Baseline Assessment – Stream Attributes

Reach S-K22 (Pipeline ROW) Perennial Spread F Greenbrier 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 - No flow

Spread F Stream S-K22 (Pipeline ROW) Greenbrier County



Photo Type: US at US Edge of ROW Location, Orientation, Photographer Initials: Upstream Edge of ROW, Upstream View, CH/AG/EW/WP



Photo Type: DS at US Edge of ROW
Location, Orientation, Photographer Initials: Upstream Edge of ROW, Downstream View, CH/AG/EW/WP

Spread F Stream S-K22 (Pipeline ROW) Greenbrier County



Photo Type: CP, US View Location, Orientation, Photographer Initials: Pipeline Center Point, Upstream View, CH/AG/EW/WP



Photo Type: CP, DS View
Location, Orientation, Photographer Initials: Pipeline Center Point, Downstream View, CH/AG/EW/WP

Spread F Stream S-K22 (Pipeline ROW) Greenbrier County



Photo Type: US at DS Edge of ROW
Location, Orientation, Photographer Initials: Downstream Edge of ROW, Upstream View, CH/AG/EW/WP



Location, Orientation, Photographer Initials: Downstream Edge of ROW, Downstream View, CH/AG/EW/WP

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

USACE FILE NO./ Project Name: (v2.1, Sept 2015)		MOI	UNTAIN VALL	EY PIPELINE	IMPACT COORDINATES: (in Decimal Degrees)	: Lat	nt.	37.858315	Lon.	-80.755546	WE	ATHER:		Sunny	DATE:	8	/15/2015
IMPACT STREAM/SITE ID (watershed size {acreage},				UNT to Buff	alo Creek (S-K22)			MITIGATION STREAM CLASS./ (watershed size {acreage							Comments:		
STREAM IMPACT LENGTH:	78	FORM MITIGAT		RESTORATION (Levels I-III)	MIT COORDINATES: (in Decimal Degrees)	Lat	it.		Lon.		PRECIPITATI	ON PAST 48 HRS:			Mitigation Length:		
Column No. 1- Impact Existing	g Condition (Deb	it)		Column No. 2- Mitigation Existing	Condition - Baseline (Credit)			Column No. 3- Mitigation Pr Post Completion		'ears	Colum	n No. 4- Mitigation Proj Post Completion		ars	Column No. 5- Mitigation Projec	ted at Maturit	y (Credit)
Stream Classification:	Perer	nnial	Stre	eam Classification:			Stre	eam Classification:		0	Stream Classificat	ion:	(D	Stream Classification:		0
Percent Stream Channel Sle	ope	9.8		Percent Stream Channel S	Slope			Percent Stream Channel SI	ope	0	Perce	nt Stream Channel SI	ope	0	Percent Stream Channel S	lope	0
HGM Score (attach d	ata forms):			HGM Score (attacl	h data forms):			HGM Score (attach	data forms):			HGM Score (attach d	ata forms):		HGM Score (attach o	ata forms):	
		Average			Average				_	Average			1	Average			Average
Hydrology Biogeochemical Cycling Habitat		0	Bio	drology geochemical Cycling bitat	0		Bio	Irology geochemical Cycling itat		0	Hydrology Biogeochemical C Habitat	ycling		0	Hydrology Biogeochemical Cycling Habitat		0
PART I - Physical, Chemical and	Biological Indica	ators	i ran	PART I - Physical, Chemical a	and Biological Indicators		1100	PART I - Physical, Chemical ar	nd Biological Inc	licators		Physical, Chemical and	Biological Indic	cators	PART I - Physical, Chemical and	l Biological Ir	ndicators
	Points Scale Range	Site Score			Points Scale Range Site Score				Points Scale Range	Site Score			Points Scale Range	Site Score		Points Scale F	Range Site Score
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PH	YSICAL INDICATOR (Applies to all stream	ns classifications)		PH	/SICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICA	TOR (Applies to all stream	s classifications)		PHYSICAL INDICATOR (Applies to all stream	s classifications)
USEPA RBP (High Gradient Data Sheet) 1. Epifaunal Substrate/Available Cover	1 0 00			EPA RBP (Low Gradient Data Sheet) pifaunal Substrate/Available Cover	1 0 00			EPA RBP (High Gradient Data Sheet) pifaunal Substrate/Available Cover	1 0 00			Gradient Data Sheet) ate/Available Cover	0-20		USEPA RBP (High Gradient Data Sheet) 1. Epifaunal Substrate/Available Cover		
