Survey Descr	ription															
Project Name:			W	aterbody I	Name:	ime: v					aterbody ID:			Date:		
Atlantic Coast Pip	eline		U	NT to Wa	arwick	Run				sh	nia407			5/3/20)16	
State:	Co	ounty:			Con	npany:			Cre	w M	lember Initials	s:	Photos:			
Virginia	Hi	ghlan	d		NR	G - ER	М		GB	, S	A		5 phot	os		
Tract Number(s):	:				Nea	rest Mile	epost:				Associated W	/etland	ID(s):			
06-001-B001 - GV	WNF				84.8	84.85					None					
Survey Type: (check one)		⊠Ce	enterline	□R	e-Route	;		ccess Ro	ad		□Other:					
Physical Attri	ibutes															
Stream Classifica (check one)	ation:	□Ep	ohemeral	□In	itermitte	ent	⊠P	erennial								
Waterbody Type: (check one)	: □Riv	ver	⊠ Stream	n 🗆 [Ditch		anal	□ Oth	er:							
OHWM Width: _20.0	ft.	OHWN (check al	I Indicator: I that apply)	:	⊠ or	Clear lir bank	ne	□Shelv	/ing		□Wrested vegetation	×	Scouring	g	□Water staining	
Height: 	ft.	⊑ v	Bent, mati Bent, mati	ed, or mis	sing 🗵	Wrack li	ne	⊠Litter debris	and		□Abrupt plar community ch	nt nange	□Soil c	haracte	ristic change	
Width of Waterbo Bank to Top of B	ody - Top Bank:	of	Width of V to Toe of \$	Vaterbody Slope:	/ - Toe (of Slope	Width Water	of Wate Edge:	rbody ·	- Wa	ater Edge to	Depth (Approx.	of Wate	r:		
28.	<u>0</u> ft.		10	<u>.0_</u> ft.			N/A□		_16.0	_ft.		N/A□	-	0.75_	ft.	
Sinuosity:			Water vel	ocity:			Bank	height				Bank	slope			
(check one)	aight		(Approx.)					Right:	4.5	ft			Right	:	dogroop	
	anderina			_1.5_	īps			Left:	<u>-4.5</u>				Left	t: 70		
	andening		N/A∐						5.0	_π.					degrees	
Analysis of Bank Banks show sig	k Stability ns of inst	/ (i.e. ro ability	oot structu in places e	re, vegeta evidenced	ation, s I by loo	ubstrate se rock	e chara s and s	cteristic soils; this	s): s woul	d be	e considered	norma	l for a m	oderate	el y steep	
Qualitative At	ttribute	s														
Water Appearance	ce:															
(check one)	⊡Nc	o water	⊠Clea	ar 🗆 T	urbid	□Sh on	ieen i surfac	e s	Surface scum	•	□Algal mats	□Othe	r:			
Substrate:	🗆 Be	edrock	⊠ Bould	er 🛛 Co	obble	Grav	el 🛛	Sand	🗆 Sil	lt/ cl	ay 🛛 Organio		Other:			
% of Substrate:		%	<u>10</u> %	_ <u>50</u> _%	_ <u>25</u> _%	<u> 10 </u> %)	%	<u> 5 </u> %		%					
Width of Riparia	n Zone:	Ve	getative La	ayers:												
<u>175 ft</u>	÷	(che Av	eck all that app	_{y)} Dominant	s:	^I Trees	: 1.		⊠ Sa _1.0	iplin _in.	gs/Shrubs:	_	Herbs			
N/A⊡ Dominant Bank \	Vegetatio	(ap) n (list):	prox.)													
Hemlock, white Dutchman's pi	e pine, s pe. Chri	sugar	maple, gi <u>fern, vio</u>	reen ash let, woo	, bass <u>d aste</u>	wood, r <u>. black</u>	sweet	t birch, wood	yellow fern	v po	oplar, hydra	ngea,	striped	mapl	e,	
Riffles, scatter	ed pool	erged or S, WOC	ody debri	uatic vegeta s, wrack	piles	erhanging	banks/re	oots, leaf p	acks, la	rge :	submerged wood	i, riffies,	deep pool	s):		
Aquatic Organis	ms Obser	rved (lis	st):													
Water striders,	, inverte	brates	s, minnov	vs, crayfi	ish											
T&E Species Obs	served (lis	s <i>t)</i> :														
none																
Disturbances (ex	: livestock	access,	manure in wa	aterbody, wa	aste disc	harge pipe	es):									
None apparen	IT															
Tributary is: (check one)		⊠ N	latural		Artificia	l, man-m	ade	□ Man	ipulate	d						

shia407

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Continues out of corridor in both directions; channel is braided – OHWM added for braids; bank to bank outermost to outermost. Stream is of a moderately steep gradient with bed dominated by cobble. Mature second growth mixed hardwoods with hemlock and white pine; canopy sparse in places due to hemlock and white pine mortality.

Waterbody Sketch (Include north arrow, centerline, distance from centerline, data point location, survey boundary, and IDs of associated features)

□ Moderate

Stream Quality ^a : (check one)

⊠ High





Waterbody SHIA407 facing north upstream



Waterbody SHIA407 facing south downstream



Waterbody SHIA407 facing west across

Survey Descriptio	n								I- -		
Project Name:		Waterb	ody Name:			Ň	/aterbody ID:		Date:		
Atlantic Coast Pipeline	1		o warwick R	un		SI	nia410		5/7/2016		
State:	County:		Compa	any:		Crew I	Nember Initials	: Photos:			
Virginia	Highland		NRG-	ERM		GB, S	SA	5			
Tract Number(s):			Neares	st Milep	ost:		Associated Wetland ID(s):				
06-001-B001-GWNF			85.1				No associa	ted wetlands	3		
Survey Type: (check one)	⊠Cer	nterline	□Re-Route		□Access Road		□Other:				
Physical Attribute	s										
(check one)	□Eph	nemeral			Perennial						
Waterbody Type: (check one)	River	Stream	□ Ditch	□ Car	nal 🗌 Other:						
OHWM Width: ft.	OHWM (check all t	Indicator: that apply)	⊠ Cl on ba	lear line ank	□Shelving	9	□Wrested vegetation	Scourin	g ⊟Water staining		
Height: N/A□	⊡I ve	Bent, matted, c getation	or missing □W	rack line	e ⊠Litter an debris	ıd	□Abrupt plan community ch	t ⊡Soil o lange	characteristic change		
Width of Waterbody - 1 Bank to Top of Bank:	Γopof γ t∘	Vidth of Water o Toe of Slope	body - Toe of \$	Slope V V	Vidth of Waterbo Vater Edge:	ody - W	ater Edge to	Depth of Wate (Approx.)	r:		
<u>18_</u> ft.		<u>8</u> ft.		r	J/A□	<u>9</u> ft.		N/A□	<u>0.5</u> ft.		
Sinuosity:	y	Nater velocity	:	E	Bank height			Bank slope			
(check one)	(,	Approx.)			Right:			Righ	t:		
		-	<u>2</u> fps		Left:	<u>4_</u> 11.		Let	<u>- 80</u> degrees		
Meanderin	ng N	N/A□				<u>5</u> ft.			70 degrees		
Analysis of Bank Stab Evidence of bank insta	ility (i.e. roo ability in the	ot structure, v e form of loos	egetation, sub e rocks and so	strate o oil; to b	characteristics): e expected on h	igh gra	adient streams				
Qualitative Attribu	tes										
Water Appearance:	_										
(check one)	No water	⊠Clear	□Turbid	□She on s	en ⊡Sur surface scu	face Im	□Algal mats	□Other:			
Substrate:	Bedrock	□ Boulder	⊠ Cobble ⊠	Gravel	Sand 🛛	∃ Silt/ c	clay 🛛 Organic	: Other:			
% of Substrate:	%	%	<u>60</u> % <u>25</u> %	% <u>10</u>	_%%	_ <u>5_</u> %	_%				
Width of Riparian Zone	: Veg	etative Layers	:	Trees:	×	Saplir	nas/Shrubs:	⊠ Herbs			
<u>100 ft</u> -	Avg	. DBH of Dom	inants: <u>1</u>	<u>4</u> in.	_	<u>1.5</u> in		_			
Dominant Bank Vegeta	tion (list):										
Hemlock, white pine Bellport, gree ash, y	e, sugar m violet, woo	naple, yellov od nettle	v poplar, sha	gbark	hickory, stripe	ed ma	ple, witch ha	zel, cornflow	ver, Christmas fern,		
Small pools, coarse	bmerged or e woody d	emerged aquatic ebris, scatte	vegetation, overha	anging ba KS	anks/roots, leaf pacl	ks, large	submerged wood	, riffles, deep poo	ls):		
Aquatic Organisms Ob	served (list):	-								
Invertebrates, crayf	ish										
T&E Species Observed	l (list):										
none											
Disturbances (ex: livesto	ock access, m	nanure in waterbo	ody, waste dischar	ge pipes):						
none											
Tributary is: (check one)	⊠ Na	atural	□ Artificial, n	nan-ma	de 🗆 Manipu	ulated					

shia410

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

UNT to Warwick Run; stream continues out of the corridor in both directions. The channel is braided upstream of centerline; high gradient stream with flashy high flows. Bank instability in the form of loose rocks and soil, exposed roots present and to be expected.

