Corrective Action Plan (CAP)

Alden Resources, LLC
Area #6 Project
Campbell County, Tennessee
LRN-2018-00397; ARAP# NR19MS.001
NPDES Permit TN0070408
SMCRA Permit 3333
WPT# 2023-61

Table 1. Impacts Summary

Name	Length (Linear	Baseline FCU	Debit
	Feet)		(FCUs)
Stream 1	40	10	10
Stream 1	70	10	10
Stream 1	136	34	34
Total	176	44	44

Table 2. Mitigation Summary

Name	Length (Linear Feet)	Proposed FCU
Stream 2	118	93
Stream 2A	150	119
Total	268	212

Table 3. Credit and Debit Summary

Name	Length (Linear	Baseline	Mitigation
	Feet)	Impacts FCU	FCU Credit
		Debit	
Stream 1	176	44	
Stream 2/2A	268	0	212
Total	NA	-44	+212
Net Lift	NA	+168 F	CUs

Ver. 10-20-17

FCI Calculator for the High-Gradient Headwater Streams in Appalachia

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-Gradient Headwater Streams and Low-Gradient Perennial Streams in Appalachia (Environmental Laboratory U.S. Army Corps of Engineers 2017).

Project Name: Area 6

Location: Stream 2 Lower

Sampling Date: 4-25-23 Project Site Before Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: 1

Shrub/Herb Strata

Functional Results Summary: Enter Re

Enter Results in Section A of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.42
Biogeochemical Cycling	0.21
Habitat	0.12

Variable Measure and Subindex Summary:

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	Not Used, <20%	Not Used
V _{EMBED}	Average embeddedness of channel.	1.17	0.16
V _{SUBSTRATE}	Median stream channel substrate particle size.	0.08	0.04
V_{BERO}	Total percent of eroded stream channel bank.	83.00	0.63
V_{LWD}	Number of down woody stems per 100 feet of stream.	60.00	0.50
V _{TDBH}	Average dbh of trees.	Not Used	Not Used
V _{SNAG}	Number of snags per 100 feet of stream.	0.00	0.10
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	41.00	0.63
V _{SRICH}	Riparian vegetation species richness.	0.00	0.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	55.00	0.67
V_{HERB}	Average percent cover of herbaceous vegetation.	25.31	0.34
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.55	0.58

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	Team:	Waypoint, L	LC	rieiu L	Jala Sile	et and C			M Northing	N36.48910	0
Pro	ject Name:								_	W84.02067	
	,	Stream 2 Lo	ower					•	npling Date:		
SA	R Number:	1	Reach	Length (ft):	100	Stream Ty	/pe: _{Inter}	mittent Strea	m		,
	Top Strata:	Shi	ub/Herb Str	ata	(determined	d from perce	ent calculate	d in V _{CCANO}	_{>Y})		_
Site a	and Timing:	Project Site				•	Before Proje	ct			•
ample	Variables	1-4 in strea	m channel								
	00/41011	20%, enter	points along at least one	the stream value betw	. Measure een 0 and 1	nd sapling ca only if tree/s 9 to trigger	apling cove	r is at least :			Not Use <20%
ſ		cent cover n				00	40	45	45	40	1
-	20	15	20	20	15	20	10	15	15	10	
2	V_{EMBED}	along the st surface and to the follow of 1. If the	ream. Sele l area surroi ving table. I bed is comp	ct a particle unding the p f the bed is losed of bed	from the be particle that in an artificial strock, use a	surface, or o	noving it, de by fine sedim composed of e of 5.	termine the lent, and en f fine sedime	percentage ter the ratin ents, use a	of the g according rating score	1.2
		Minshall 19	-	or gravel, co	obble and be	oulder partic	cles (rescale	d from Platt	s, Megahan	ı, and	
		Rating 5	Rating Des		overed sur	ounded or	buried by fir	ne sediment	(or bedrock	()	
		4				ounded, or surrounded				'	1
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	List the rati	ngs at each			ooverea, ea	rroundou, o	i bunea by i	ino ocalino	it (or artinoit	ar ourrace)	i
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	0.08	0.10	0.08	0.08	8.00	0.20					
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	Variables V _{LWD}	stream read	down woody	/ stems (at I	east 4 inche	es in diamete e 50'-wide b	er and 36 in	ches in leng thin the cha	th) per 100 nnel, and th	feet of	60.0
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6	V_{TDBH}	inches (10 d	cm) in diame measurem	eter. Enter	tree DBHs in	r tree/saplin n inches. at least 4 in				at least 4	Not Us
ſ		the stream	Left Side					Right Side			1
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İ	6.2	4	5	7	5	6.2	5.8	5.2	5.7	6.1	
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7	V_{SNAG}					per 100 feet et will be cal		Enter numb	er of snags	on each	0.0
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8	V _{SSD}		s <20%). E	nter number be calculat	of saplings	and shrubs		le of the stre		asure only if e amount	41.0