Epiladrial Substrate/Available Cover Embeddedness	0-20 0-20	14		Pool Substrate Characterization	0-20 0-20			mbeddedness	0-20 0-20		2. Embeddedness	ite/Available Cover	0-20		Embeddedness	0-20 0-20	
Velocity/ Depth Regime	0-20			Pool Variability	0-20			elocity/ Depth Regime	0-20		3. Velocity/ Depth R	egime	0-20		Velocity/ Depth Regime	0-20	
Sediment Deposition	0-20	15	4. S	Sediment Deposition	0-20			ediment Deposition	0-20		 Sediment Deposi 		0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20			Channel Flow Status	0-20			hannel Flow Status	0-20		Channel Flow Sta		0-20		Channel Flow Status	0-20	0-1
6. Channel Alteration	0-20	19		Channel Alteration	0-20			hannel Alteration	0-20		Channel Alteration		0-20		Channel Alteration	0-20	0-1
7. Frequency of Riffles (or bends)	0-20			Channel Sinuosity	0-20			requency of Riffles (or bends)	0-20		Frequency of Riff		0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	16		Bank Stability (LB & RB)	0-20			ank Stability (LB & RB)	0-20		Bank Stability (LE		0-20		Bank Stability (LB & RB)	0-20	
9. Vegetative Protection (LB & RB)	0-20	12	9. V	/egetative Protection (LB & RB)	0-20			egetative Protection (LB & RB)	0-20		Vegetative Protect	ction (LB & RB)	0-20		Vegetative Protection (LB & RB)	0-20	
10. Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Marginal	8		Riparian Vegetative Zone Width (LB & RB) al RBP Score	0-20 0			Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetati Total RBP Score	ve Zone Width (LB & RB)		•	10. Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Poor	
Sub-Total	iviarginai	84 0.42		o-Total	Poor	_		-Total	Poor	0	Sub-Total		Poor	0	Sub-Total	Poor	0
CHEMICAL INDICATOR (Applies to Intermitter	nt and Perennial Str			EMICAL INDICATOR (Applies to Intermitte				EMICAL INDICATOR (Applies to Intermitte	nt and Perennial St			TOR (Applies to Intermitte	ent and Perennial S	•	CHEMICAL INDICATOR (Applies to Intermitte	ent and Perenni	
WVDEP Water Quality Indicators (General)			DEP Water Quality Indicators (General	al)			DEP Water Quality Indicators (General)			lity Indicators (Genera	I)		WVDEP Water Quality Indicators (Genera	ıl)	
Specific Conductivity	0-90		Spe	ecific Conductivity	0-90		Spe	cific Conductivity	0-90		Specific Conductiv	vity	0-90		Specific Conductivity	0-90	
100-199 - 85 points pH	0 00	Els	рН				рН				рН		0.00		рН	1 0 00	
5.6-5.9 = 45 points	0-80				5-90 0-1				5-90				5-90 0-1			5-90	0-1
DO	10-30		DO		10-30		DO		10-30		DO		10-30		DO	10-30	
Sub-Total			Sub	p-Total			Sub	-Total		0	Sub-Total			0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermit	ttent and Perennial	Streams)		DLOGICAL INDICATOR (Applies to Interm	nittent and Perennial Streams)			LOGICAL INDICATOR (Applies to Intern	nittent and Perenn	, ,		CATOR (Applies to Interi	mittent and Perenr	nial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Per	rennial Streams)
WV Stream Condition Index (WVSCI)			wv	Stream Condition Index (WVSCI)			wv	Stream Condition Index (WVSCI)			WV Stream Condit	ion 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	o-Total	0		Sub	-Total	•	0	Sub-Total		•	0	Sub-Total		0
PART II - Index and U	Init Score			PART II - Index an	nd Unit Score			PART II - Index and	d Unit Score			PART II - Index and U	Jnit Score		PART II - Index and	Unit Score	
															The state of the s		
Index	Linear Feet	Unit Score		Index	Linear Feet Unit Score			Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Fe	eet Unit Score
0.610	78	47.58		0	0 0	1		0	0	0		0	0	0	0	0	0