Waterbody Sketch (Include north arrow, centerline, distance from centerline, data point location, survey boundary, and IDs of associated features)

□ Moderate

Stream Quality ^a : (check one)

⊠ High

Low





Waterbody SHIA410 facing north upstream



Waterbody SHIA410 facing south downstream



Waterbody SHIA410 facing east across

Survey Descriptio	n								
Project Name:		Waterbody Nar	me:		W	aterbody ID:		Da	te:
Atlantic Coast Pipeline		UNT to Warv	wick Run		sł	nia411		6/1	0/2016
State:	County:		Company:		Crew N	Member Initials	s: Pl	hotos:	
Virginia	Highland		NRG/ERM	l	GB, K	(0	5	5 photos	
Tract Number(s):			Nearest Mile	epost:		Associated W	etland II	D(s):	
access road 06-001-B0	01.AR1		85.1			whia409			
Survey Type: (check one)		e □Re-F	Route	⊠Access Road		□Other:			
Physical Attribute	S								
Stream Classification: (check one)	Ephemer	al ⊡Inter	mittent	⊠Perennial					
Waterbody Type: (check one)]River ⊠ St	ream 🗆 Dito	ch □Ca	anal 🗌 Other:					
OHWM Width: ft.	OHWM Indica (check all that app	ntor: Iy)	⊠ Clear lin on bank	ne 🗆 Shelving	g	□Wrested vegetation	⊠\$	Scouring	□Water staining
Height: <u>1.25</u> ft. N/A□	□Bent, vegetatio	matted, or missin on	g ⊠Wrack li	ne ⊠Litter ar debris	nd	□Abrupt plar community ch	nt [nange	∃Soil char	acteristic change
Width of Waterbody - 1 Bank to Top of Bank:	op of Width to Toe	of Waterbody - of Slope:	Toe of Slope	Width of Waterbo Water Edge:	ody - W	ater Edge to	Depth o (Approx.)	f Water:	
<u>_20.0</u> ft.		<u>12.0</u> ft.		1 N/A□	<u>2.0 </u> f	ft.	N/A□	0	<u>.40 </u> ft.
Sinuosity: (check one) ⊠Straight	Water (Approx.	velocity:) 1.0fr	os	Bank height Right:	<u>4.5_</u> ft.		Bank slo	ope Right:	<u>35</u> degrees
⊠Meanderin	ng N/A□			Leit:	<u>3.5_</u> ft.			Leit:	<u>30</u> degrees
Analysis of Bank Stab Banks show signs of Qualitative Attribu	ility (i.e. root stru instability in the tes	ucture, vegetatio	on, substrate ock/soil and (e characteristics): exposed roots; co	onsider	r normal for st	ream wit	th modera	tely steep gradient
(check one)	No water ⊠	Clear □Turb	id ⊡Sh on	leen ⊡Sur surface scu	face ım	□Algal mats	□Other:		
Substrate: [(check all that apply) % of Substrate:	Bedrock □ B	oulder ⊠ Cobb % _ <u>50_</u> °	ole ⊠ Grave % _35_%	el ⊠ Sand <u>5</u> %	⊠ Silt/ c _ <u>5_</u> 9	lay ⊠ Organic % _5% _	c □ Ot	her: %	
Width of Riparian Zone <u>80 ft</u> . N/A□	e: Vegetativ (check all tha Avg. DBH (approx.)	e Layers: t apply) I of Dominants:	⊠ Trees: 12.0_ir	: D	Saplir <u>1.5</u> in.	ngs/Shrubs:	×F	lerbs	
Dominant Bank Vegeta Sugar maple, white Virginia creeper, gra	ition <i>(list)</i> : oak, black loc ape. Dutchmai	ust, basswoo n's pipe, wood	d, ironwood I nettle, foa	d, hydrangea, h Imflower. wood	ickory aster	v, autumn oliv . violet. butte	ve, blac ercup	ckberry,	poison ivy,
Aquatic Habitats (ex: su Leaf packs, scattere	ubmerged or emerge ed pools, coar	ed aquatic vegetation se woody deb	n, overhanging ris, wrack p	banks/roots, leaf pac D iles	ks, large	submerged wood	l, riffles, de	eep pools):	
Aquatic Organisms Ob	served (list):								
Caddisfly, mayfly, n	ninnow, scud								
T&E Species Observed	l (list):								
none									
Disturbances (ex: livestor Ford crossing for de	ock access, manure	in waterbody, waste d dirt road: no	e discharge pipe culvert or	es): bridge; vehicle	traffic	is historic –	20 yea	rs or mo	re.
Tributary is: (check one)	⊠ Natural	hA 🗆	tificial, man-m	ade 🗆 Manipu	ulated		, -		

shia411

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Stream continues out of access road corridor in both directions; moderately steep gradient stream; no culvert or bridge present; road is decommissioned with no vehicular traffic in over 20 years; saturated PEM seep wetland located in adjacent historic overflow channel; mature second growth mixed hardwood forest.

Waterbody Sketch (Include north arrow, centerline, distance from centerline, data point location, survey boundary, and IDs of associated features)

□ Moderate

Stream Quality ^a : (check one)

🛛 High





Waterbody SHIA411 facing north upstream



Waterbody SHIA411 facing south downstream



Waterbody SHIA411 scouring facing west across

Survey Description	n							-			
Project Name:		Waterbody Na	me:		w	aterbody ID:		Date:			
Atlantic Coast Pipeline		UNT to Lick	Draft		sł	nia409		5/7/2016			
State:	County:		Company:		Crew N	lember Initials	: Photos				
Virginia	Highland		NRG- ERM	Λ	GB, S	SA, AS	5 Pho	otos			
Tract Number(s):			Nearest Mile	epost:	1	Associated W	etland ID(s):				
06-001-B001 - GWNF			85.4			whia407; whia408					
Survey Type: (check one)	⊠Centerlin	ne □Re-	Route	□Access Road		Other:					
Physical Attributes	S										
(check one)	Epheme	ral □Inte	rmittent	Perennial							
Waterbody Type: (check one)]River ⊠ Si	tream 🗆 Dite	ch 🗆 Ca	anal 🛛 Other:							
OHWM Width: ft.	OHWM Indic (check all that app	ator: ^{bly)}	⊠ Clear lir on bank	ne 🗆 Shelving	g	□Wrested vegetation	Scouri	ng ⊟Water staining			
Height: ft. N/A□	□Bent, vegetati	matted, or missir ion	ng ⊠Wrack li	ne □Litter ar debris	nd	□Abrupt plan community ch	t ⊟Soil ange	characteristic change			
Width of Waterbody - T Bank to Top of Bank:	op of Width to Toe	of Waterbody - of Slope:	Toe of Slope	Width of Waterbo Water Edge:	ody - W	ater Edge to	Depth of Wate (Approx.)	er:			
<u>25.0_</u> ft.		<u>11.0</u> ft.			<u>13.0</u> ft.		N/A□	<u>0.75</u> ft.			
Sinuosity: (^{check one)} ⊠Straight □Meanderir	Water (Approx	r velocity: .) <u>2.0</u> fp:	6	Bank height Right: Left:	<u>5.0</u> ft. <u>4.5</u> ft.		Bank slope Rigł Le	nt: 60 degrees ft: 70 degrees			
Analysis of Bank Stabi Banks exhibit instabili flachy biob flowe Qualitative Attribu	ility (i.e. root str ty in places in tl tes	ructure, vegetati he form of loose	on, substrate rock/soil and	e characteristics): d exposed roots;	would	consider norm	al for stream	of this gradient with			
Water Appearance: (check one)	[]] No water ⊠	lClear □Turb	oid □Sh on	leen ⊡Sur i surface scu	face ım	□Algal [mats	□Other:				
Substrate: (check all that apply) % of Substrate:	Bedrock ⊠ B	oulder ⊠ Cobl	ole ⊠ Grave 2_% <u>10</u> %	el ⊠ Sand % <u>_5</u>	□ Silt/ c .%	lay ⊠ Organic %	□ Other:				
Width of Riparian Zone <u>150 ft</u> . N/A⊡	e: Vegetativ (check all the Avg. DBH (approx.)	ve Layers: ^{at apply)} H of Dominants:	⊠ Trees <u>13.0_</u> ir	: D	⊠ Saplir _ <u>1.0_</u> in.	ngs/Shrubs:	⊠ Herbs –				
Dominant Bank Vegeta Northern red oak, re	tion (list): ed maple, sug	ar maple, hen	nlock, white	e oak, yellow po	oplar, s	sweet birch, I	nydrangea,	witch hazel,			
Aquatic Habitats (ex: su Isolated step pools,	occasional le	ed aquatic vegetatic	on, overhanging	banks/roots, leaf pact	^{ks, large} ots, rif	submerged wood	, riffles, deep po	ols):			
Aquatic Organisms Ob	served (list):	• •		0.0							
Invertebrates, salan	nander, crayfi	sh									
T&E Species Observed	l (list):										
Disturbances (ex: livesto	ock access manure	in waterbody wast	e discharge pipe	25):							
None apparent		waterbody, wast	e alconarge pipe								
Tributary is: (check one)	⊠ Natural	□ Ar	tificial, man-m	ade 🗆 Manipi	ulated						

Waterbody ID: shia409

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Stream continues out of corridor in both directions; moderately steep gradient mountain stream with flashy high flows – as a result bank instability is present in places in the form of loose rock/soil and exposed roots. Saturated PFO seep wetlands whia407 & whia408 are located in swales along toe of slope above stream; whia407 receives hydrology from seep phia405 & spring phia406 – outflow from this feature has subterranean connection to stream outside corridor; whia408 receives hydrology from spring phia407 – outflow from this feature has direct surface connection to stream within the corridor.

Waterbody Sketch (Include north arrow, centerline, distance from centerline, data point location, survey boundary, and IDs of associated features) Stream Quality^a:

□ Moderate

(check one)