9	V _{SRICH}	richness pe									
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1	Acer sacch			-							
1				Nyssa sylv			Albizia julibi			Lonicera ta	
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-	Asimina tri			Prunus ser			Alternanthe		Ш	Lythrum sa	licaria
	Betula alleg	ghaniensis		Quercus al	lba		philoxeroide	2 S		Microstegiun	n vimineu
	Betula lent	ta		Quercus co	occinea		Aster tatario	cus		Paulownia	tomento
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	Carya glab	ora		Quercus pr	rinus		Coronilla va	ria		Pueraria m	ontana
	Carya ova	lis		Quercus ru	ıbra	2	Elaeagnus ur	mbellata	2	Rosa multif	lora
	Carya ova	ta	Ш	Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepens
	Cornus flo	rida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	asiliensi
-	Fagus grai		_	Tilia amerio			Ligustrum ob		_		
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				•			Ligustium s	IIICIISC			
	Liriodendror	-		Ulmus ame	ericana						
	Magnolia a	acuminata									
		3	Species in	Group 1				3	Species in	Group 2	
		-		•							
nple	e Variables	10-11 withi	n at least 8	subplots (4	40" x 40", o	r 1m x 1m)	in the ripari	an/buffer :	zone within	25 feet fron	n each
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VSI VSI VSI VSI VSI VD	Forest and r Open space Newly grade Newly grade Summary: ariable CANOPY MBED UBSTRATE ERO WD DBH NAG SD RICH	SAA Number	Left 40 15 e entire cate verage of R Land 75% ground ns, parks, etc. e soil, no vege er 1 VSI Not Used 0.16 0.04 0.63 0.50 Not Used 0.10 0.63 0.00	10 15 chment of t tunoff Score Use (Choos cover)), grass cover tation or pav	40 the stream. for watersh se From Dro <50% rement) has been of d by open v due to pre	ned: p List) dammed in water. Sub vious distu	Not a several loc strate most urbances. Hi	30 50 V V V V V V V V V V V V V V V V V	Runoff Score 1 0.1 0	ment 52 32 16 16 ttream valle Canopy of	Runni Perce (not >1 52 84 100
V: Vcc Vsi Vsi Vss Vsi Vsi Vhi	Forest and r Open space Newly grade Newly grade Summary: ariable CANOPY MBED UBSTRATE ERO WD DBH NAG SD RICH ETRITUS	SAA Number SAA Number Value Not Used, <20% 1.2 0.08 in 83 % 60.0 Not Used 0.0 41.0 0.00 55.0 %	Left 40 15 e entire cate verage of F Land 75% ground ns, parks, etc. soil, no vege er 1 VSI Not Used 0.16 0.04 0.63 0.50 Not Used 0.10 0.63 0.00 0.67	10 15 chment of t tunoff Score Use (Choos cover)), grass cover tation or pav	40 the stream. for watersh se From Dro <50% rement) has been of d by open v due to pre	ned: p List) dammed in water. Sub vious distu	Not a several loc strate most urbances. Hi	30 50 V V V V V V V V V V V V V V V V V	Runoff Score 1 0.1 0	ment 52 32 16 16 ttream valle Canopy of	Runni Perce (not >1 52 84 100

			High-G			ter Strea		Appalachi	а		
	Team:	Waypoint, I	LC		outu Ono	or and o	aioaiai	Latitude/UT	M Northing:	36.4861	
Pro	oject Name:	Area 6						Longitude/U	ΓM Easting:	-84.01719	
		Stream 2 U	•					San	npling Date:	2028	
SA	AR Number:	1		Length (ft):	100	Stream Ty		ermittent Strea			•
0:4-	Top Strata:		rub/Herb Sti	rata	(determine	d from perce		ted in V _{CCANO}	_{PY})		
	and Timing:	Mitigation !				•	After Proje	ect			•
Sample 1	Variables			over chann	al by trop ar	nd capling o	anony M	easure at no f	ower than 1	0 roughly	
'	V _{CCANOPY}	equidistant 20%, enter	points along at least one		. Measure een 0 and 1	only if tree/s	apling cov	er is at least			Not Used, <20%
	0										
				6.11							
2	V _{EMBED}	along the si surface and to the follow of 1. If the	tream. Sele d area surro ving table. I bed is comp	ect a particle unding the p f the bed is posed of bed	from the be particle that in an artificial strock, use a	ed. Before n s covered b surface, or c rating score	noving it, or by fine sed composed or of 5.	er than 30 rough determine the iment, and en of fine sedime	percentage ter the rating ents, use a r	of the g according rating score	3.3
		Minshall 19	83)		obble and b	oulder partic	cles (resca	led from Platt	s, Megahan	i, and	
		Rating 5	Rating Des <5 percent		overed sur	rounded or	buried by	fine sediment	(or bedrock	()	
		4	5 to 25 per	cent of surfa	ce covered,	surrounded	d, or buried	d by fine sedir	nent	ν	
		3 2						ed by fine sed ed by fine sed			
		1				•	•	ea by fine sea / fine sedimer		al surface)]
		ngs at each							1		1
	5	1	2	2	2	2					
	2	5 5	4 5	3 5	3 5	5 2					
	3	5	2	4	4	5					
L	4	2	1	2	2	2					
3	Enter partic	along the s	tream; use t	he same po nearest 0.1 i	ints and par inch at each	ticles as use	ed in V _{EMB}	than 30 roug			3.00 in
	3.00	0.08	0.30	particles as 3.00	3.00	0.08					1
	1.00	3.00	0.08	7.00	3.00	3.00					
	2.10	0.50	0.70	4.00	3.00	3.00					
	0.70	3.00	5.60	1.00	3.00	4.50					
1	2.50	0.50	0.08	3.00	3.00	3.00	tal numbo	r of feet of erd	odod bank o	n oach sido	
4	V _{BERO}		al percentag					, total erosion			0 %
			Left Bank:	0	ft		Right Ban	k: 0	ft		
Sample	e Variables	5-9 within t	he entire ri	parian/buffe	er zone adja	acent to the	stream c	hannel (25 fe	et from ead	ch bank).	
5	V_{LWD}	stream read	ch. Enter th		om the entir lated.	e 50'-wide b	uffer and	inches in leng within the cha	nnel, and th		20.0
6	V_{TDBH}	Average db	h of trees (r	neasure onl		downed wo		at least 20%)	. Trees are	at least 4	
	· IDBN	inches (10	cm) in diam	eter. Enter	tree DBHs i	n inches.		e buffer on ea			Not Used
		the stream	below:				,				i .
	2	3	Left Side	3	2	3	2	Right Side	2	2	
		3	2	3	2	3	2	2		3	
7	V _{SNAG}			ast 4" dbh a the amount				. Enter numb	er of snags	on each	1.0
			Left Side:				Right Side	э:	1		
8	V _{SSD}		saplings and				es dbh) pe	er 100 feet of	stream (mea		
		if tree cove	r is <20%).	Enter numb	er of sapling	gs and shrul		n side of the s			150.0