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAMES-K22 U	NT to Buffalo Creek	LOCATION Spread F]
STATION#R	IVERMILE	STREAM CLASS Perennial	✓]
LATLC	ONG	COUNTY Greenbrier	▼	
STORET#		AGENCYPotesta/Edge]
INVESTIGATORSCH/AC		1.22]
FORM COMPLETED BY	C. Haden	DATE 8/24/2021 TIME 1130.4M	REASON FOR SURVEY Preliminary Assessment	
WEATHER CONDITIONS	rain (h (heavy rain) (steady rain)	Has there been a heavy rain in the last 7 days? Yes No Air Temperature 80 °F 0 C Other	
SITE LOCATION/MAP	Draw a map of the site of the	te and indicate the areas sample	ed (or attach a photograph)	
STREAM CHARACTERIZATION	Stream Subsystem	ermittent	Stream Type ☐Coldwater ✓Warmwater	
	Stream Origin Glacial Non-glacial montane Swamp and bog	Spring-fed	Catchment Areakm ²	

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERS FEATURI		Field	Pasture Industria	duse rcial al	Local Watershed NPS □ No evidence ☑ Sor □ Obvious sources					
		Agric Resid	ultural Other _ ential	220	Local Watershed Erosi					
RIPARIA VEGETA (18 meter	TION		e the dominant type and s Z ant species present Wo	record the do hrubs ody sapling	minant species present ☐Grasses ☐ He s, greenbrier, multi flora i	rbaceous				
INSTREA FEATURI		Estimate Samplin Area in Estimate Surface (at that	ted Stream Width and Reach Area km² (m²x1000) and Stream Depth and Rowldry charm with the Stream Rowldry charm with the Stream Depth and Rowldry charm with the Stream	600 km ²	High Water Mark Proportion of Reach R Morphology Types Riffleso Pool 39 % Channelized Yes	Partly open Partly shaded Shaded High Water Mark 0.15 m Proportion of Reach Represented by Stream Morphology Types Riffles % Run 15 % Pool 30 %				
LARGE V DEBRIS	VOODY	LWD Density	$ \begin{array}{ccc} \underline{20} & \underline{m^2} \\ \text{of LWD} & \underline{0.53} & \underline{m} \end{array} $	n²/km² (LWD/	reach area)					
AQUATIO VEGETA	CTION	Roote Floati Domina	ng Algae □At	ne present	nt Rooted floating	Free floating				
WATER (QUALITY	Specific Dissolve pH Turbidi	cature C conductance ed Oxygen ity strument Used			Chemical Other				
SEDIMEN SUBSTRA		Odors Norm Chem Other	nical Anaerobic	Petroleum None	Epoking at stones which	Paper fiber Sand Other h are not deeply embedded, k in color?				
INC	ORGANIC SUB	STRATE	COMPONENTS		ORGANIC SUBSTRATE C	OMPONENTS				
	(should a	dd up to 1		Substrate	(does not necessarily add Characteristic	up to 100%)				
Substrate Type	Diamet	er	Sampling Reach	Type	Characteristic	% Composition in Sampling Area				
Bedrock			0	Detritus	sticks, wood, coarse plant materials (CPOM)	40				
Boulder	> 256 mm (10")		15	26 1 26 1	11 1 6	10				
Cobble	64-256 mm (2.5 2-64 mm (0.1"-2	,	20 20	Muck-Mud	black, very fine organic (FPOM)	0				
Sand	0.06-2mm (gritt		25	Marl	grey, shell fragments	0				
Silt	0.004-0.06 mm	у)	20	Man	grey, shell fragments	0				
Clay	< 0.004-0.06 mm (sli	ck)	0	1						