🖾 High





Waterbody SHIA409 facing north upstream



Waterbody SHIA409 facing south downstream



Waterbody SHIA409 facing east across

Survey Description	n									
Project Name:		Waterbody Nar	ne:		W	/aterbody ID:		Da	te:	
Atlantic Coast Pipeline		Lick Draft			sl	hia408		5/4	4/2016	
State:	County:		Company:		Crew I	Member Initials	: Pł	notos:		
Virginia	Highland		NRG - ER	Μ	GB, S	SA	5	photos		
Tract Number(s):			Nearest Mile	epost:		Associated Wetland ID(s):				
06-001-B001 - GWNF			85.5			whia406				
Survey Type: (check one)	Centerline	e □Re-F	Route	□ Access Road		□Other:				
Physical Attributes	S									
Stream Classification: (check one)	Ephemera	al 🗆 Inter	mittent	⊠Perennial						
Waterbody Type: (check one)	River 🛛 Str	ream 🗆 Dito	:h □ Ca	anal 🗌 Other:						
		tor								
Width: <u>15.0</u> ft.	(check all that appl)	γ)	⊠ Clear lir on bank	ne ⊠Shelving	g	□Wrested vegetation	⊠S	couring	□Water staining	
Height: ft.	□Bent, r vegetatio	matted, or missin	g ⊠Wrack li	ne ⊠Litter ar debris	nd	□Abrupt plan community ch	t ⊑ lange	∃Soil cha	acteristic change	
N/A										
Bank to Top of Bank:	op of Width to Toe	of Waterbody - of Slope:	foe of Slope	Width of Waterbo Water Edge:	ody - W	ater Edge to	Depth of (Approx.)	Water:		
<u>_20.0</u> ft.	-	<u>10.0</u> ft.			<u>13.0_</u> ft		N/A□	0.	<u>75_</u> ft.	
Sinuosity:	Water	velocity:		Bank height			Bank slo	pe		
(check one)	(Approx.)	-		Right:				Right:		
		<u>_1.5</u> _fps	i	Loft-	<u>5.0</u> ft.				75 degrees	
⊠Meanderin	ng N/A□			Leit.	<u>5.0</u> ft.			Len.	<u>85</u> degrees	
Analysis of Bank Stabi	lity (i.e. root stru	cture, vegetatio	on, substrate	characteristics):						
Banks exhibit instabili	ty in places; loos	e soil and rock	s, exposed r	oots; normal for I	nigher	gradient strea	ns			
Qualitative Attribu	tes									
Water Appearance:					<i>.</i>					
			id USn on	i surface scu	im	mats				
Substrate:	Bedrock 🛛 🖾 Bo	oulder 🛛 Cobb	le 🛛 Grave	el 🛛 Sand 🛛	□ Silt/ c	clay 🛛 Organic	: 🗆 Otł	her:		
% of Substrate:	<u>_% 10</u> %	<u>60_%_1</u>	<u>5_% 10</u> %	<u> % _5</u>	_% _	%				
Width of Riparian Zone	: Vegetative	e Layers:								
100 #	(check all that	apply)	☑ Trees	: 🛛 🛛	Saplir	ngs/Shrubs:	$\boxtimes H$	lerbs		
<u>100 π</u> . N/A□	Avg. DBH (approx.)	of Dominants:	<u> 14.0 </u> ir	n	<u>1.5</u> in		-			
Dominant Bank Vegeta	tion (list):									
Hemlock, yellow pop mountain laurel, wo	plar, white pine od aster, violet	e, shagbark hi t. hav scented	ickory, sug I fern, mite	ar maple, red n r box, trillium, v	naple, vood f	striped map	le, swe	et birch,	witch hazel,	
Coarse woody debr	is, scattered si	mall pools, ov	rerhanging	roots, riffles	ks, laige	submerged wood	, miles, de	ep pools).		
Aquatic Organisms Ob	served (list):									
Minnows, invertebra	ates, water strie	ders, frog								
T&E Species Observed	(list):									
none										
Disturbances (ex: livesto	ock access, manure i	n waterbody, waste	e discharge pipe	es):						
Old road bed on we	st side of strea	am								
Tributary is: (check one)	[⊠] Natural	□ Art	ificial, man-m	ade 🗆 Manipu	ulated					

Waterbody ID: shia408

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Stream continues out of corridor in both directions; moderately steep gradient stream showing signs of bank instability in places as evidenced by loose rock/soil and exposed roots – consider normal for a stream of this gradient; paralleled by an old road bed on west side; spring fed PFO wetland whia406 has direct hydrologic connection; flows through mature second growth mixed hardwoods with white pine and hemlock. There is a proposed access road on east side; no road exists on that side of stream.

Waterbody Sketch (Include north arrow, centerline, distance from centerline, data point location, survey boundary, and IDs of associated features)

□ Moderate

Stream Quality ^a: (check one)

🛛 High





Waterbody SHIA408 facing north upstream



Waterbody SHIA408 facing south downstream



Waterbody SHIA408 facing east across

Survey Description	n										
Project Name:		Wate	erbody Nar	ne:			w.	aterbody ID:		Da	ite:
Atlantic Coast Pipeline		UN	to Mudo	ay Run			st	0008		()	1/2016
State:	County:			Company:			Crew N	lember Initials	: F	Photos:	
Virginia	Bath			NRG/ERM	1	(GB, K	(0	:	3 photos	;
Tract Number(s):				Nearest Mile	epost:			Associated W	etland	ID(s):	
36-016 – GWNF; acces	ss road 36	-014.AR2		93.6				none			
Survey Type: (check one)	□c	enterline	□Re-F	Route	⊠Access	Road		□Other:			
Physical Attribute	s										
(check one)	□E	phemeral	⊠Inter	mittent	□Perenni	al					
Waterbody Type: (check one)	River	⊠ Stream	□ Ditc	h □Ca	anal 🗆	Other:					
OHWM Width: _ <u>2.0_f</u> t.	OHWN (check a	Indicator: Il that apply)		⊠ Clear lir on bank	ne ⊡SI	nelving	I	□Wrested vegetation		Scouring	□Water staining
Height: ft. N/A□	⊑ v	∃Bent, matteo egetation	l, or missin	g	ne ⊠Li debi	ter and	d	□Abrupt plan community ch	t ange	□Soil cha	racteristic change
Width of Waterbody - Bank to Top of Bank:	Top of	Width of Wa to Toe of Slo	terbody - ٦ ope:	Foe of Slope	Width of W Water Edge	aterbo :	ody - W	ater Edge to	Depth ((Approx.)	of Water:	
<u>10.0</u> ft.			ft.		N/A□	_1	<u>1.5_</u> ft.		N/A□	_0	<u>.25_</u> ft.
Sinuosity:		Water veloc	ity:		Bank heigh	t			Bank s	lope	
Straight		(Αρριοχ.)	10 fro		Rig	ht:	60 ft			Right:	55 degrees
□Meander	ina		<u>_1.0</u> _ips		L	əft:	<u>0.0</u> 10.			Left:	<u>60</u> dogroco
		N/A⊔					<u>2.3_</u> 11.			-	<u>60</u> degrees
Analysis of Bank Stat Banks are road cut an	oility (i.e. ro d road bas	oot structure se	, vegetatio	on, substrate	e characteris	tics):					
Qualitative Attribu	utes										
Water Appearance:										_	
		⊠Clear		id LISP on	surface	scur	nace m	mats			
Substrate: [(check all that apply)	Bedrock	Boulder	🛛 Cobb	le 🛛 Grave	el 🛛 Sano		I Silt/ c	lay 🛛 Organic	□ 0	ther:	
% of Substrate:	%	%	<u> 10 </u> %	<u>_30_</u> %	<u>25</u> %		<u>25 </u> %	<u>_10_</u> %	_	%	
Width of Riparian Zon	e: Ve	getative Laye	ers:	⊠ Trees	:		Saplin	ngs/Shrubs:	\boxtimes	Herbs	
<u>ft</u> . N/A⊠	Av (ap	g. DBH of Do	ominants:	<u> 14.0 </u> ir	٦.	_	<u>1.5</u> in.		_		
Dominant Bank Veget	ation (list):										
Chestnut oak, swe	et birch, y	vellow popl	ar, black	locust, red	l maple, m	ounta	ain lau	irel, minniebi	ush, co	olts foot,	Japanese stilt
Aquatic Habitats (ex: s	ubmerged or	r emerged aqua	tic vegetatior	n, overhanging	banks/roots, le	af pack	s, large	submerged wood	, riffles, c	leep pools):	
Leaf packs											
Aquatic Organisms Ol	oserved (lis	s <i>t)</i> :									
caddisfly											
T&E Species Observe	d (list):										
none											
Disturbances (ex: lives	tock access,	manure in wate	rbody, waste	discharge pipe	es):						
Culvert crossing fo	r existing	road, conf	ined to d	itch upstre	am of culv	ert					
Tributary is:											
(спеск опе)		Natural	∐ Art	ificial, man-m	ade 🛛 🕅	lanipu	lated				

sbaa008

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Stream begins within ditch at road cut seep pbaa004; passes under existing gravel road via 18" corrugated metal culvert; downstream continues out of access road survey corridor where flow becomes subterranean. Mature second growth mixed hardwood forest.

Waterbody Sketch (Include north arrow, centerline, distance from centerline, data point location, survey boundary, and IDs of associated features)

⊠ Moderate

Stream Quality ^a: (check one)

🗆 High

🗆 Low





Waterbody SBAA008 facing south upstream



Waterbody SBAA008 facing north downstream



Waterbody SBAA008 facing east across

Survey Descriptio	n								1		
Project Name:		Wat	erbody Nar	ne:		w	aterbody ID:		Date:		
Atlantic Coast Pipeline		UN	T to Mudo	dy Run		s	baa009		7/1/2016		
State:	County:			Company:		Crew I	Member Initials	: Photos:			
Virginia	Bath			NRG/ERM	1	GB, k	(0	3 phot	tos		
Tract Number(s):	1			Nearest Mile	epost:		Associated W	etland ID(s):			
36-016 – GWNF; acces	s road 36-0	014.AR2		93.6			none				
Survey Type: (check one)	□Ce	enterline	□Re-F	Route	⊠Access Road	đ	□Other:				
Physical Attribute	S										
(check one)	□Ep	hemeral	⊠Inter	mittent	□Perennial						
Waterbody Type: (check one)	River	⊠ Stream	□ Ditc	h 🗆 Ca	anal 🛛 Other	r:					
OHWM Width: _ <u>2.0</u> ft.	OHWM (check all	Indicator: that apply)		⊠ Clear lir on bank	ne 🗆 Shelvir	ng	□Wrested vegetation	⊠Scourin	g ⊟Water staining		
Height: ft. N/A□	ve	Bent, matte	d, or missin	g	ne ⊠Litter a debris	nd	□Abrupt plan community ch	t ⊡Soil o ange	characteristic change		
Width of Waterbody - 1 Bank to Top of Bank:	op of	Width of Wa to Toe of SI	aterbody - 1 ope:	Foe of Slope	Width of Waterb Water Edge:	ody - W	ater Edge to	Depth of Wate (Approx.)	r:		
<u>_6.0</u> ft.		1.0	_ft.			<u>1.5</u> ft.		N/A□	<u>0.25</u> ft.		
Sinuosity:		Water veloc	;ity:		Bank height			Bank slope			
(check one)		(Approx.)			Right:			Righ	t:		
			<u>_0.75</u> fps	6	l eft [.]	<u>3.5</u> ft.		Let	60 degrees		
	ng	N/A□				<u>2.0</u> ft.			60 degrees		
Analysis of Bank Stab Banks are road cut an	ility (i.e. ro d road bas	oot structure e	e, vegetatio	on, substrate	e characteristics)):					
Qualitative Attribu	itas										
Water Appearance:											
(check one)	[∃] No water	⊠Clear	□Turb	id □Sh on	neen ⊡Su i surface sc	irface :um	□Algal I mats	□Other:			
Substrate:	Bedrock	Boulder	· 🛛 Cobb	le 🛛 Grave	el 🛛 Sand	⊠ Silt/ c	clay 🛛 Organic	Other:			
% of Substrate:	%	%	<u> 10 </u> %	<u>35</u> %	<u>30</u> %	<u>15</u> %	<u>_10_</u> %	%			
Width of Riparian Zone	e: Veg	ck all that apply)	ers:	⊠ Trees	:	⊠ Saplir	ngs/Shrubs:	⊠ Herbs			
<u>π</u> . N/A⊠	AVQ (app	J. DBH OT D irox.)	ominants:	<u>13.0</u> ir	n.	<u> 1.0 </u> in.		-			
Dominant Bank Vegeta	tion (list):										
Northern red oak, w aolden ragwort, bus Aquatic Habitats (av. si	hite oak, <u>clover.</u>	sugar ma white sna	aple, black akeroot, ie	k gum, strip ewel weed.	oed male, scar colts foot		k, black locus	t, blackberry	v, Christmas fern,		
Leaf packs	ubmerged of	emerged aqua		i, overhänging		cks, large	Submerged wood	, nines, deep poo			
Aquatic Organisms Ob	served (lis	t):									
caddisfly											
T&E Species Observed	l (list):										
none											
Disturbances (ex: liveste	ock access, r	manure in wate	erbody, waste	e discharge pipe	es):						
Culvert crossing for	⁻ existing	road, con	fined to d	itch upstre	am of culvert						
Tributary is: (check one)	□ N	latural	∏ Art	ificial. man-m	ade 🛛 Manir	oulated					
L				, a n m							

sbaa009

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Stream begins within ditch at road cut seep pbaa005; passes under existing gravel road via 18" corrugated metal culvert; downstream continues out of access road survey corridor where flow becomes subterranean. Mature second growth mixed hardwood forest.