9	V _{SRICH}		the tallest s	tratum. Che							3.00
				nd the subir	ndex will be	calculated f	rom these da		0 (4.0)		
	Agor rubru		p 1 = 1.0	Magnalia t	rinotolo		Ailanthua a		2 (-1.0)	Loninoro in	nonico
	Acer rubru			Magnolia ti			Ailanthus ai			Lonicera ja	
	Acer sacch			Nyssa sylv			Albizia julibi			Lonicera ta	
	Aesculus fi	lava		Oxydendrun	n arboreum		Alliaria petio	olata		Lotus corn	iculatus
	Asimina trii	loba		Prunus ser	rotina		Alternanthe			Lythrum sa	licaria
	Betula alleg	ghaniensis		Quercus ai	lba		philoxeroide	es		Microstegiui	m vimineum
	Betula lent	а		Quercus co	occinea		Aster tatario	cus		Paulownia	tomentosa
	Carya alba	,		Quercus in	nbricaria		Cerastium f	ontanum		Polygonum	cuspidatum
	Carya glab	ra		Quercus pi	rinus		Coronilla va	nria		Pueraria m	ontana
	Carya oval	lis		Quercus ru	ıbra		Elaeagnus ui	mbellata		Rosa multi	flora
	Carya ovat	ta	\Box	Quercus ve	elutina		Lespedeza	bicolor	П	Sorghum h	alepense
	Cornus flor			Sassafras			Lespedeza			Verbena bi	
_ _	Fagus grar		П	Tilia amerio			Ligustrum ob				
	Fraxinus a			Tsuga can			Ligustrum s				
				•			Ligustrums	mense			
<u></u>	Liriodendror	-	Ш	Ulmus ame	ericana						
Ш	Magnolia a	cuminata									
		3	Species in	Group 1				0	Species in	Group 2	
			-,			<u> </u>					
Sample	e Variables	10-11 withi	n at least 8	subplots (4	10" x 40", o	r 1m x 1m)	in the ripari	an/buffer z	one within	25 feet fron	n each
bank.	The four sul	•	•		•		ch side of th				
10	V _{DETRITUS}					-	naterial. Wo	•	<4" diamete	er and <36"	52.50 %
		long are inc		•	t cover of th	e detritai iay	er at each s	•		7	02.00 /0
		50		Side	50	50	Right		50		
		50 70	50 60	50 50	50 50	50 40	50 50	50 70	50 50	1	
11	V _{HERB}						asure only if t			o not	
• • •	* HEKB						there may b				71 %
				s up through	200% are	accepted. E	nter the perd	cent cover o	of ground ve	egetation at	7 1 %
		each subpl	ot.								
			1 -4	0:-1-		Г	D: ab t	C: do		1	
				Side	50	00	Right		50]	
		80	70	60	50	80	60	70	50]	
		80	70 70	60 90	75	80 75			50 80		
		80 70 2 within the	70 70 e entire cato	90 chment of t	75 he stream.	75	60	70			
Sample 12	e Variable 1	80 70 2 within the	70 70 e entire cato	90 chment of t	75	75	60	70			0.93
		80 70 2 within the	70 70 e entire cato	90 chment of t	75 he stream.	75	60	70		% in	
		80 70 2 within the	70 70 e entire cato exverage of F	60 90 chment of t	75 he stream.	75 ned:	60	70	80 Runoff	% in Catch-	0.93 Running Percent
		80 70 2 within the	70 70 e entire cato exverage of F	60 90 chment of t	75 he stream. e for watersh	75 ned:	60	70	80		Running
	V _{WLUSE}	80 70 2 within the	70 70 e entire cate verage of F	60 90 Chment of t Runoff Score	75 he stream. e for watersh	75 ned:	60	70	80 Runoff	Catch-	Running Percent
	V _{WLUSE}	80 70 2 within the Weighted A	70 70 e entire cato everage of F Land	60 90 Chment of t Runoff Score	75 he stream. e for watersh	75 ned:	60	70	Runoff Score	Catch- ment 90	Running Percent (not >100)
	V _{WLUSE}	80 70 2 within the	70 70 e entire cato everage of F Land	60 90 Chment of t Runoff Score	75 he stream. e for watersh	75 ned:	60	70	Runoff Score	Catch- ment	Running Percent (not >100)
	V _{WLUSE}	80 70 2 within the Weighted A	70 70 e entire cato everage of F Land	60 90 Chment of t Runoff Score	75 he stream. e for watersh	75 ned:	60	70	Runoff Score	Catch- ment 90	Running Percent (not >100)
	V _{WLUSE}	80 70 2 within the Weighted A	70 70 e entire cato everage of F Land	60 90 Chment of t Runoff Score	75 he stream. e for watersh	75 ned:	60	70	Runoff Score	Catch- ment 90	Running Percent (not >100)
	V _{WLUSE}	80 70 2 within the Weighted A	70 70 e entire cato everage of F Land	60 90 Chment of t Runoff Score	75 he stream. e for watersh	75 ned:	60	70	Runoff Score	Catch- ment 90	Running Percent (not >100)
	V _{WLUSE}	80 70 2 within the Weighted A	70 70 e entire cato everage of F Land	60 90 Chment of t Runoff Score	75 he stream. e for watersh	75 ned:	60	70	Runoff Score	Catch- ment 90	Running Percent (not >100)
	V _{WLUSE}	80 70 2 within the Weighted A	70 70 e entire cato everage of F Land	60 90 Chment of t Runoff Score	75 he stream. e for watersh	75 ned:	60	70	Runoff Score	Catch- ment 90	Running Percent (not >100)
	V _{WLUSE}	80 70 2 within the Weighted A	70 70 e entire cato everage of F Land	60 90 Chment of t Runoff Score	75 he stream. e for watersh	75 ned:	60	70	Runoff Score	Catch- ment 90	Running Percent (not >100)