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

STREAM NAMES-K22 UNT to Buffalo Creek	LOCATION	
STATION # RIVERMILE	STREAM CLASS Perennial	▼
LAT LONG	COUNTY Greenbrier	▼
STORET#	AGENCY Potesta/Edge	
INVESTIGATORSCH/AG/EW/WP	,	
FORM COMPLETED BY C. Haden	DATE 8/24/2021 TIME 1130 AM AM PM	REASON FOR SURVEY Preliminary Assessment

Г	Habitat		Condition	ı Category	
	Parameter	Optimal	Suboptimal	Marginal	Poor
	1. Epifaunal Substrate/ Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of	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.
	✓ N/A	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).	additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).		
	_{SCORE} 0 ▼	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
sampling reach	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.
led ir	SCORE 14▼	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
Parameters to be evaluated in sampling reach	3. Velocity/Depth Regime	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast- shallow or slow-shallow are missing, score low).	Dominated by 1 velocity/ depth regime (usually slow-deep).
ıram	_{SCORE} 0 ▼	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
P ₂	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 15▼	20 19 18 17 16	[5] 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 U	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Modified RBP

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

	Habitat		Condition	Category			
	Parameter	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 19▼	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0		
IIIg reach	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.		
Sallipi	score 0 ▼	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0		
r arameters to be evaluated product than sampling reach	8. Bank Stability (score each bank) Note: determine left or right side by facing deuterment.	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 erod areas; "raw" areas frequent along straig sections and bends; obvious bank slough 60-100% of bank ha erosional scars.			
ננגיי	SCORE 8	Left Bank 10 9	8 7 6	5 4 3	2 1 0		
2	SCORE 8	Right Bank 10 9	8 7 6	5 4 3	2 1 0		
Larameters	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 6 ▼	Left Bank 10 9	8 7 6	5 4 3	2 1 0		
	SCORE 6 ▼)	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 < 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 84 Modified RBP

BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAMES-K22 UNT to Buffalo Creek						eek	LOC	CATIC	ON											
STATION # RIVERMILE							STREAM CLASS Perennial									▼				
LAT							COL	JNTY	1	Gr	een	brie	r							•
STORET#							AGI	ENCY	Pote	esta	/Ed	ge								
INVESTIGATORS	:H/A	G/E	W٨	ΝP		-							1	LOT	NUMBER					
FORM COMPLETE	D BY	С	. ŀ	Нa	de	en	DAT TIM		REASON FOR SURVEY Preliminary Assessment							nent				
HABITAT TYPES	In	dica Co Sub	ate the obble	ne pe e ged N	ercen % Macro	tage of Sphytes	each l	habita %	at typ	e pr □V	eser eget	it ated Other	Ban	ks	%	%				
SAMPLE COLLECTION	G H	Comparison of the comparison																		
GENERAL COMMENTS	111														channel; no f		ob:	 ser	vec	<u></u>
QUALITATIVE Indicate estimate Dominant					0 = A		t/Not	Obs		d, 1		Raro		= C	ommon, 3= Abun				3	1
Filamentous Algae						1 2								ut ala.	rates		1			4
Macrophytes						1 2					Fis		nve	rtebi	ales	-			3	
FIELD OBSERV Indicate estimate	ATIO	ON: und	S Ol anc	F M e:	ACI 0 = orga	ROBE Absen anisms	NTH it/Not s), 3=	OS t Obs Abu	ında	nt (>10	org	anis	sms)	rganisms), 2 = Co , 4 = Dominant (>				ıs)	
Porifera	0	1	2	3	4	Anis	opter	a		0	1	2	3	4	Chironomidae	0	1	2	3	4
Hydrozoa	0	1	2	3	4		ptera			0	1	2	3	4	Ephemeroptera	0	1	2	3	4
Platyhelminthes	0	1	2	3	4		iptera			0	1	2	3	4	Trichoptera	0	1	2	3	4
Turbellaria	0	1	2	3	4		opter			0	1	2	3	4	Other	0	1	2	3	4
Hirudinea	0	1	2	3	4	-	dopte	ra		0	1	2	3	4						
Oligochaeta	0	1	2	3	4	Siali				0	1	2	3	4						
Isopoda	0	1	2	3	4	-	dalid	ae		0	1	2	3	4						
Amphipoda	0	1	2	3	4	Tipu				0	1	2	3	4						
Decapoda	0	1	2	3	4	-	idida			0	1	2	3	4						
Gastropoda	0	1	2	3	4		ıliida			0	1	2	3	4						
Bivalvia	0	1	2	3	4	Tabi Culc	nidae			0	1	2	3	4						
						Cuic	idae			U				4	1					