Waterbody Sketch (Include north arrow, centerline, distance from centerline, data point location, survey boundary, and IDs of associated features)

⊠ Moderate

Stream Quality ^a: (check one)

🗆 High

🗆 Low





Waterbody SBAA009 facing southwest upstream



Waterbody SBAA009 facing northeast downstream



Waterbody SBAA009 facing southeast across

Survey Description	on												
Project Name:			Waterbo	ody Nan	ne:	v	Vaterbody ID:			Date:			
Atlantic Coast Pipeline			UNT to	o Mudd	ly Run			s	baa010			7/1/20	16
State:	County:				Company:			Crew	Member Initials	: F	hotos:		
Virginia	Bath				NRG/ERM			GB, I	KO		3 photo	os	
Tract Number(s):					Nearest Mile	epost:			Associated W				
36-016 – GWNF; acce	ss road 36	-014.AR2	2		93.6				none				
Survey Type: (check one)	□c	Centerline		□Re-R	oute	⊠A	ccess Road		□Other:				
Physical Attribute	es												
Stream Classification (check one)	: □E	phemeral		⊠Interr	nittent	□P	erennial						
Waterbody Type: (check one)	□River	⊠ Stre	am	Ditcl	h 🗆 Ca	anal	□ Other	:					
OHWM Width: <u>2.0</u> ft.	OHWI (check a	V Indicato all that apply)	or:		⊠ Clear lir on bank	e	□Shelvin	g	□Wrested vegetation		Scouring]	□Water staining
Height:]	□Bent, m vegetation	atted, or	r missing	g	ne	⊠Litter ar debris	nd	□Abrupt plan community ch	t lange	⊡Soil cl	haracter	istic change
Width of Waterbody - Bank to Top of Bank:	Top of	Width o to Toe o	f Waterl of Slope	body - T :	oe of Slope	Width Wate	n of Waterb r Edge:	ody - V	Vater Edge to	Depth (Approx.)	of Water	:	
<u>10.0_</u> ft.		_	<u>1.5_</u> ft.			N/A□		<u>1.5</u> ft.		N/A□	-	0.25_1	ft.
Sinuosity:		Water v	elocity:			Bank	height			Bank s	lope		
(check one)		(Approx.)					Right:				Right	:	
			0	<u>).75</u> fps	5		Left:	<u>1.5</u> ft			Left	<u>60</u> 0	legrees
□Meander	ring	N/A□					-	<u>8.0</u> ft				<u> </u>	degrees
Analysis of Bank Sta Banks are road cut a	bility (i.e. r nd road ba	root struc Ise	cture, ve	egetatio	n, substrate	chara	acteristics):	:					
Qualitative Attrib	utes												
Water Appearance: (check one)	□No water	. ⊠C	lear	□Turbi	d ⊡Sh on	een surfac	⊡Su ce sci	rface um	□Algal mats	□Other	:		
Substrate:	Bedrock	🗆 🗆 Bou	ulder 🛛	⊠ Cobbl	le 🛛 Grave	el 🗵	Sand	⊠ Silt/ o	clay 🛛 Organic	: 🗆 C	ther:		
(check all that apply) % of Substrate:	%		_%	<u>20_</u> %	<u>40</u> %		<u>20 </u> %	<u> 10 </u> %	<u>_10_</u> %		%		
Width of Riparian Zor		egetative	Layers:		⊠ Trees	:	D	⊠ Sapli	ngs/Shrubs:	\boxtimes	Herbs		
<u> </u>	Av (ap	уд. DBH (oprox.)		nants:	<u>13.0</u> ir	۱.	-	<u>1.0 in</u>		-			
Dominant Bank Vege	tation (list)	:											_
Northern red oak, aolden ragwort, bu Aquatic Habitats (ex	white oak Ish clove	k, sugar r. white	maple snakei aguatic v	e, black root. ie regetation	c gum, strip wel weed.	bed m colts	nale, scarl foot roots leaf pac	let oal	k, black locus	riffles of		, Chris	stmas fern,
Leaf packs	susmo gou e	, energed	aquatio	ogotation	, oronnanging	b an intern	ooto, ioui puo	into, italige	,	,, .	roob boon		
Aquatic Organisms O	bserved (//	ist):											
caddisfly													
T&E Species Observe	d (list):												
none													
Disturbances (ex: lives	stock access,	, manure in	waterboo	dy, waste	discharge pipe	es):							
Contined to ditch a	along exis	sting roa	ad										
Tributary is: (check one)		Natural		🗆 Arti	ficial, man-m	ade	🛛 Manip	ulated					
sbaa010

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Stream begins within ditch at nick point seep pbaa006; does not cross road; downstream continues out of access road survey corridor where flow becomes subterranean. Mature second growth mixed hardwood forest.

Waterbody Sketch (Include north arrow, centerline, distance from centerline, data point location, survey boundary, and IDs of associated features)

⊠ Moderate

Stream Quality ^a: (check one)

🗆 High

 \Box Low





Waterbody SBAA010 facing northeast upstream



Waterbody SBAA010 facing southwest downstream



Waterbody SBAA010 facing southeast across

Survey Description	on											
Project Name:			Waterbody	/ Name	:			w	aterbody ID:		0	Date:
Atlantic Coast Pipeline		l	JNT to M	luddy	Run			s	baa011		7	7/1/2016
State:	County	:		Co	ompany:			Crew I	Member Initials	: P	hotos:	
Virginia	Bath			Ν	RG/ERM	l		GB, ⊧	(O	;	3 photo	S
Tract Number(s):				Ne	earest Mile	epost:			Associated W			
36-016 – GWNF; acces	ss road 3	6-014.AR2		93	3.6				none			
Survey Type: (check one)		Centerline		Re-Roi	ute	⊠A	ccess Road	1	□Other:			
Physical Attribute	es											
Stream Classification: (check one)		Ephemeral	\boxtimes	Intermi	ttent	□P	erennial					
Waterbody Type: (check one)	River	⊠ Stre	am 🗆	Ditch	□ Ca	anal	□ Other					
OHWM Width: _ <u>2.0_f</u> t.	OHW (check	M Indicato all that apply)	or:		⊠ Clear lir on bank	ie	□Shelvin	g	□Wrested vegetation	\boxtimes	Scouring	□Water staining
Height: ft. N/A□		□Bent, ma vegetation	atted, or m	issing	□Wrack li	ne	⊠Litter a debris	nd	□Abrupt plar community ch	it lange	□Soil ch	aracteristic change
Width of Waterbody - Bank to Top of Bank:	Top of	Width of to Toe o	f Waterboo f Slope:	dy - To	e of Slope	Width Water	of Waterb Edge:	ody - W	ater Edge to	Depth c (Approx.)	of Water:	
<u>10.0</u> ft.			<u>1.5_</u> ft.			N/A□	-	<u>1.5</u> ft.		N/A□	_	<u>0.25_</u> ft.
Sinuosity:		Water ve	elocity:			Bank	height			Bank sl	оре	
Straight		(Approx.)	0.50				Right:	10.0 ft			Right:	75 dogroos
□Meander	ina		0.50	<u> </u> tps			Left:	30 ft			Left:	<u>45</u> degrees
	<u> </u>				• • •			<u> </u>				
Analysis of Bank Stat Banks are road cut ar	nd road b	root struc ase	ture, vege	tation,	substrate	chara	icteristics)	•				
Qualitative Attrib	utes											
Water Appearance:												
(check one)	No wate	er ⊠Cl	ear 🗆	Turbid	□Sh on	een surfac	⊡Su se sc	rface um	□Algal mats	□Other:		
Substrate:	Bedroc	k 🗆 Bou	lder 🛛 🖓	Cobble	⊠ Grave	el 🗵	Sand	⊠ Silt/ c	lay 🛛 Organic	: □0	ther:	
% of Substrate:	%		_% _5_	%	<u>_25_</u> %		<u>35</u> %	<u>20 </u> %	<u>_15_</u> %	_	_%	
Width of Riparian Zon	e: V	egetative	Layers:				r	V Sanlir	ac/Shrubs:		Jorbs	
<u>ft</u> . N/A⊠	م (۵	vg. DBH c	of Dominar	nts:	<u> 10.0 </u> ir	1.	-	<u>1.5</u> in		_	10103	
Dominant Bank Veget	ation (list):										
Northern red oak, h arass. iewel weed.	nickory, white s	sweet bi nake roo	rch, suga t. New Y	ar map ork fe	ole, black <u>rn. violet</u>	cher . blac	ry, scarle kberrv	t oak,	black locust,	garlic	mustar	rd, Japanese stilt
Leaf packs, emerg	ent vege	etation	aqualic vege	etation, c	overnanging	Danks/I	ools, lear pac	ks, large	submerged wood	, nines, d	leep pools):
Aquatic Organisms O	bserved (list):										
caddisfly												
T&E Species Observe	d (list):											
none												
Disturbances (ex: lives	tock access	s, manure in	waterbody,	waste di	scharge pipe	es):						
Culvert crossing fo	r existin	g road, c	confined	to ditc	h upstre	am of	culvert					
Tributary is: (check one)		Natural	Г] Artific	cial, man-m	ade	🛛 Manip	ulated				
L		-					- 1	-				

sbaa011

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Stream begins well outside proposed access road survey corridor on a rocky slope at spring pbaa007; follows ditch along existing road for 120 feet before passing under existing gravel road via 18" corrugated metal culvert; downstream continues out of access road survey corridor where most flow becomes subterranean; remaining flow enters a small, excavated and bermed open water body approximately 12 feet in diameter on a decommissioned road bed outside survey corridor. Mature second growth mixed hardwood forest.