	V _{WLUSE}	80 70 2 within the Weighted A	70 70 e entire cato everage of F Land	60 90 Chment of t Runoff Score	75 he stream. e for watersh	75 ned:	60	70	Runoff Score	Catch- ment 90	Running Percent (not >100)
	Forest and r	80 70 2 within the Weighted A	70 70 e entire cate everage of F Land -75% ground ns, parks, etc.	60 90 Chment of t Runoff Score	75 he stream. e for watersh	75 ned:	60	70	Runoff Score	Catch- ment 90	Running Percent (not >100)
	Forest and r	80 70 2 within the Weighted A	70 70 e entire cate everage of F Land -75% ground ns, parks, etc.	60 90 Chment of t Runoff Score	75 he stream. e for watersh	75 ned:	60	70 80	Runoff Score	Catch- ment 90	Running Percent (not >100)
12	Forest and r Open space	80 70 2 within the Weighted A mative range (: (pasture, law)	70 70 e entire cate verage of F Land -75% ground ns, parks, etc.	60 90 chment of t Runoff Score Use (Choos (cover)	75 he stream. e for watersh se From Dro	75 ned:	60 70	70 80	Runoff Score 1 0.3	Catchment 90 10	Running Percent (not >100) 90 100
12	Forest and r Open space Summary: ariable	80 70 2 within the Weighted A stative range (: (pasture, law) SAA Number Value	70 70 re entire cate overage of F Land -75% ground rs, parks, etc.	60 90 chment of t Runoff Score Use (Choos cover) , grass cover	75 he stream. e for watersh se From Dro >75%	75 ned: p List)	60 70	70 80	Runoff Score 1 0.3	Catchment 90 10 ags and st	Running Percent (not >100) 90 100
12	Forest and r Open space	80 70 2 within the Weighted A mative range (: (pasture, law)	70 70 e entire cate verage of F Land -75% ground ns, parks, etc.	60 90 chment of t Runoff Score Use (Choos cover) , grass cover	75 he stream. e for watersh se From Dro >75% as been coparian plar	75 ned: p List)	60 70 Not with proper	70 80 V V V V Substrate alled. Sap	Runoff Score 1 0.3	Catchment 90 10 ags and st	Running Percent (not >100) 90 100
12 V	Forest and r Open space Summary: ariable	80 70 2 within the Weighted A mative range (: (pasture, law) SAA Numbel Value Not Used,	70 70 re entire cate overage of F Land -75% ground rs, parks, etc.	60 90 chment of t Runoff Score Use (Choos cover) , grass cover	75 he stream. e for watersh se From Dro >75% as been coparian plar	75 ned: p List)	Not with proper	70 80 V V V V Substrate alled. Sap	Runoff Score 1 0.3	Catchment 90 10 ags and st	Running Percent (not >100) 90 100
V \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Forest and r Open space Summary: ariable /ccanopy	80 70 2 within the Weighted A mative range (: (pasture, law) SAA Number Value Not Used, <20% 3.3	70 70 70 e entire cate verage of F Land 775% ground 7	60 90 chment of t Runoff Score Use (Choos cover) , grass cover	75 he stream. e for watersh se From Dro >75% as been coparian plar	75 ned: p List)	Not with proper	70 80 V V V V Substrate alled. Sap	Runoff Score 1 0.3	Catchment 90 10 ags and st	Running Percent (not >100) 90 100
V V	Forest and r Open space Summary: ariable /ccanopy /substrate	80 70 2 within the Weighted A weighted A within the Weighted A wi	ro ro entire cate everage of F Land -75% ground ns, parks, etc. VSI Not Used 0.92 1.00	60 90 chment of t Runoff Score Use (Choos cover) , grass cover	75 he stream. e for watersh se From Dro >75% as been coparian plar	75 ned: p List)	Not with proper	70 80 V V V V Substrate alled. Sap	Runoff Score 1 0.3	Catchment 90 10 ags and st	Running Percent (not >100) 90 100
V V	Forest and r Open space Summary: ariable /ccanopy	80 70 2 within the Weighted A mative range (: (pasture, law) SAA Number Value Not Used, <20% 3.3	70 70 70 e entire cate verage of F Land 775% ground 7	60 90 chment of t Runoff Score Use (Choos cover) , grass cover	75 he stream. e for watersh se From Dro >75% as been coparian plar	75 ned: p List)	Not with proper	70 80 V V V V Substrate alled. Sap	Runoff Score 1 0.3	Catchment 90 10 ags and st	Running Percent (not >100) 90 100
V V V V V V V V V V V V V V V V V V V	Forest and r Open space Summary: ariable /ccanopy /substrate	80 70 2 within the Weighted A weighted A within the Weighted A wi	ro ro entire cate everage of F Land -75% ground ns, parks, etc. VSI Not Used 0.92 1.00	60 90 chment of t Runoff Score Use (Choos cover) , grass cover	75 he stream. e for watersh se From Dro >75% as been coparian plar	75 ned: p List)	Not with proper	70 80 V V V V Substrate alled. Sap	Runoff Score 1 0.3	Catchment 90 10 ags and st	Running Percent (not >100) 90 100
