

Baseline Assessment – Stream Attributes

Reach S-I20 (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	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	✓

*Modified RBP – Dry stream, No flow

37.771406° N, -80.733241° W



Photo Type: US, US View

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

37.771406° N, -80.733241° W



Photo Type: US, DS VIEW

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



Photo Type: CP, US View

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



Photo Type: CP, DS View

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

37.771406° N, -80.733241° W



Photo Type: ROW N

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

37.771406° N, -80.733241° W



Photo Type: ROW S

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



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

"Q:\Charleston\2021 Projects\21-0244- MVP- STREAM AND WETLAND CONDITIONS ASSESSMENT AND SURVEY PLAN\002 - Pre-Crossing Monitoring\Spread F\S-I20"

USCE FILE NO./ Project Name: (v2.1, Sept 2015)				Mountain Valley Pipeline				IMPACT COORDINATES: (in Decimal Degrees)				Lat.	37.771406				Lon.	-80.733241				WEATHER:				Cloudy				DATE:				10/5/2021																									
IMPACT STREAM/SITE ID AND SITE DESCRIPTION: (watershed size (acreage), unaltered or impairments)										S-I20 UNT to Lick Creek										MITIGATION STREAM CLASS./SITE ID AND SITE DESCRIPTION: (watershed size (acreage), unaltered or impairments)																				Comments:																			
STREAM IMPACT LENGTH:				92		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:										Stream Classification:				0						Stream Classification:				0						Stream Classification:				0															
Percent Stream Channel Slope				16.2						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):										HGM Score (attach data forms):									
Average										Average										Average										Average										Average										Average									
Hydrology										Hydrology										Hydrology										Hydrology										Hydrology																			
Biogeochemical Cycling				0						Biogeochemical Cycling										Biogeochemical Cycling				0						Biogeochemical Cycling										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										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																					
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)										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)										USEPA RBP (High Gradient Data Sheet)									
1. Epifaunal Substrate/Available Cover				0-20						1. Epifaunal Substrate/Available Cover				0-20						1. Epifaunal Substrate/Available Cover				0-20						1. Epifaunal Substrate/Available Cover				0-20						1. Epifaunal Substrate/Available Cover				0-20															
2. Embeddedness				0-20				8		2. Embeddedness				0-20						2. Embeddedness				0-20						2. Embeddedness				0-20						2. Embeddedness				0-20															
3. Velocity/ Depth Regime				0-20						3. Velocity/ Depth Regime				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				10		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						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				20		6. Channel Alteration				0-20						6. Channel Alteration				0-20						6. Channel Alteration				0-20						6. Channel Alteration				0-20															
7. Frequency of Riffles (or bends)				0-20						7. Frequency of Riffles (or bends)				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				18		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																																																											

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME S-120		LOCATION UNT TO LICK CREEK	
STATION # _____ RIVERMILE _____		STREAM CLASS Perennial	
LAT 37.771406 LONG -80.733241		COUNTY Summers	
STORET # _____		AGENCY POTESTA	
INVESTIGATORS ABK, AG			
FORM COMPLETED BY ABK		DATE 10-5-2021 TIME 1210	REASON FOR SURVEY PRELIM. ASSESSMENT

WEATHER CONDITIONS	<div style="display: flex; justify-content: space-between;"> <div> <p>Now</p> <div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">80 %</div> <div style="display: flex; flex-direction: column; align-items: center;"> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> </div> </div> </div> <div> <p>storm (heavy rain) rain (steady rain) showers (intermittent) %cloud cover clear/sunny</p> </div> <div> <p>Past 24 hours</p> <div style="display: flex; align-items: center;"> <div style="margin-right: 5px;">%</div> <div style="display: flex; flex-direction: column; align-items: center;"> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> </div> </div> </div> </div> <div style="margin-top: 10px;"> <p>Has there been a heavy rain in the last 7 days? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Air Temperature 70 F °C</p> <p>Other _____</p> </div>		
SITE LOCATION/MAP	<p>Draw a map of the site and indicate the areas sampled (or attach a photograph)</p>		
STREAM CHARACTERIZATION	<div style="display: flex; justify-content: space-between;"> <div> <p>Stream Subsystem</p> <p><input checked="" type="checkbox"/> Perennial <input type="checkbox"/> Intermittent <input type="checkbox"/> Tidal</p> <p>Stream Origin</p> <p><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>Stream Type</p> <p><input type="checkbox"/> Coldwater <input checked="" type="checkbox"/> Warmwater</p> <p>Catchment Area _____ km²</p> </div> </div>		