Waterbody Sketch (Include north arrow, centerline, distance from centerline, data point location, survey boundary, and IDs of associated features)

⊠ Moderate

Stream Quality ^a: (check one)

🗆 High





Waterbody SBAA011 facing northeast upstream



Waterbody SBAA011 facing southeast downstream



Waterbody SBAA011 facing southeast across

Survey D	escription													
Project Nan	ne:			Waterbody Na	me:	w	aterbody ID:			Date:				
Atlantic Coa	st Pipeline			Laurel Run				sl	baa004			6/21/2016	;	
State:		Count	y:		Company:			Crew I	Member Initia	ls:	Photos:			
Virginia		Bath			NRG/ERM			GB, k	KO		3 photos			
Tract Numb	per(s):	1			Nearest Mile	post:			Associated	Wetland	ID(s):			
36-016 - GV	VNF				94.1				none					
Survey Typ (check one)	e:	\boxtimes (Centerline	□Re-R	oute	Access	Road	[□Other:					
Physical	Attributes													
Stream Clas (check one)	ssification:	□E	Ephemeral	□Intern	nittent	⊠Perennia	al							
Waterbody (check one)	Type: □F	River	⊠ Strea	m 🗆 Ditch	n 🗆 Car	al 🗆 (Other:							
OHWM Width:	<u>7.0</u> ft.	OHV (chec	VM Indicate	or:	⊠ Clear lin on bank	e ⊡S	Shelving	I	□Wrested vegetation	X	Scouring	g ⊡Wa stain	ater ing	
Height: N/A□	<u>1.0</u> ft.		□Bent, m vegetatior	atted, or missir 1	ng ⊠Wrack lii	ne ⊠L det	itter and oris	d	□Abrupt pla community	ant change	⊡Soil c	haracteristic	change	
Width of Wa to Top of Ba	aterbody - To ank:	p of Ba	nkWidth o to Toe c	f Waterbody - of Slope:	Toe of Slope	Width of W Water Edg	/aterbo e:	dy - W	ater Edge to	Depth (Approx.)	of Wate	r:		
	<u>12.0</u> ft.		_	<u>4.0_</u> ft.		N/A□	_6	<u>6.0_</u> ft.		N/A□	-	<u>0.50</u> ft.		
Sinuosity:			Water v	elocity:		Bank heig	ht			Bank s	lope			
(check one)	□Straight		(Approx.)			Ri	ght:				Right	:		
	-			<u> 0.75 </u> fp)S	L	_eft:	<u>3.0_</u> π.			Left	<u>70</u> degre	ees	
	⊠Meandering)	N/A□				<u></u>	<u>2.5_</u> ft.				60_degre	ees	
Banks appe	ar stable for a	stream	of moderat	te gradient; sm	all undercut a	eas on out	side of t	pends	considered no	ormal.				
Water Appe	earance:													
(check one)	1	No wate	r ⊠Cle	ar ⊡Turbi	d ⊡She on s	en urface	⊡Surfa scum	ce	□Algal mats	□Other:				
Substrate:		Bedrock	k 🗆 Boule	der 🛛 Cobbl	e 🛛 Gravel	⊠ Sand		Silt/ cla	ay 🛛 Organio	c □ Ot	her:			
(check all that a) % of Substi	rate:	%		% <u> 55 </u> %	<u>_25</u> _%	<u> 10 </u> %		<u>5</u> %	_5_% _	9	6			
Width of Ri	parian Zone:	,		Layers:	Traca.			Conlin	ac/Chruba		Llorbo			
_ <u>6</u> N/A□	<u>60 ft</u> -		Avg. DBH ((approx.)	of Dominants:	<u> 12.0 </u> ir	l.	_	<u>1.5</u> in		_ _	TIEIDS			
Dominant E	Bank Vegetati	on (list)):											
White oak	k, black gun dron, wood	n, scar fern, l	rlet oak, c Indian cue	hestnut oak	, sassafras, <u>violet, Chr</u>	sweet bi	rch, w	hite p	ine, witch h	nazel, m		n laurel,		
Leaf pack	s, scattered	d smal	ll pools, o	verhanging	roots, wood	y debris,	wrack	piles	submerged wood	1, miles, ut)-		
Aquatic Org	ganisms Obs	erved (list):											
Invertebra	ates – cadd	isfly, c	ranefly, n	nayfly; crayfi	ish									
T&E Specie	es Observed ((list):												
Disturbance	es (ex: livestoc	k access	s, manure in v	vaterbody, waste	discharge pipes): 								
None rece	ent; there is	a ver	y old road	bed on the	west side t	nat has g	rown	comp	letely shut					
Tributary is (check one)	:		Natural	□ Arti	ficial, man-mae	de 🗆 N	lanipula	ated						

Waterbody ID: sbaa004

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap: natural vegetation extends 1/3-1/2 of the active channel width on each side: filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Perennial stream of moderate gradient with a meandering channel; there is a small braid at the upstream edge of the corridor. Mature second growth mixed hardwood forest with scattered white pine.

Waterbody Sketch (Include north arrow, centerline, distance from centerline, data point location, survey boundary, and IDs of associated features) Stream Quality a: ⊠ High □ Moderate

check one)





Waterbody sbaa004 facing southwest downstream



Waterbody sbaa004 facing northeast upstream



Waterbody sbaa004 facing northwest across

Open Waterboo	dy Data	a Sheet									
Survey Descripti	ion										
Project Name:		V	Vaterboo	dy Name:			v	Vaterbody ID:		Date:	
Atlantic Coast Pip	oeline	ι	Jnname	ed Pond	I		c	baa003		10/27/20)16
State:	County:			Com	bany:		Crew I	Member Initials:	Photos:		
Virginia	Bath			NRG	6/ERM		GB, A	AS	3 photos	S	
Tract Number(s):				Neare	est Milepost:		A	Associated Wetla	nd ID(s):		
36-016 - GWNF				96.3			1	none			
Survey Type: (check one)	Σ	[⊠] Centerline		□Re-Rou	ute [□Access R	oad	□Other:			
Physical Attribut	tes										
Waterbody Type: (check one)	ck Pond	Natural F	Pond □	Lake 🗆	Reservoir 🗵	Impoundn	nent 🗆	Oxbow 🗆 Other			
Hydrologic Regime:	🗆 Pe	rmanently F	looded	⊠ Sem	ipermanently I	Flooded	□ Seaso	onally Flooded	Temporaril	y Flooded	
онwм	0	HWM Indica	ator:								
Height:	(cr	neck all that app	ly)		☑ Clear line on bank	e ⊡Sh	elving	□Wrested vegetation	□Scou	ring	□Water staining
<u>3.0</u> 1.		□Bent, vegetatio	matted, o on	or missing	□Wrack line	□Lit debr	ter and is	□Abrupt pla community o	aracteristic	c change	
Depth of Water:			Bank h	eight (av	erage):			Bank slope (av	verage):		
N/A□) <u>ft</u> .				<u>5.0</u> ft.				<u>70</u> degree	5	
Qualitative Attrib	outes										
Water Appearance: (check one)	□No wa	ter ⊠C	lear	□Turbid	□Sheer on surfa	n 🗆 ce so	Surface	□Algal mats	□Other:		
Substrate: (check all that apply)	Bedro	ock 🗆 Bou	ulder [Cobble	□ Gravel	⊠ Sand	⊠ Silt	t/ clay 🛛 Organic	c 🗆 Other:		
% of Substrate:		%	_%	%	%	<u>20</u> %	60 0	% <u>20</u> %	0	6	
Width of Riparian Zo	one:	/egetative l	_ayers:								
ft.	(check all that ap	oply)		⊠ Trees:		⊠ Sap	lings/Shrubs:	⊠ Hert	OS	
N/A⊠		Avg. DBH o	f Domina	ants:	<u>_14.0_</u> in.		<u>_1.0_</u> i	in.			
Dominant Bank Vege	etation (lis	st):									
Scarlet oak, suga oldenrod, rough le	r maple eaf gold	, red map enrod, mo	le, blac buntain	k gum, laurel, s	witch hazel	, huckleb tergreen	erry, M	innie bush, blu	eberry, yell	ow popla	ar, zigzag g
Pool, coarse woo	dy debri	or emerged aqua	atic vegetati	ion, overnang	ging banks/roots, le	af packs, large	submerged	i wood, riffies, deep pool	s, etc.):		
Aquatic Organisms (Observed	(<i>list</i>):									
none											
T&E Species Observ	ed (list):										
none											
Disturbances (ex: live None observed	estock acce	ss, manure in	waterbod	ly, waste di	scharge pipes):						
Waterbody is: (check one)		□ Natural		⊠ Artific	ial, man-made	e □ Ma	nipulated	d			
Waterbody Quality ^a (check one)	:	∃ High		⊠ Mode	erate	□ Low					

obaa003

High Quality: Natural, natural bank vegetation around entire waterbody; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or bank vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Excavated and beamed small, artificial impoundment located in a draw; filled by sheet flow; overflow to ephemeral stream sbaa014; mature second growth mixed hardwood forest.