V V V V V V V V V V V V V V V V V V V	Forest and r Open space Summary: ariable /ccanopy /substrate /bero /LWD	SAA Number Value Not Used, <20% 3.3 3.00 in 0 % 20.0	r 1 VSI Not Used 0.92 1.00 1.00	60 90 chment of t Runoff Score Use (Choos cover) , grass cover	75 he stream. e for watersh se From Dro >75% as been coparian plar	75 ned: p List)	Not with proper	70 80 V V V V Substrate alled. Sap	Runoff Score 1 0.3	Catchment 90 10 ags and st	Running Percent (not >100) 90 100
V V V V V V V V V V V V V V V V V V V	Forest and r Open space Summary: ariable /ccanopy /embed /substrate /bero	80 70 2 within the Weighted A weighted A within the Weighted A wi	ronger of Factor	60 90 chment of t Runoff Score Use (Choos cover) , grass cover	75 he stream. e for watersh se From Dro >75% as been coparian plar	75 ned: p List)	Not with proper	70 80 V V V V Substrate alled. Sap	Runoff Score 1 0.3	Catchment 90 10 ags and st	Running Percent (not >100) 90 100
V V V V V V V V V V V V V V V V V V V	Forest and r Open space Summary: ariable /ccanopy /substrate /bero /LWD	SAA Number Value Not Used, <20% 3.3 3.00 in 0 % 20.0	r 1 VSI Not Used 0.92 1.00 1.00	60 90 chment of t Runoff Score Use (Choos cover) , grass cover	75 he stream. e for watersh se From Dro >75% as been coparian plar	75 ned: p List)	Not with proper	70 80 V V V V Substrate alled. Sap	Runoff Score 1 0.3	Catchment 90 10 ags and st	Running Percent (not >100) 90 100
V V	Summary: ariable /ccanopy /substrate /bero /tub /tobh	80 70 2 within the Weighted A weighted A within the Weighted A wi	ronger of Formula of the control of	60 90 chment of t Runoff Score Use (Choos cover) , grass cover	75 he stream. e for watersh se From Dro >75% as been coparian plar	75 ned: p List)	Not with proper	70 80 V V V V Substrate alled. Sap	Runoff Score 1 0.3	Catchment 90 10 ags and st	Running Percent (not >100) 90 100
V V	Summary: ariable /ccanopy /substrate /bero	80 70 2 within the Weighted A weighted A within the Weighted A wi	ro ro entire cate everage of F Land r75% ground ns, parks, etc. VSI Not Used 0.92 1.00 1.00 Not Used	60 90 chment of t Runoff Score Use (Choos cover) , grass cover	75 he stream. e for watersh se From Dro >75% as been coparian plar	75 ned: p List)	Not with proper	70 80 V V V V Substrate alled. Sap	Runoff Score 1 0.3	Catchment 90 10 ags and st	Running Percent (not >100) 90 100
V V V V V V V V V V V V V V V V V V V	Summary: ariable /ccanopy /substrate /bero /tub /tobh	80 70 2 within the Weighted A weighted A within the Weighted A wi	ronger of Formula of the control of	60 90 chment of t Runoff Score Use (Choos cover) , grass cover	75 he stream. e for watersh se From Dro >75% as been coparian plar	75 ned: p List)	Not with proper	70 80 V V V V Substrate alled. Sap	Runoff Score 1 0.3	Catchment 90 10 ags and st	Running Percent (not >100) 90 100
V V V V V V V V V V V V V V V V V V V	Forest and r Open space Summary: ariable /ccanopy /embed /substrate /bero /Lwd /tobh	SAA Number Value Not Used, <20% 3.3 3.00 in 0 % 20.0 Not Used 1.0 150.0	r 1 VSI Not Used 1.00 Not Used 1.00 1.00	60 90 chment of t Runoff Score Use (Choos cover) , grass cover	75 he stream. e for watersh se From Dro >75% as been coparian plar	75 ned: p List)	Not with proper	70 80 V V V V Substrate alled. Sap	Runoff Score 1 0.3	Catchment 90 10 ags and st	Running Percent (not >100) 90 100
V V V V V V V V V V V V V V V V V V V	Forest and r Open space Summary: ariable /ccanopy /substrate /bero /tubb /snag /ssb /srich /betritus	SAA Number Value Not Used, <20% 3.3 3.00 in 0 % 20.0 Not Used 1.0 150.0 3.00	70 70 70 70 70 70 70 70 70 70 70 70 70 7	60 90 chment of t Runoff Score Use (Choos cover) , grass cover	75 he stream. e for watersh se From Dro >75% as been coparian plar	75 ned: p List)	Not with proper	70 80 V V V V Substrate alled. Sap	Runoff Score 1 0.3	Catchment 90 10 ags and st	Running Percent (not >100) 90 100
V V V V V V V V V V V V V V V V V V V	Forest and r Open space Summary: ariable /ccanopy /substrate /bero /tub /snag /ssp	80 70 2 within the Weighted A weighted A within the Weighted A wi	70 70 70 70 70 70 70 70 70 70 70 70 70 7	60 90 chment of t Runoff Score Use (Choos cover) , grass cover	75 he stream. e for watersh se From Dro >75% as been coparian plar	75 ned: p List)	Not with proper	70 80 V V V V Substrate alled. Sap	Runoff Score 1 0.3	Catchment 90 10 ags and st	Running Percent (not >100) 90 100