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	Predominant Surrounding Landuse <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	Local Watershed NPS Pollution <input type="checkbox"/> No evidence <input checked="" type="checkbox"/> Some potential sources <input type="checkbox"/> Obvious sources Local Watershed Erosion <input checked="" type="checkbox"/> None <input type="checkbox"/> Moderate <input type="checkbox"/> Heavy
RIPARIAN VEGETATION (18 meter buffer)	Indicate the dominant type and record the dominant species present <input type="checkbox"/> Trees <input type="checkbox"/> Shrubs <input type="checkbox"/> Grasses <input checked="" type="checkbox"/> Herbaceous Dominant species present _____	
INSTREAM FEATURES	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> Estimated Reach Length <u>70 FT</u> m Estimated Stream Width <u>2.5 FT</u> m Sampling Reach Area <u>175 FT^2</u> m² Area in km² (m²x1000) _____ km² Estimated Stream Depth <u>DRY</u> m Surface Velocity (at thalweg) <u>DRY</u> m/sec Stream Dry <input checked="" type="checkbox"/> </div> <div style="width: 45%;"> Canopy Cover <input checked="" type="checkbox"/> Partly open <input type="checkbox"/> Partly shaded <input type="checkbox"/> Shaded High Water Mark _____ m Proportion of Reach Represented by Stream Morphology Types Riffle^o _____ % Run^o _____ % Pool^o _____ % Channelized <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Dam Present <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No </div> </div>	
LARGE WOODY DEBRIS	LWD <u>10 FT^2</u> m ² Density of LWD _____ m ² /km ² (LWD/ reach area)	
AQUATIC VEGETATION	Indicate the dominant type and record the dominant species present <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> %	
WATER QUALITY	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> Temperature _____ °C Specific Conductance _____ Dissolved Oxygen _____ pH _____ Turbidity _____ WQ Instrument Used <u>Dry stream</u> </div> <div style="width: 45%;"> Water Odors <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 _____ Water Surface Oils <input type="checkbox"/> Slick <input type="checkbox"/> Sheen <input type="checkbox"/> Globs <input type="checkbox"/> Flecks <input type="checkbox"/> None <input type="checkbox"/> Other _____ Turbidity (if not measured) <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 _____ </div> </div>	
SEDIMENT/ SUBSTRATE	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> Odors <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 _____ Oils <input checked="" type="checkbox"/> Absent <input type="checkbox"/> Slight <input type="checkbox"/> Moderate <input type="checkbox"/> Profuse </div> <div style="width: 45%;"> Deposits <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 _____ Looking at stones which are not deeply embedded, are the undersides black in color? <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		0	Detritus	sticks, wood, coarse plant materials (CPOM)	40
Boulder	> 256 mm (10")	30			
Cobble	64-256 mm (2.5"-10")	20	Muck-Mud	black, very fine organic (FPOM)	-
Gravel	2-64 mm (0.1"-2.5")	25			
Sand	0.06-2mm (gritty)	15	Marl	grey, shell fragments	-
Silt	0.004-0.06 mm	10			
Clay	< 0.004 mm (slick)	-			

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

STREAM NAME S-120		LOCATION UNT TO LICK CREEK	
STATION # _____ RIVERMILE _____		STREAM CLASS Perennial	
LAT 37.771406 LONG -80.733241		COUNTY Summers	
STORET # _____		AGENCY POTESTA	
INVESTIGATORS ABK, AG			
FORM COMPLETED BY ABK		DATE 10-5-2021 TIME 1210 AM PM	REASON FOR SURVEY PRELIM. ASSESSMENT