obaa003 facing southeast



obaa003 facing southwest



obaa003 facing northwest

Survey Descriptio	n	.									-
Project Name:		Waterb	ody Nam	ie:			w	aterbody ID:		Da	te:
Atlantic Coast Pipeline		Campi		1			s	0aa014		10	/2//2016
State:	County:		C	Company:			Crew M	lember Initials	: Phote	os:	
Virginia	Bath		ſ	NRG/ERM	l		GB, A	S	3 pł	notos	
Tract Number(s):			1	Nearest Mile	epost:			Associated W	etland ID(s)	:	
36-016. GWNF			ę	96.3				none			
Survey Type: (check one)	⊠Cer	nterline	□Re-Ro	oute		ess Road	1	□Other:			
Physical Attribute	S										
(check one)	⊠Eph	nemeral	□Interm	nittent	□Pere	nnial					
Waterbody Type: (check one)	∃River	Stream	Ditch	n 🗆 Ca	anal	Other	-				
OHWM Width: _ <u>2.0_</u> ft.	OHWM I (check all ti	hat apply)		□ Clear lir on bank	ie []Shelvin	ıg	□Wrested vegetation	⊠Scou	uring	□Water staining
Height: 	⊡E veç	Bent, matted, o getation	r missing	□Wrack li	ne D c	∃Litter a ebris	nd	□Abrupt plan community ch	t ⊡So ange	oil char	acteristic change
Width of Waterbody - ⁻ Bank to Top of Bank:	Γopof V te	Vidth of Water o Toe of Slope	body - Te :	oe of Slope	Width of Water E	Waterb dge:	ody - W	ater Edge to	Depth of Wa	ater:	
<u>_5.0</u> ft.		<u> 1.0 </u> ft.			N/A 🖂	_	f	t.	N/A⊠		ft.
Sinuosity:	v	Vater velocity:			Bank he	ight			Bank slope		
(check one)	(/	Approx.)				Right:			Ri	ght:	
			fps	6		Left:	<u>2.5</u> ft.		1	 Left:	40 degrees
□Meanderi	ng N	I/A⊠					<u>3.0</u> ft.			_	<u>60</u> degrees
Analysis of Bank Stab No evidence of bank i	ility (i.e. roc nstability ot	ot structure, ve oserved	egetatio	n, substrate	charact	∍ristics)	:				
Qualitative Attribu	ites										
Water Appearance: (check one)	[⊠] No water	□Clear	□Turbic	d ⊡Sh	leen	□Su	rface	□Algal	□Other:		
Cubetrata.	Dedreels	Deulder				SC					
(check all that apply)	Bedrock	□ Boulder		e 🛛 Grave	el 🛛 S	and	⊠ Silt/ c	lay 🖾 Organic			
% of Substrate:	%	%	<u>_30</u> _9	% _10_	<u>%</u>	<u>15 </u> %	<u>25</u> %	<u>_20</u> _%	%		
Width of Riparian Zon	e: Vege (check	etative Layers	:	⊠ Trees	:	[⊠ Saplir	ngs/Shrubs:	⊠ Herb	S	
<u>ft</u> . N/A⊠	Avg. (appro	. DBH of Domi	nants:	<u>14.0</u> ir	۱.	-	<u>1.0</u> in		in	1.	
Dominant Bank Vegeta	ation (list):										
Scarlet oak, sugar oldenrod. rough lea	maple, red If goldenro	l maple, blac od. mountain	ck gum, 1 laurel.	, witch haz spotted w	zel, huc vinterare	kleberr en	y, Minr	nie bush, blu	eberry, ye	llow	ooplar, zigzag g
Aquatic Habitats (ex: s	ubmerged or e	emerged aquatic v	vegetation,	, overhanging	banks/root	s, leaf pac	cks, large	submerged wood	, riffles, deep	pools):	
		1-									
none	oservea (list))-									
T&E Species Observed	d (list):										
none											
Disturbances (ex: livest	ock access, m	anure in waterbo	dy, waste	discharge pipe	es):						
none											
Tributary is: (check one)	⊠ Na	tural	□ Artif	icial, man-m	ade	 □ Manip	ulated				
l											

sbaa014

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Begins as outflow/overflow from impoundment obaa003 within the survey corridor; downstream continues out of the survey corridor; bed/bank/OHWM weakly developed within the corridor becoming more distinct outside the survey corridor.

Waterbody Sketch (Include north arrow, centerline, distance from centerline, data point location, survey boundary, and IDs of associated features)

⊠ Moderate

Stream Quality ^a: (check one)

🗆 High





sbaa014 facing west upstream



sbaa014 facing east downstream



sbaa014 facing north across

Open Waterboo	dy Data	a Sheet												
Survey Descripti	on													
Project Name:		V	Vaterbod	y Name:				Wate	erbody ID:		Date:			
Atlantic Coast Pip	eline	ι	Jnname	d Pond				oba	a001		6/25/20 ⁻	16		
State:	County:			Comp	any:		Crew	/ Men	nber Initials:	Photos:	•			
Virginia	Bath			NRG	/ERM		GB,	KO		1 Photo)			
Tract Number(s):				Neare	st Milepost:			Asso	ociated Wetlar	nd ID(s):				
36-016 – GWNF;	access	road 36-0	16.AR1	96.5				nor	ne					
Survey Type: (check one)	[Centerline	[Re-Rou	te 🛛	⊠Access Ro	ad		□Other:					
Physical Attribut	es													
Waterbody Type: (check one) Stor	ck Pond	Natural F	Pond 🗆	Lake 🗆	Reservoir 🗵	Impoundm	ent 🗆] Oxt	bow 🗆 Other:					
Hydrologic Regime: □ Permanently Flooded ⊠ Semipermanently Flooded □ Seasonally Flooded □ Temporarily Flooded														
онwм	0	HWM Indica	tor:											
Height:	(Ci	heck all that appl	ly)		☑ Clear line on bank	e ⊡Sh	elving		□Wrested vegetation	□Sco	uring	□Water staining		
<u>_2.0</u> π.		□Bent, i vegetatio	matted, or on	r missing	□Wrack line	□Litt debri	er and s		⊠Abrupt pla community c	brupt plant				
Depth of Water:			Bank he	eight (ave	erage): <u>3.5</u> ft			В	Bank slope (av	erage):				
<u>_1.</u> N/A□	<u>5</u> ft.									<u>70</u> degree	es			
Qualitative Attrib	outes													
Water Appearance: (check one)	□No wa	iter □C	lear D	⊠Turbid	□Sheer on surfa	n 🗆 ce sc	Surface um	e	□Algal [mats	Other:				
Substrate: (check all that apply)	Bedro	ock 🗆 Bou	ılder 🗆	Cobble	□ Gravel	⊠ Sand	⊠S	ilt/ cla	ay 🛛 Organic	□ Other:				
% of Substrate:		<u>%</u>	_%	_%	%	<u> 30 </u> %	40	_%	<u> 30 </u> %		%			
Width of Riparian Zo	ne:	Vegetative L	_ayers:											
ft		(check all that ap	oply)		⊠ Trees:		⊠ Sa	pling	s/Shrubs:	🛛 Her	bs			
	1	Avg. DBH of (approx.)	f Domina	nts:	<u>12.0</u> in.		<u>_1.7</u>	<u>5_</u> in.						
Dominant Bank Vege	tation (li	ist):												
Scarlet oak, swee grass, white snake	t birch, eroot, V	chestnut o /irginia cre	oak, yel eper	low pop	lar, black lo	ocust, gra	pe, re	ed m	naple, blackt	perry, fleab	ane, Jap	oanese stilt		
Aquatic Habitats (ex: s	submerged	or emerged aqua	atic vegetatio	n, overhangi	ing banks/roots, le	af packs, large s	submerge	ed woo	d, riffles, deep pools	s, etc.) :				
Aquatic Organisms C	Observed	d (list):												
Tadpoles, salama	nder													
T&E Species Observe	ed (list):													
none														
Disturbances (ex: live	stock acce	ess, manure in	waterbody	, waste dis	charge pipes):									
Sediment run-off f	from ad	ljacent roa	d											
Waterbody is: (check one)	C	□ Natural		⊠ Artifici	al, man-made	e 🗆 Mai	nipulate	ed						
Waterbody Quality ^a : (check one)	:	□ High		⊠ Moder	rate	□ Low								

obaa001

High Quality: Natural, natural bank vegetation around entire waterbody; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or bank vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Excavated impoundment adjacent to existing forest service road; likely created for amphibian habitat; there are additional impoundments down-slope of this one which are outside the access road survey corridor. Receives sheet flow from adjacent roadbeds and slope. Mature second growth mixed hardwood forest.





Open waterbody OBAA001 facing south

Survey Descriptio	n						<u> </u>				
Project Name:		Waterbo	dy Nam	e:			w	/aterbody ID:			Date:
Atlantic Coast Pipel	line	UNI to	Cowpa	asture Riv	ver		sl	baa005		e	5/24/2016
State:	County:		C	company:			Crew I	Member Initials	s:	Photos:	
Virginia	Bath		Ν	IRG/ERM			GB, k	KO		3 Phote	os
Tract Number(s):	1		Ν	learest Mile	epost:			Associated W	/etland	ID(s):	
36-016 - GWNF			9	8.3				None			
Survey Type: (check one)	⊠Center	line	□Re-Ro	oute	□Acce	ss Road		□Other:			
Physical Attribute	s										
Stream Classification: (check one)	□Epherr	ieral	□Interm	ittent	⊠Pere	nnial					
Waterbody Type:											
(check one)	∃River ⊠	Stream	□ Ditch	🗆 Ca	anal	Other:					
OHWM Width: _ <u>11.0_ft</u> .	OHWM Ind (check all that a	icator: apply)		⊠ Clear lir on bank	ie 🗆	Shelvin	g	□Wrested vegetation		Scouring	□Water staining
Height:ft.	□Ber vegeta	nt, matted, or ation	missing	⊠Wrack li	ne 🗆 de	Litter ar ebris	nd	□Abrupt plar community ch	nt nange	□Soil cł	aracteristic change
Width of Waterbody - 1	Top of Wid	th of Waterb	ody - To	be of Slope	Width of	Waterb	ody - W	ater Edge to	Depth	of Water	
Bank to Top of Bank:	to T	oe of Slope:		·	Water Ec	lge:		C C	(Approx.))	
<u>ft</u> .		<u>6.5</u> ft.					<u>10.0</u> ft			-	<u>1.25</u> ft.
Sinuosity:	Wat	er velocity:			N/A⊡ Bank bei	aht			N/A⊔ Bank s	slone	
(check one)	(Appr	rox.)			F	Right:			Dank	Right	
		1.	<u>.25_</u> fps			Loft -	<u>5.0_</u> ft.			Loft	60 degrees
□Meanderi	ng N/A						<u>10.0_</u> ft			Lon	70_ degrees
Qualitative Attribu	ites										
Water Appearance:	Nowator	⊠Cloar			000		faco			r.	
	INO water	A Clear		on	surface	SCL	im	mats		1.	
Substrate:	Bedrock	Boulder 🛛		e 🛛 Grave	el 🛛 Sa	and [□ Silt/ c	ay 🗆 Organio		Other:	
% of Substrate: <u>2</u>	<u>0%</u> 10)%	<u>30</u> %	<u>_30</u> %	<u>10 °</u>	%	%	%		_%	
Width of Riparian Zone	e: Vegeta	tive Layers:									
50 ft	(check all	that apply)	ante	⊠ Trees	:	\triangleright	Saplir	ngs/Shrubs:	\boxtimes	Herbs	
<u> </u>	(approx.)		iants.	<u> 12.0 </u> ır	1.	-	<u>1.5</u> in		-		
Dominant Bank Vegeta	ation (list):										
White oak, sugar m huckleberry, grape.	aple, white p cinquefoil. p	oine, chest anic arass	nut oal <u> s. wild r</u>	c, pignut h ve. violet	nickory, l <u>woodla</u>	black g ind sed	um, re ae	ed maple, wi	tch ha	zel, bla	ckhaw,
Step pools, coarse	woody debri	s, wrack p	iles	overnanging	burintoirtoota	, icui puo	ito, large	Submerged wood	, 111103,		<i>,</i> ,.
Aquatic Organisms Ob	served (list):										
Invertebrates – may	/fly, caddisfly	y; crayfish									
T&E Species Observed	l (list):										
none											
Disturbances (ex: livest	ock access, manu	ire in waterbod	y, waste o	lischarge pipe	es):						
None apparent											
Tributary is: (check one)	⊠ Natura	al		cial, man-m	ade [□ Manip	ulated				
Stream Quality ^a : (check one)	⊠ High		□ Mod	erate		Low					