Field Data Sheet and Calculator Team: Waypoint, LLC Project Name. Area 6 Location Stream 72 SAR Number: 1 Reach Length (fit): 100 Stream Type: Intermittent Stream Top Strate: Shrub-Heet Stream (determined from percent calculated in Vocasion): 1 Sar and Timing. Mitigation Size				High-G					Appalachi tor	а		
SAR Number: Contains Stream ZA		Team:	Waypoint, I	LC		outu Ono	or arra o	aioaia		M Northing:	36.48511	
SRR Number: Top Strata: ShrubHerb Strata (determined from percent calculated in V _{COMOCP}) Steampte Variables 1-4 in stream channel 1 V _{COMOCP} Andrage percent converse channel by tree and saying carrow. Measure at no fewer than 10 mulphly and the stream channel 1 V _{COMOCP} Andrage percent converse channel by tree and saying carrow. Measure at no fewer than 10 mulphly and the stream channel converse channel	Pro	oject Name:	Area 6						Longitude/U	ΓM Easting:	-84.01817	
Site and Timing: Missation Site: Value After Project Af		Location:	Stream 2A						San	npling Date:	2028	
Size and Timing: Mitigation Size After Project After Proj	-											•
Sample Variables 1-4 in stream channel 1 Vocacor Average percent cover over channel by tree and saping cancey. Measure at no fewer than 10 roughly according to the stream channel by tree and saping cancey. Measure at no fewer than 10 roughly according to the stream channel by tree and saping cancey. Measure at no fewer than 10 roughly according to the stream channel between 0 and 19 to trigger 10p Strate choice.) List the percent cover measurements at each point below: 2 Viseto Average embeddedness of the stream channel. Measure at no fewer than 30 roughly equidistant points only in the stream. Select a particle from the bed. Beloor moving it, determine the percentage of the surface and area surrounding the particle first is overed by fine sediment, and enter the rating according on 1.1 If the bed is composed of bedook, use a rating sediment, and enter the rating according on 1.1 If the bed is composed of bedook, use a rating sediment, on 4.1 If the bed is composed of bedook, use a rating sediment, on 4.1 If the bed is composed of bedook, use a rating sediment, on 4.1 If the bed is composed of bedook, use a rating sediment, on 4.1 If the bed is composed of bedook, use a rating sediment, on 4.1 If the bed is composed of bedook, use a rating sediment, on 4.1 If the bed is composed of bedook, use a rating sediment, on 4.1 If the bed is composed of bedook, use a rating sediment, on 4.1 If the bed is composed of bedook, use a rating sediment, on 4.1 If the bed is composed of bedook, use a rating sediment, on 4.1 If the bed is composed of bedook, use a rating sediment, on 4.1 If the bed is composed of bedook, use a rating sediment, on 4.1 If the bed is composed of bedook, on 4.1 If the bed is composed of bedook, on 4.1 If the bedook of the sediment of 5.1 If the bed is composed of bedook, on 4.1 If the bed is composed of bedook, on 4.1 If the bedook of the sediment of 5.1 If the bedook of the sediment of					rata	(determined	d from perce			_{PY})		
Vicunity Average percent cover over channel by tree and spaling cancopy. Measure at no lewer than 10 roughly quidistant points along the stream. Neasure only it receiping cover is at least 20%. (If less than 20%, enter at least one value between 0 and 19 to higger Top Strats choice.)	Site	and Timing:	Mitigation :	Site			•	After Proj	ect			•
equidictant points along the stream. Measure only if tree/spiling cover is at least 20%. (If less than 20%, enter at least on evalue between and 19 to trigger Top Strata choice). List the percent cover measurements at each point below: 2						-1	al a salla sa sa			4h 4	0	
Average embeddedness of the stream channel. Measure at no fewer than 30 roughly equidistant points along the stream. Select a particle from the bed. Before moving it, determine the percentage of the surface and areas aurrounding the particle that is covered by fine sediment, and enter the traing according to the following table. If the bed is an antificial surface, or composed of fine sadiments, use a rating score of 1. If the bed is composed of before, use a rating score of 5. Embeddedness rating for gravel, cabble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983). Rating Rating Description	ı		equidistant 20%, enter	points along at least one	the stream value betw	. Measure een 0 and 1	only if tree/s	apling co	ver is at least:			
along the stream. Select a particle from the bed. Before moving it, determine the percentage of the surface and area surrounding the particle that is covered by fine sediment, and enter the rating according to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score of 1. If the bed is composed of bedrock, use a rating score of 5. Embeddedness rating for gravel, cobble and boulder particles (recalled from Platts, Megahan, and Minshall 1983) Rating		0]
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Minshall 1983 Rating Rating Description	2	VEMBED	along the si surface and to the follow of 1. If the	tream. Sele d area surro ving table. I bed is comp	ect a particle unding the p f the bed is posed of bed	from the be particle that in an artificial strock, use a	ed. Before n s covered b surface, or c rating score	noving it, y fine sec omposed e of 5.	determine the diment, and en of fine sedime	percentage ter the rating ents, use a r	of the g according rating score	3.3