SITE ID:_	S-K2Z	UNT to	Buffalo	Creek	Spread F	
DATE:	8 24 21				, E,	
COLLEC	TOR(S): CH AG	EW WP				

Wolman Pe	sbble Count (I	Reach Wide)	49,00	- 7 Y L			HEILEN	SWIND OF	- T 10 117	NOTES:
290	SI	SI	25	10	7	160	85	SI	SI	SI = Silt
70	150	65	80	SĪ	15	10	30	31	SI	FS= Fine Sand
5	12	7	31	7	10	22	FS	SI	ST	FSE Fine Sand
300	190	SI	110	2.1	SI	85	SI	15	SI	MS = Medium Sand
SI	SI	SI	SI	F 5	95	60	FS	SI	125	
260	FS	FS	SI	12	7	5	10	5	SI	
210	SI	SI	SI	225	SI	51	190	SI	SI	
105	51	SI	20	SI	80	290	120	FS	FS	
SI	SE	FS	SI	FS	260	12	SI	SI	SI	;a
FS	20	55	55	SI	5	MS	40	15	SI	

Riffle Pebble Count	NOTES:

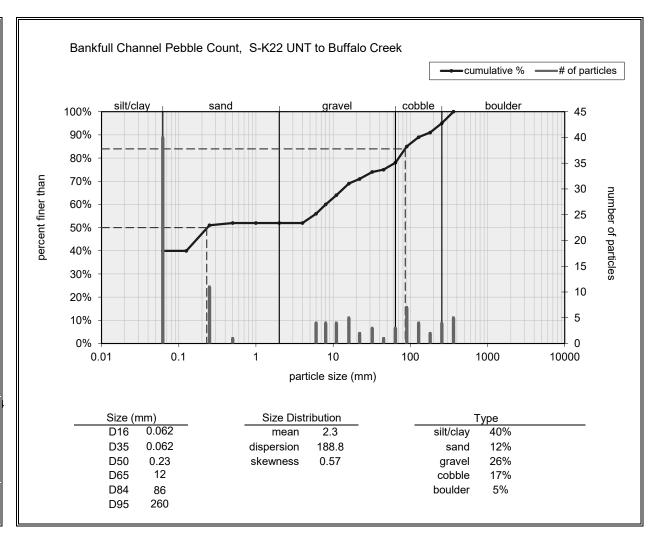
	1411110	.00414.0	
	Fire	.12525	[s]
	Medium	.2550	SAND
	Coarse	.50 - 1.0	D
.0408	Very Coarse	1.0 - 2	-
.9816	Very Fine	2.4	755
.1622	Fine	4 - 5.7	
.2231	Fine	5.7 - 8	G
.3144	Medium	8 - 11,3	R
.4463	Medium	11,3 - 16	
.6389	Coarse	15 - 22.6	E
.B9 - f.3	Coarse	22.5 - 32	
1.3 - 1.8	Very Coarse	32 - 45	
1.8 - 2.5	Very Coarse	45 - 54	1000
2.5 - 3.5	Smatt	64 - 90	HOR
3.5 - 5.0	Small	90 - 128	Coap
5.0 - 7.1	Large	128 - 180	
7.1 - 10.1	Large	180 - 256	85
10.1 - 14.3	Small	256 - 362	(8)
14.3 - 20	Small	362 - 512	ΙΫ́
20 - 40	Medium	512 - 1024	78
40 - 80	Large-Wry Large	1024 - 2048	R
	Bedrock		BDRK