Waterbody ID: sbaa005

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Moderately steep gradient perennial stream; continues out of the survey corridor in both directions; banks exhibit no signs of instability; slopes above bank are steep; mature second growth mixed hardwood forest with a white pine element.





Waterbody SBAA005 facing east upstream



Waterbody SBAA005 facing northwest downstream



Waterbody SBAA005 facing north across

Survey D	Description		<u> </u>										
Project Nai	me:		Ň	Naterbody Na	me:				Waterbody ID:			Date:	
Atlantic Coa	ast Pipeline		ι	JNT to Cow	pasture F	River			sbaa006			6/24/	2016
State:		County	/ :		Company			Crew	Member Initial	s:	Photos:		
Virginia		Bath			NRG/ER	RM		GB,	KO		3 phot	os	
Tract Num	ber(s):				Nearest N	lilepost	:		Associated V	Vetland	ID(s):		
36-016 - GV	WNF				98.9				None				
Survey Typ (check one)	be:	\boxtimes (Centerline	□Re-Re	oute	□A	ccess Road		□Other:				
Physical	Attributes												
Stream Cla (check one)	ssification:	□e	Ephemeral	⊠Intern	nittent	□P	erennial						
Waterbody	туре:												
(cneck one)	LIF	River	⊠ Strear	n 🗆 Ditch	n ⊔C	Canal	□ Other:						
OHWM Width:	<u>4.0</u> ft.	OHV (chec	VM Indicato k all that apply)	or:	□ Clear on bank	line	□Shelvi	ng	⊠Wrested vegetation	×	Scouring	9	□Water staining
Height: N/A□	<u>0.50</u> ft.		□Bent, ma vegetation	atted, or missir	ng ⊟Wracl	< line	⊠Litter a debris	and	□Abrupt pla community c	nt hange	□Soil c	haracte	eristic change
Width of W to Top of B	/aterbody - To Bank:	p of Ba	nkWidth of to Toe o	Waterbody - f Slope:	Toe of Slo	pe Widt Wate	th of Waterl er Edge:	body -	Water Edge to	Depth (Approx.)	of Wate	r:	
	<u>12.0</u> ft.			<u>3.5_</u> ft.		N/A		<u>3.5</u> f	ft.	N/A□	_	0.25	_ft.
Sinuosity:			Water ve	elocity:		Ban	k height			Bank s	slope		
(cneck one)	⊠Straight		(Approx.)	. (Right:	60	4		Right	75	dograaa
				<u>_0.75</u> fp	S		Left:	0.0_	n.		Left	<u>75</u>	uegrees
	⊔Meandering	9	N/A□					6.0	ft.			60	degrees
Analysis of	f Bank Stabili	ity (i.e. I	root structu	ire, vegetatio	n, substrat	e chara	cteristics):						
			Served										
Qualitativ	ve Attribut	es											
(check one)		No watei	Clea	ar 🗆 Turbio	d ⊡S o	heen n surfac	⊡Sur e scu	face ım	□Algal [mats	□Other:			
Substrate:		Bedrock	Bould	er 🛛 Cobbl	e 🛛 Grav	/el ⊠	Sand D	⊠ Silt/ o	clay 🛛 Organic		ther:		
% of Subst	trate:	%	9	6 <u>10</u> %	<u>40</u>	%	<u>30</u> %	<u>10</u> %	_10_%	%			
Width of Ri	iparian Zone:	1	Vegetative	Layers:									
	ft.		(check all that a Avg. DBH o	oply) of Dominants:	⊠ Tre 13.0	es: in		⊠ Sap	lings/Shrubs: in	\boxtimes	Herbs		
N/A⊠	D l - 1/		(approx.)					_ 1.70		_			
Dominant i White oak	Bank vegetati	ion (iist) n shac	: abark hick	ory norther	n red oal	(nian	ut bickory	whit	e nine sugar	manle	witch	hazo	1
huckleber Aquatic Ha	rry, panic qu Ibitats (ex: sub	merged o	or emerged ac	cinquefoil, quatic vegetation	woodland	d seda banks/r	e. violet. v pots, leaf pack	wild van wieder wied wieder wieder w wieder wieder	ams, spotted submerged wood,	winter riffles, d	eep pools)	:	1,
Leaf pack	ks, coarse v	voody	debris										
Aquatic Or	ganisms Obs	erved (/	ist):										
none													
T&E Specie	es Observed	(list):											
none													
Disturbanc	es (ex: livestoc	k access	, manure in w	aterbody, waste	discharge pip	bes):							
None app	parent												
Tributary is (check one)	5:		Natural	□ Artit	ficial, man-r	nade	🗆 Manipu	ulated					

Waterbody ID: sbaa006

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap: natural vegetation extends 1/3-1/2 of the active channel width on each side: filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Weakly intermittent stream of moderately steep gradient; banks not well defined; slopes above steep; continues out of the survey corridor in both directions; mature second growth mixed hardwood forest with white pine element.

Waterbody Sketch (Include north arrow, centerline, distance from centerline, data point location, survey boundary, and IDs of associated features) Stream Quality a: ⊠ High □ Moderate

check one)





Waterbody SBAA006 facing north upstream



Waterbody SBAA006 facing south downstream


Waterbody SBAA006 facing west across

Survey Description	I										
Project Name:		Wa	aterbody Na	me:		v	aterbody ID:			Date:	
Atlantic Coast Pipeline		U	NT to Cow	pasture Riv	ver	s	baa007			6/24/20	016
State:	County:			Company:		Crew I	Member Initials	s:	Photos:		
Virginia	Bath			NRG/ERM		GB, ⊧	(0		5 phot	os	
Tract Number(s):				Nearest Mile	epost:		Associated W	/etland	ID(s):		
36-016 – GWNF; red trac labels within polygon	ct polygon	with 36-02	9 – 36-0	98.95			Maybe with	in no a	access	tract	
Survey Type: (check one)	⊠Cen	terline	□Re-Ro	oute	□Access Road		Other:				
Physical Attributes											
Stream Classification:											
(check one)	□Eph	emeral	⊠Intern	nittent	□Perennial						
Waterbody Type: (check one)	River	⊠ Stream	□ Ditch	ı 🗆 Car	al 🗆 Other:						
онwм	OHWM	Indicator:									
Width: <u>9.0</u> ft.	(check ali	that apply)		Clear lin on bank	le ⊡Shelvin	g	⊠Wrested vegetation	\boxtimes	Scouring	g [s	∃Water taining
Height:		Bent, matt	ed, or missin	ig ⊠Wrack lii	ne ⊠Litter ar	nd	□Abrupt pla	nt	□Soil c	haracteri	stic change
<u> </u>	Ve	egetation			debris		community c	hange			
Width of Waterbody - To to Top of Bank:	op of Bank	Width of W to Toe of S	/aterbody - ` Slope:	Toe of Slope	Width of Waterb Water Edge:	ody - W	ater Edge to	Depth (Approx.)	of Wate	r:	
20.0.#			. <u>а</u>			ог 4				0.75 ft	
<u></u> π.		4.5	π.		N/A□ -	<u>6.5</u> π.		N/A□	-	<u>0.75</u> 11.	
Sinuosity:		Water velo	ocity:		Bank height			Bank s	slope		
(check one)		(Approx.)			Right:				Right	:	
			<u>_1.0</u> fps	6	Left:	<u>10.0_</u> ft	t.		Left	<u>_70</u> _d :	egrees
⊠Meandering	9	N/A□			-	<u>3.0</u> ft.				<u>90</u> d	egrees
Analysis of Bank Stabil Banks exhibit undercut	ity (i.e. roc ting on ou	t structure	e, vegetation eanders; slo	n, substrate o ope slumping	characteristics): off in places abo	ove bar	ık; see photos	i.			
Qualitative Attribut	es										
Water Appearance: (check one)	No water	⊠Clear	□Turbio	d ⊡She on s	en ⊡Surfa surface scur	ace n	□Algal [mats	Other:			
Substrate:	Bedrock	Boulder		e 🛛 Gravel	⊠ Sand ⊠	Silt/ cla	ay 🗆 Organic		ther:		
% of Substrate:	%	%	<u>_10_</u> %	<u>60_</u> %	<u>15</u> %	<u>15 </u> %	%	%			
Width of Riparian Zone:	Ve	getative La	vers:								
	(che	ck all that appl	y)	☑ Trees:		🛛 Saplir	ngs/Shrubs:	\boxtimes	Herbs		
<u>150 ft</u> - N/A□	AV (app	g. DBH of I prox.)	Dominants:	<u>13.0</u> ir	ı. <u>-</u>	<u>1.75</u> i	n.	_			
Dominant Bank Vegetat	ion (list):										
White oak, black gun panic grass, wood ru	n, shagba ish. wood	ark hicko lland sed	ry, norther lae. wina s	n red oak, j stem. Japar	pignut hickory, nese stilt grass	white . aolde	pine, sugar en ragwort	maple	, witch	hazel,	blackhaw,
Leaf packs, coarse v	omerged or e voody de	merged aqua bris, ove	atic vegetation, rhanging r	overhanging ba	anks/roots, leaf packs , riffles	s, large s	submerged wood,	riffles, de	eep pools):	
Aquatic Organisms Obs	erved (list)	:									
Water striders, caddi	sfly, cray	fish									
T&E Species Observed	(list):										
none											
Disturbances (ex: livestoc	ck access, m	anure in wate	erbody, waste	discharge pipes):						
None apparent											
Tributary is: (check one)	⊠ Na	tural	□ Artif	icial, man-ma	de 🗌 Manipul	ated					

Waterbody ID: sbaa007

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap: natural vegetation extends 1/3-1/2 of the active channel width on each side: filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Intermittent stream of moderately steep gradient; banks undercut at outside meanders; slopes above steep with some slumping due to undercut; continues out of the survey corridor in both directions; mature second growth mixed hardwood forest with white pine element.