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3 26 to 50 percent of surface covered, surrounded, or buried by fine sediment 2 51 to 75 percent of surface covered, surrounded, or buried by fine sediment 1 575 percent of surface covered, surrounded, or buried by fine sediment 1 575 percent of surface covered, surrounded, or buried by fine sediment (or artificial surface) 1 575 percent of surface covered, surrounded, or buried by fine sediment (or artificial surface) 1 575 percent of surface covered, surrounded, or buried by fine sediment (or artificial surface) 1 575 percent of surface covered, surrounded, or buried by fine sediment (or artificial surface) 1 575 percent of surface covered, surrounded, or buried by fine sediment (or artificial surface) 1 575 percent of surface covered, surrounded, or buried by fine sediment (or artificial surface) 1 575 percent of surface covered, surrounded, or buried by fine sediment (or artificial surface) 1 575 percent of surface covered, surrounded, or buried by fine sediment (or artificial surface) 1 575 percent of surface covered, surrounded, or buried by fine sediment (or artificial surface) 1 575 percent of surface covered, surrounded, or buried by fine sediment (or artificial surface) 1 575 percent of surface covered, surrounded, or buried by fine sediment (or artificial surface) 1 575 percent of surface covered, surrounded, or buried by fine sediment (or artificial surface) 1 575 percent of surface covered, surrounded, or buried by fine sediment (or artificial surface) 1 1 1 1 1 1 1 1 1			•			overed, sur	rounded, or	buried by	fine sediment	(or bedrock	κ)	j l
2 5 10 75 percent of surface covered, surrounded, or buried by fine sediment (or artificial surface)			4	5 to 25 per	cent of surfa	ce covered,	surrounded	l, or burie	d by fine sedir	nent] [
1 >75 percent of surface covered, surrounded, or buried by fine sediment (or artificial surface)												
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3 V _{SUSTRATE} Median stream channel substrate particle size. Measure at no fewer than 30 roughly equidistant points along the stream; use the same points and particles as used in V _{EMBED} . Enter particle size in inches to the nearest 0.1 inch at each point below (bedrock should be counted as 99 in, asphalt or concrete as 0.0 in, sand or finer particles as 0.08 in): Sample Variables 5-9 within the entire riparian/buffer zone adjacent to the stream channel (25 feet from each bank). Sample Variables 5-9 within the entire riparian/buffer zone adjacent to the stream channel, and the amount per 100 feet of stream will be calculated. Number of down woody stems (at least 4 inches in diameter and 36 inches in length) per 100 feet of stream and the amount per 100 feet of stream will be calculated. Not Used Number of snags (at least 4" dbh and 36" tall) per 100 feet of stream. Enter number of snags on each side of the stream, and the amount per 100 feet of stream will be calculated. Number of snags (at least 4" dbh and 36" tall) per 100 feet of stream. Enter number of snags on each side of the stream, and the amount per 100 feet of stream will be calculated. Not Used Number of snags (at least 4" dbh and 36" tall) per 100 feet of stream. Enter number of snags on each side of the stream, and the amount per 100 feet of stream will be calculated. Not Used												
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Total percent of eroded stream channel bank. Enter the total number of feet of eroded bank on each side and the total percentage will be calculated. If both banks are eroded, total erosion for the stream may be up to 200%. Left Bank: Oft Right Bank: Oft Right Bank: Oft Oft Oft Right Bank: Oft Oft Oft Oft Oft Oft Oft Of		1.00	3.00	0.08	7.00	3.00	3.00					1
2.50 0.50 0.08 3.00 3.00 3.00 1.00 3.00 3.00 3.00 3.00		2.10	0.50	0.70	4.00	3.00	3.00					
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Number of down woody stems (at least 4 inches in diameter and 36 inches in length) per 100 feet of stream reach. Enter the number from the entire 50'-wide buffer and within the channel, and the amount per 100 feet of stream will be calculated. Number of downed woody stems: V_{TDBH}				Left Bank:	0	π		Right Ban	ik: U	π		
Number of downed woody stems: Average dbh of trees (measure only if V _{CCANOPY} tree/sapling cover is at least 20%). Trees are at least 4 inches (10 cm) in diameter. Enter tree DBHs in inches. List the dbh measurements of individual trees (at least 4 in) within the buffer on each side of the stream below: Left Side Right Side 2 3 2 3 2 3 2 2 2 3 3 2 3 3 2 3 3 2 3			Number of stream read	down woody	y stems (at I e number fr	east 4 inche	es in diamete	er and 36	inches in leng	th) per 100	feet of	20.0
inches (10 cm) in diameter. Enter tree DBHs in inches. List the dbh measurements of individual trees (at least 4 in) within the buffer on each side of the stream below:			per rooree	t or stream	wiii be calcu		downed wo	ody stem	is: 2	20		
the stream below: Left Side	6	V_{TDBH}	inches (10	cm) in diam	eter. Enter	y if V _{CCANOP} tree DBHs i	_Y tree/saplin n inches.	g cover is	at least 20%)		at least 4	Not Used
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· · · · · · · · · · · · · · · · · · ·	8	V_{SSD}	if tree cove	saplings and r is <20%).	Enter numb	er of sapling	up to 4 inch	es dbh) p	er 100 feet of	stream (mea		150.0

