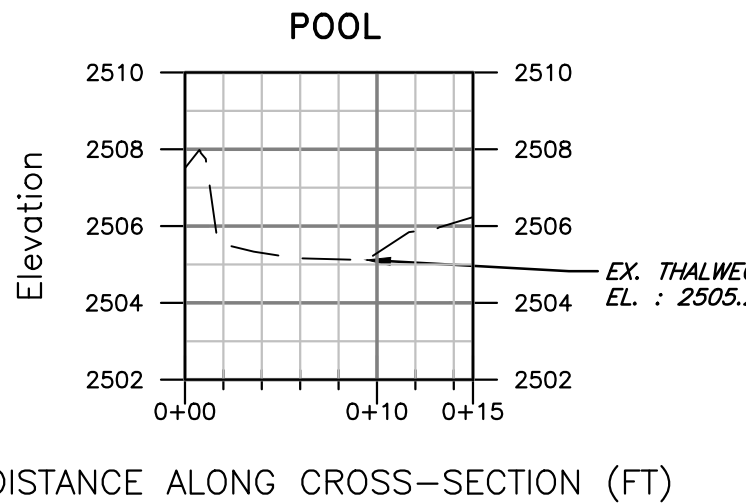
- THIS MAP HAS BEEN ORIENTED TO NAD 1983 UTM ZONE 17N, AND VERTICALLY TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88), USING REAL TIME DGPS. FIELD LOCATIONS WERE COMPLETED ON 10-5-2021.
- EASEMENT LINES SHOWN ON PLAN VIEW WERE PROVIDED BY MOUNTAIN VALLEY PIPELINE.
- SURVEY POINTS FOR CROSS SECTIONS 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-119 BASELINE CROSS-SECTION A



DISTANCE ALONG CROSS-SECTION (FT)

### S-119 BASELINE CROSS-SECTION B



DISTANCE ALONG CROSS-SECTION (FT)

#### CROSS SECTION LEGEND

EXISTING GRADE

#### CROSS SECTION

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

#### PRE-CROSSING PHOTOS



PHOTO TAKEN LOOKING DOWNSTREAM  
FROM UPSTREAM IMPACT LIMITS



PHOTO TAKEN LOOKING UPSTREAM FROM  
DOWNSTREAM IMPACT LIMITS

#### POST-CROSSING PHOTOS

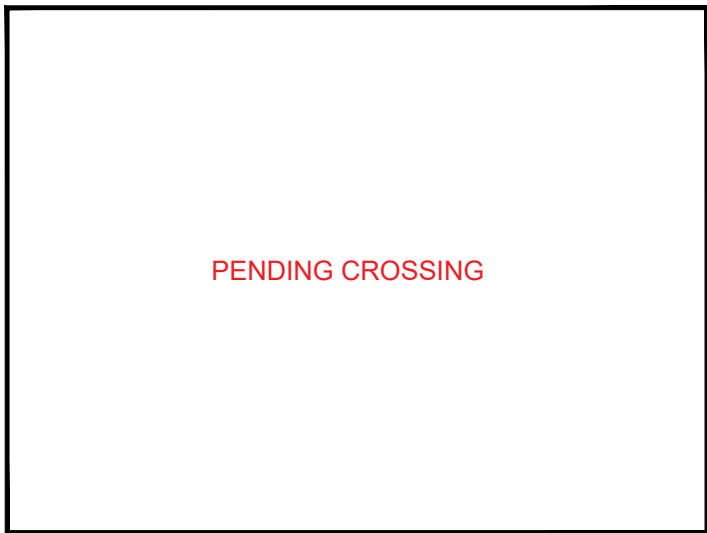


PHOTO TAKEN LOOKING DOWNSTREAM  
UPSTREAM FROM IMPACT LIMITS

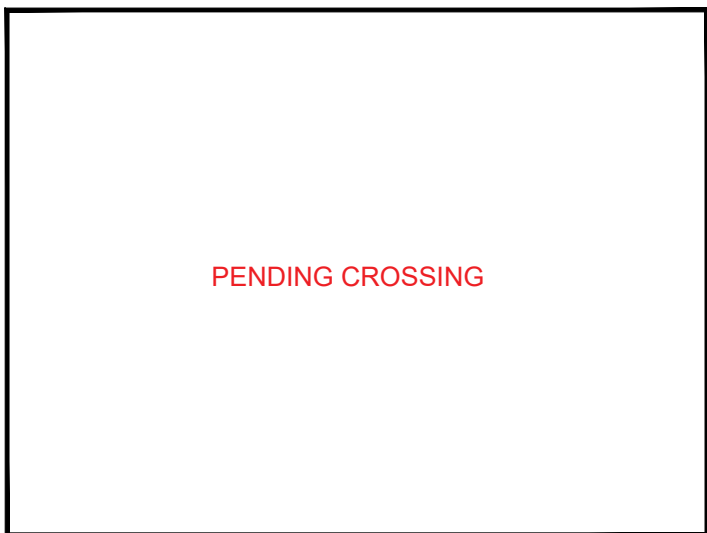


PHOTO TAKEN LOOKING UPSTREAM FROM  
UPSTREAM IMPACT LIMITS

PRE-CROSSING

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

DATE ISSUED 10/7/2021