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
1. Epifaunal Substrate/ Available Cover <input checked="" type="checkbox"/> N/A SCORE 0	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). 20 19 18 17 16	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). 15 14 13 12 11	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. 10 9 8 7 6	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. 5 4 3 2 1 0
2. Embeddedness SCORE 8	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. 20 19 18 17 16	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment. 15 14 13 12 11	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment. 10 9 8 7 6	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. 5 4 3 2 1 0
3. Velocity/Depth Regime <input checked="" type="checkbox"/> N/A SCORE 0	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.) 20 19 18 17 16	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). 15 14 13 12 11	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low). 10 9 8 7 6	Dominated by 1 velocity/depth regime (usually slow-deep). 5 4 3 2 1 0
4. Sediment Deposition SCORE 10	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. 20 19 18 17 16	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. 15 14 13 12 11	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. 10 9 8 7 6	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. 5 4 3 2 1 0
5. Channel Flow Status <input checked="" type="checkbox"/> N/A SCORE 0	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. 20 19 18 17 16	Water fills >75% of the available channel; or <25% of channel substrate is exposed. 15 14 13 12 11	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. 10 9 8 7 6	Very little water in channel and mostly present as standing pools. 5 4 3 2 1 0

Modified RBP - Dry Stream

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

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
6. Channel Alteration Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.	
SCORE 20	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Frequency of Riffles (or bends) <input checked="" 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 0	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 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
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 3 Left Bank	10 9	8 7 6	5 4 3	2 1 0
SCORE 3 Right Bank	10 9	8 7 6	5 4 3	2 1 0

Total Score **80**

BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAME S-120		LOCATION UNT TO LICK CREEK	
STATION # _____ RIVERMILE _____		STREAM CLASS Perennial	
LAT 37.771406 LONG -80.733241		COUNTY Summers	
STORET # _____		AGENCY POTESTA	
INVESTIGATORS ABK, AG		LOT NUMBER	
FORM COMPLETED BY ABK		DATE 10-5-2021 TIME 1210	REASON FOR SURVEY PRELIM. ASSESSMENT

HABITAT TYPES	Indicate the percentage of each habitat type present <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 (_____) _____%
SAMPLE COLLECTION	Gear used <input type="checkbox"/> D-frame <input type="checkbox"/> kick-net <input type="checkbox"/> Other _____ How were the samples collected? <input type="checkbox"/> wading <input type="checkbox"/> from bank <input type="checkbox"/> from boat Indicate the number of jabs/kicks taken in each habitat type. <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 (_____) _____
GENERAL COMMENTS	dry stream, no suitable habitat, benthic not 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: S-I70
DATE: 10/5/21
COLLECTOR(S): AG

21-0744

55	2	5	5	15	51	35	20	22	40
42	40	305	305	410	410	410	18	22	31
34	51	51	22	25	20	15	120	88	65
480	480	480	480	480	480	205	2.25	52	52
65	65	240	240	240	240	52	51	65	25
50	51	51	65	65	190	190	190	45	21
430	430	430	430	430	430	345	345	280	280
65	65	65	8	45	51	15	9	25	20
585	585	585	585	585	585	585	585	180	32
455	455	455	455	455	195	105	65	8	22

NOTES:

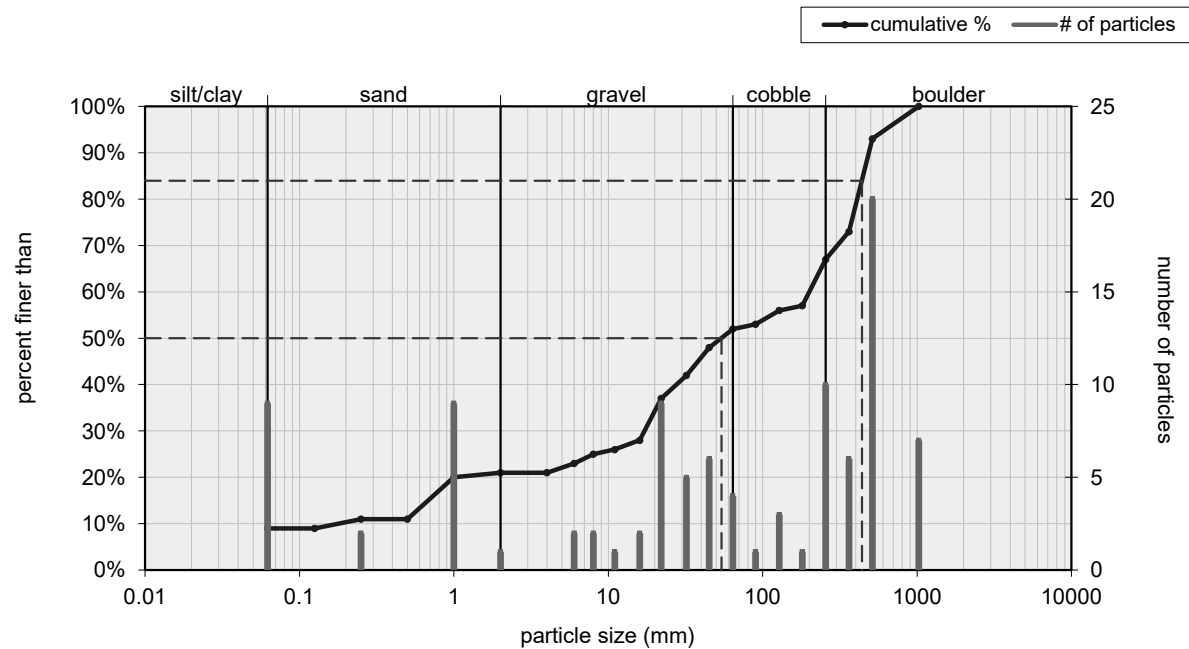
[illegible]

NOTES:

Inches	Material	Multimeter	
4-10	Very Fine	100-125	SAND
10-20	Medium	125-250	
20-40	Coarse	250-500	
40-60	Very Coarse	500-1000	
60-80	Very Fine	100-200	GRAVEL
80-100	Fine	200-400	
100-120	Fine	400-600	
120-140	Medium	600-800	
140-160	Medium	800-1000	GRAVEL
160-180	Coarse	1000-1200	
180-200	Coarse	1200-1400	
200-220	Very Coarse	1400-1600	
220-240	Very Coarse	1600-1800	GRAVEL
240-260	Small	1800-2000	
260-280	Small	2000-2200	
280-300	Large	2200-2400	
300-320	Large	2400-2600	GRAVEL
320-340	Small	2600-2800	
340-360	Small	2800-3000	
360-380	Medium	3000-3200	
380-400	Medium	3200-3400	GRAVEL
400-420	Large	3400-3600	
420-440	Large	3600-3800	
440-460	Very Large	3800-4000	

Bankfull Channel		
Material	Size Range (mm)	Count
silt/clay	0 - 0.062	9
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	9
very coarse sand	1 - 2	1
very fine gravel	2 - 4	
fine gravel	4 - 6	2
fine gravel	6 - 8	2
medium gravel	8 - 11	1
medium gravel	11 - 16	2
coarse gravel	16 - 22	9
coarse gravel	22 - 32	5
very coarse gravel	32 - 45	6
very coarse gravel	45 - 64	4
small cobble	64 - 90	1
medium cobble	90 - 128	3
large cobble	128 - 180	1
very large cobble	180 - 256	10
small boulder	256 - 362	6
small boulder	362 - 512	20
medium boulder	512 - 1024	7
large boulder	1024 - 2048	
very large boulder	2048 - 4096	
total particle count:		100
bedrock -----		
clay hardpan -----		
detritus/wood -----		
artificial -----		
total count:		100
Note:		

Bankfull Channel Pebble Count, S-I20 UNT TO LICK CREEK



Size (mm)		Size Distribution		Type	
D16	0.73	mean	17.9	silt/clay	9%
D35	20	dispersion	41.1	sand	12%
D50	54	skewness	-0.29	gravel	31%
D65	240			cobble	15%
D84	440			boulder	33%
D95	620				