9	V _{SRICH}		the tallest s	tratum. Che							3.00
				nd the subir	ndex will be	calculated f	rom these da		0 (4.0)		
	Agor rubru		p 1 = 1.0	Magnalia t	rinotolo		Ailanthua a		2 (-1.0)	Loninoro in	nonico
	Acer rubru			Magnolia ti			Ailanthus ai			Lonicera ja	
	Acer sacch			Nyssa sylv			Albizia julibi			Lonicera ta	
	Aesculus fi	lava		Oxydendrun	n arboreum		Alliaria petio	olata		Lotus corn	iculatus
	Asimina trii	loba		Prunus ser	rotina		Alternanthe			Lythrum sa	licaria
	Betula alleg	ghaniensis		Quercus ai	lba		philoxeroide	es		Microstegiui	m vimineum
	Betula lent	а		Quercus co	occinea		Aster tatario	cus		Paulownia	tomentosa
	Carya alba	,		Quercus in	nbricaria		Cerastium f	ontanum		Polygonum	cuspidatum
	Carya glab	ra		Quercus pi	rinus		Coronilla va	nria		Pueraria m	ontana
	Carya oval	lis		Quercus ru	ıbra		Elaeagnus ui	mbellata		Rosa multi	flora
	Carya ovat	ta	\Box	Quercus ve	elutina		Lespedeza	bicolor	П	Sorghum h	alepense
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_ _	Fagus grar		П	Tilia amerio			Ligustrum ob				
	Fraxinus a			Tsuga can			Ligustrum s				
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<u></u>	Liriodendror	-	Ш	Ulmus ame	ericana						
Ш	Magnolia a	cuminata									
		3	Species in	Group 1				0	Species in	Group 2	
			-,			<u> </u>					
Sample	e Variables	10-11 withi	n at least 8	subplots (4	10" x 40", o	r 1m x 1m)	in the ripari	an/buffer z	one within	25 feet fron	n each
bank.	The four sul	•	•		•		ch side of th				
10	V _{DETRITUS}					-	naterial. Wo	•	<4" diamete	er and <36"	52.50 %
		long are inc		•	t cover of th	e detritai iay	er at each s	•		7	02.00 /0
		50		Side	50	50	Right		50		
		50 70	50 60	50 50	50 50	50 40	50 50	50 70	50 50	1	
11	V _{HERB}						asure only if t			o not	
• • •	* HEKB						there may b				71 %
				s up through	200% are	accepted. E	nter the perd	cent cover o	of ground ve	egetation at	7 1 %
		each subpl	ot.								
			1 -4	0:-1-		Г	D: ab t	C: do		1	
				Side	50	00	Right		50]	
		80	70	60	50	80	60	70	50]	
		80	70 70	60 90	75	80 75			50 80		
		80 70 2 within the	70 70 e entire cato	90 chment of t	75 he stream.	75	60	70			
Sample 12	e Variable 1	80 70 2 within the	70 70 e entire cato	90 chment of t	75	75	60	70			0.93
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		80 70 2 within the	70 70 e entire cato exverage of F	60 90 chment of t	75 he stream.	75 ned:	60	70	80 Runoff	% in Catch-	0.93 Running Percent
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	V _{WLUSE}	80 70 2 within the	70 70 e entire cate verage of F	60 90 Chment of t Runoff Score	75 he stream. e for watersh	75 ned:	60	70	80 Runoff	Catch-	Running Percent
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V V V V V V V V V V V V V V V V V V V	Forest and r Open space Summary: ariable /ccanopy /substrate	80 70 2 within the Weighted A weighted A within the Weighted A wi	ro ro entire cate everage of F Land -75% ground ns, parks, etc. VSI Not Used 0.92 1.00	60 90 chment of t Runoff Score Use (Choos cover) , grass cover	75 he stream. e for watersh se From Dro >75% as been coparian plar	75 ned: p List)	Not with proper	70 80 V V V V Substrate alled. Sap	Runoff Score 1 0.3	Catchment 90 10 ags and st	Running Percent (not >100) 90 100
V V V V V V V V V V V V V V V V V V V	Forest and r Open space Summary: ariable /ccanopy /substrate /bero /LWD	SAA Number Value Not Used, <20% 3.3 3.00 in 0 % 20.0	r 1 VSI Not Used 0.92 1.00 1.00	60 90 chment of t Runoff Score Use (Choos cover) , grass cover	75 he stream. e for watersh se From Dro >75% as been coparian plar	75 ned: p List)	Not with proper	70 80 V V V V Substrate alled. Sap	Runoff Score 1 0.3	Catchment 90 10 ags and st	Running Percent (not >100) 90 100
V V V V V V V V V V V V V V V V V V V	Forest and r Open space Summary: ariable /ccanopy /embed /substrate /bero	80 70 2 within the Weighted A weighted A within the Weighted A wi	ronger of Factor	60 90 chment of t Runoff Score Use (Choos cover) , grass cover	75 he stream. e for watersh se From Dro >75% as been coparian plar	75 ned: p List)	Not with proper	70 80 V V V V Substrate alled. Sap	Runoff Score 1 0.3	Catchment 90 10 ags and st	Running Percent (not >100) 90 100
V V V V V V V V V V V V V V V V V V V	Forest and r Open space Summary: ariable /ccanopy /substrate /bero /LWD	SAA Number Value Not Used, <20% 3.3 3.00 in 0 % 20.0	r 1 VSI Not Used 0.92 1.00 1.00	60 90 chment of t Runoff Score Use (Choos cover) , grass cover	75 he stream. e for watersh se From Dro >75% as been coparian plar	75 ned: p List)	Not with proper	70 80 V V V V Substrate alled. Sap	Runoff Score 1 0.3	Catchment 90 10 ags and st	Running Percent (not >100) 90 100
V V	Summary: ariable /ccanopy /substrate /bero /tub /tobh	80 70 2 within the Weighted A weighted A within the Weighted A wi	ronger of Formula of the control of	60 90 chment of t Runoff Score Use (Choos cover) , grass cover	75 he stream. e for watersh se From Dro >75% as been coparian plar	75 ned: p List)	Not with proper	70 80 V V V V Substrate alled. Sap	Runoff Score 1 0.3	Catchment 90 10 ags and st	Running Percent (not >100) 90 100
V V	Summary: ariable /ccanopy /substrate /bero	80 70 2 within the Weighted A weighted A within the Weighted A wi	ro ro entire cate everage of F Land r75% ground ns, parks, etc. VSI Not Used 0.92 1.00 1.00 Not Used	60 90 chment of t Runoff Score Use (Choos cover) , grass cover	75 he stream. e for watersh se From Dro >75% as been coparian plar	75 ned: p List)	Not with proper	70 80 V V V V Substrate alled. Sap	Runoff Score 1 0.3	Catchment 90 10 ags and st	Running Percent (not >100) 90 100
V V V V V V V V V V V V V V V V V V V	Summary: ariable /ccanopy /substrate /bero /tub /tobh	80 70 2 within the Weighted A weighted A within the Weighted A wi	ronger of Formula of the control of	60 90 chment of t Runoff Score Use (Choos cover) , grass cover	75 he stream. e for watersh se From Dro >75% as been coparian plar	75 ned: p List)	Not with proper	70 80 V V V V Substrate alled. Sap	Runoff Score 1 0.3	Catchment 90 10 ags and st	Running Percent (not >100) 90 100
V V V V V V V V V V V V V V V V V V V	Forest and r Open space Summary: ariable /ccanopy /embed /substrate /bero /Lwd /tobh	SAA Number Value Not Used, <20% 3.3 3.00 in 0 % 20.0 Not Used 1.0 150.0	r 1 VSI Not Used 1.00 Not Used 1.00 1.00	60 90 chment of t Runoff Score Use (Choos cover) , grass cover	75 he stream. e for watersh se From Dro >75% as been coparian plar	75 ned: p List)	Not with proper	70 80 V V V V Substrate alled. Sap	Runoff Score 1 0.3	Catchment 90 10 ags and st	Running Percent (not >100) 90 100
V V V V V V V V V V V V V V V V V V V	Forest and r Open space Summary: ariable /ccanopy /substrate /bero /tubb /snag /ssb /srich /betritus	SAA Number Value Not Used, <20% 3.3 3.00 in 0 % 20.0 Not Used 1.0 150.0 3.00	70 70 70 70 70 70 70 70 70 70 70 70 70 7	60 90 chment of t Runoff Score Use (Choos cover) , grass cover	75 he stream. e for watersh se From Dro >75% as been coparian plar	75 ned: p List)	Not with proper	70 80 V V V V Substrate alled. Sap	Runoff Score 1 0.3	Catchment 90 10 ags and st	Running Percent (not >100) 90 100
V V V V V V V V V V V V V V V V V V V	Forest and r Open space Summary: ariable /ccanopy /substrate /bero /tub /snag /ssp	80 70 2 within the Weighted A weighted A within the Weighted A wi	70 70 70 70 70 70 70 70 70 70 70 70 70 7	60 90 chment of t Runoff Score Use (Choos cover) , grass cover	75 he stream. e for watersh se From Dro >75% as been coparian plar	75 ned: p List)	Not with proper	70 80 V V V V Substrate alled. Sap	Runoff Score 1 0.3	Catchment 90 10 ags and st	Running Percent (not >100) 90 100