PARTICLE Millimeters

S/C

	NOTES:

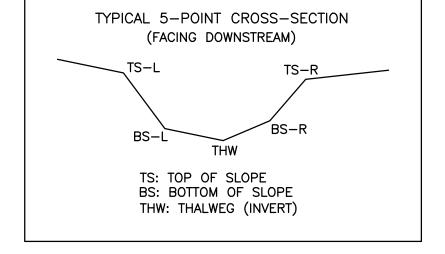
Bankfull Channel	
Material Size Range (mm)	Count
silt/clay 0 - 0.062	40
very fine sand 0.062 - 0.125	
fine sand 0.125 - 0.25	11
medium sand 0.25 - 0.5	1
coarse sand 0.5 - 1	
very coarse sand 1 - 2	
very fine gravel 2 - 4	
fine gravel 4 - 6	4
fine gravel 6 - 8	4
medium gravel 8 - 11	4
medium gravel 11 - 16	5
coarse gravel 16 - 22	2
coarse gravel 22 - 32	3
very coarse gravel 32 - 45	1
very coarse gravel 45 - 64	3
small cobble 64 - 90	7
medium cobble 90 - 128	4
large cobble <u>128</u> - 180	2
very large cobble 180 - 256	4
small boulder 256 - 362	5
small boulder <u>362 - 512</u>	
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:	



S-K22

S-K22 BASELINE THALWEG PROFILE 2502 2500 DISTANCE ALONG CROSS-SECTION (FT) PROFILE LEGEND PROFILE H: 1"=10' **EXISTING STREAM PROFILE** SCALE: V: 1"=5' INVERT ALONG THALWEG

AS-BUILT TABLE: S-K22 CROSS SECTION B							
	PRE-CROSSING		AS-BUILT				
PT. LOC.	NORTHING	EASTING	ELEV.	VERT. DIFF.	HORZ. DIFF.		
TS-L	13747090.10	1710975.58	2503.70				
BS-L	13747091.52	1710975.74	2503.01				
THW	13747094.01	1710975.87	2503.00				
BS-R	13747097.99	1710976.20	2502.95				
TS-R	13747098.58	1710976.21	2503.38				



SURVEY NOTES:

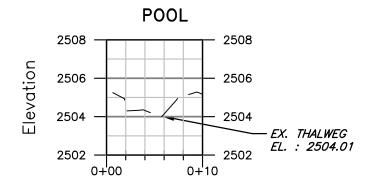
- 1. THIS MAP HAS BEEN ORIENTED TO NAD 1983 UTM ZONE 17N, AND VERTICALLY TO THE NORTH AMERICAN
- 3. SURVEY POINTS FOR CROSS SECTIONS AND THALWEG PROFILES COLLECTED IN 2021 HAVE BEEN USED IN COMBINATION WITH SURVEY POINTS AND COLLECTED PREVIOUSLY IN 2020 IN ORDER TO GENERATE THE PRE-CROSSING SURFACE SHOWN 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-K22 BASELINE CROSS-SECTION A

LEGEND

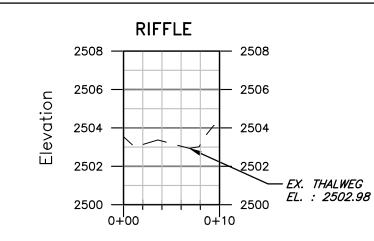
STUDY AREA (EASEMENT)

EXISTING SURVEY-LOCATED EDGE OF WATER OR TOE IF DRY



DISTANCE ALONG CROSS-SECTION (FT)

S-K22 BASELINE CROSS-SECTION B



DISTANCE ALONG CROSS-SECTION (FT)

CROSS SECTION LEGEND — EXISTING GRADE

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

PRE-CROSSING PHOTOS



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

Checked

Drawing No