Only a portion of stream could be delineated as the majority is on a private no access tract owned by Fort Lewis.

Waterbody Sketch (Include north arrow, centerline, distance from centerline, data point location, survey boundary, and IDs of associated features) Stream Quality a: ⊠ High □ Moderate

check one)

□ Low





Waterbody SBAA007 facing north upstream



Waterbody SBAA007 facing south downstream



Waterbody SBAA007 facing west across

Survey Description	on							
Project Name:	Waterbody Name: Waterbody ID:							
Atlantic Coast Pipeline		UNI to		W	s	baa003	5/9/2016	
State:	County:		Compan	y:	Crew	Member Initials	: Photos:	
Virginia	Bath		NRG-E	RM	GB, S	SA, LC	3 phot	os
Tract Number(s):			Nearest	Milepost:		Associated W	etland ID(s):	
36-016 - GWNF			99.4			none		
Survey Type: (check one)	□Cer	nterline	□Re-Route	□Access Road	t	□Other:		
Physical Attribut	es							
(check one)	l: □Epł	hemeral	⊠Intermittent	Perennial				
Waterbody Type: (check one)	□River	⊠ Stream	Ditch	Canal D Other	-			
OHWM Width: <u>3.0</u> ft.	OHWM (check all t	Indicator: that apply)	□ Clea on ban	ar line ⊡Shelvir k	ıg	□Wrested vegetation	⊠Scourin	g ⊟Water staining
Height: ft. N/A□	ve	Bent, matted, or getation	r missing □Wrad	ck line ⊠Litter a debris	nd	□Abrupt plan community ch	t ⊡Soil o lange	haracteristic change
Width of Waterbody - Bank to Top of Bank:	Top of t	Vidth of Water o Toe of Slope	body - Toe of Slo ::	ope Width of Waterb Water Edge:	ody - W	Vater Edge to	Depth of Wate (Approx.)	r:
<u>6.0</u> ft.		<u>2.0</u> ft.		N/A□ -	<u>1.5</u> ft.		N/A□	<u>0.20</u> ft.
Sinuosity:	Ň	Nater velocity:		Bank height			Bank slope	
⊠Straight	(, (ppi ox.)	15 fpc	Right:	40 ft		Righ	t: 60 degrees
□Meande	ring	<u>_</u>	<u></u>	Left:	3.0 ft.		Lef	t: 65 degrees
Analysis of Bank Sta	hility (i.e. rov	ot structure ve	anotation subst	rate characteristics)				0
There is no evidence	of bank inst	tability.	gotation, oubot					
Qualitative Attrib	utes							
Water Appearance:								
(Check One)	□No water	⊠Clear		on surface sc	um	mats		
Substrate:	Bedrock	□ Boulder 1	Cobble G	iravel 🛛 Sand	⊠ Silt/ o	clay 🛛 Organic	: 🗆 Other:	
% of Substrate:	%	%	% _ <u>35</u> _	_% <u>_20</u> _% <u>_10_</u> %	<u>_35_</u> 9	%%		
Width of Riparian Zor	ne: Veg	etative Layers: k all that apply)	: ⊠ Tr	ees.	⊠ Sapli	ngs/Shrubs [.]	🛛 Herbs	
<u>ft</u> .	Avg (appr	. DBH of Domi	nants: <u>11.</u>	<u>0</u> in.	in	1.	_	
Dominant Bank Vege	tation (list):							
Northern red oak, woodland sedge, v	white oak, wood rush	white pine, r	ed maple, hop	hornbeam, ches	tnut o	ak, hawthorn	e, violet, wild	l oat grass,
Leaf packs, coarse	e woody de	emerged aquatic v ebris	egetation, overnang	ging banks/roots, lear pa	cks, large	e submergea wooa	, nines, deep poo	15):
Aquatic Organisms C	bserved (list):						
none								
T&E Species Observe	ed (list):							
none								
Disturbances (ex: lives	stock access, m	nanure in waterbo	dy, waste discharge	pipes):				
None apparent								
Tributary is: (check one)	⊠ Na	atural	□ Artificial, ma	n-made 🛛 Manip	ulated			

Waterbody ID: sbaa003

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Begins as outflow from seep pbaa002; flow alternates between primarily subterranean and primarily surface. Surrounding area is mature second growth mixed hardwoods. Seep and stream are just outside and then roughly parallel to the edge of survey corridor. There is an intermittent stream and a perennial stream associated with sbaa003; however they are over the GWNF boundary in a permission denied tract – 36-032.

Waterbody Sketch (Include north arrow, centerline, distance from centerline, data point location, survey boundary, and IDs of associated features)

⊠ Moderate

Stream Quality ^a : (check one)

High

□ Low





Waterbody SBAA003 facing south upstream



Waterbody SBAA003 facing north downstream



Waterbody SBAA003 facing east across

Survey Descriptio	n					
Project Name:		Waterbody Name:		Waterbody ID:		Date:
Atlantic Coast Pipel	ine	Gibson Hollow		sbaa019		10/29/2016
State:	County:	Compa	any:	Crew Member Initials	: Photos:	
Virginia	Bath	NRG	- ERM	GB, AS	3 phot	os
Tract Number(s):		Neares	st Milepost:	Associated W	etland ID(s):	
36-029		99.3		wbaa005		
Survey Type: (check one)	⊠Centerline	e 🛛 Re-Route	□Access Road	□ Other:		
Physical Attribute	S 🛛					
Stream Classification: (check one)	Ephemera	al 🗆 Intermittent	⊠Perennial			
Waterbody Type:						
(check one)	River ⊠ Str	eam 🗆 Ditch	□ Canal □ Other:			
ОНWМ Width: 9.0ft	OHWM Indica (check all that appl	tor: v)	lear line □Shelving ank	g □Wrested vegetation	Scourin	g ⊟Water staining
Height:1.25ft	□Bent, r vegetatio	matted, or missing ⊠ W on	/rack line ⊠Litter ar debris	nd	nt ⊡Soil o nange	haracteristic change
Width of Waterbody - 1	op of Width	of Waterbody - Toe of S	Slope Width of Waterbo	ody - Water Edge to	Depth of Wate	r:
Bank to Top of Bank:	to Toe	of Slope:	Water Edge:	, ,	(Approx.)	
<u>15.0</u> ft.	· _	<u>6.0</u> ft.		<u>5.0 _</u> ft.		<u>0.50 </u> ft.
Sinuosity:	Water	velocity:	N/A⊡ Bank height		Bank slope	
(check one)	(Approx.)		Right:		Right	t:
		<u>0.33</u> fps	Left [.]	<u>2.0 </u> ft.	Lef	<u>35</u> degrees
Meanderin	ng N/A□			<u>3.0</u> _ft.	201	<u>90</u> degrees
Qualitative Attribu	tes		·			
Water Appearance:	No water 🛛			faco 🗆 Algal		
			on surface scu	im mats		
Substrate:	Bedrock 🗆 Bo	oulder 🛛 Cobble 🖾	Gravel 🛛 Sand 🛛	🛛 Silt/ clay 🛛 Organio	c 🗆 Other:	
% of Substrate:	10_%	% <u>40</u> % <u>3</u>	<u>30 % 10 % </u>	<u> 10 </u> % <u> 15 </u> %	%	
Width of Riparian Zone	e: Vegetative	e Layers:				
120 ft.	(check all that Ava DBH	apply) ⊠ .	Trees:	Saplings/Shrubs:	⊠ Herbs	
N/A	(approx.)	<u> </u>	<u>12.0 </u> In. <u> </u>	<u>1.5</u> IN.		
Dominant Bank Vegeta	tion (list):					
northern red oak, w arass. deer tonque	hite oak, hop h arass. mounta	iornbeam, red mapl in brome, golden ra	e, black gum, white awort. wood aster. v	pine, shagbark hid violet		re, Japanese stilt
coarse woody debr	is, leaf packs,	pools, scattered em	ergent vegetation		, 111100, 0000 poo	
Aquatic Organisms Ob	served (list):					
Water strides, cadd	isfly, crayfish					
T&E Species Observed	l (list):					
none						
Disturbances (ex: liveste	ock access, manure i	n waterbody, waste dischar	ge pipes):			
Dirt ATV road cross	sing – no culve	rt or bridge present				
Tributary is: (check one)	⊠ Natural	□ Artificial, n	nan-made 🛛 Manipi	ulated		
Stream Quality ^a : (check one)	⊠ High	□ Moderate	□ Low			

Waterbody ID: sbaa019

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Continues out of the survey corridor in both directions. PFO wetland wbaa005 present on both sides of stream; sbaa003 flow enters steam via wbaa005; sbaa003 loses channel and ends within wetland.





sbaa019 facing north upstream



sbaa019 facing south downstream



sbaa019 facing east across

Survey Description	n										
Project Name:		Waterbody	/ Name	e:			w	aterbody ID:			Date:
Atlantic Coast Pipel	ine	Barn Lick	Brar	nch			S	SAUA436			9/27/2016
State:	County:		С	ompany:			Crew I	Vember		Photos:	
Virginia	Augusta		N	IRG			Initials	: GB, SA		01-03	
Tract Number(s):			N	learest Mile	epost:			Associated W	etland	ID(s):	
07-001-A008			1	11.25				WAUB102			
Survey Type: (check one)	⊠Centerlin	e 🗆	Re-Ro	ute	□Ac	cess Road		□Other:			
Physical Attributes	S										
Stream Classification: (check one)	□ Ephemer	al 🗆	Interm	ittent	⊠Pe	erennial					
Waterbody Type:											
(check one)	River St	ream 🗆	Ditch	🗆 Ca	anal	□ Other:					
ОНШМ	OHWM Indica	ator:							5		
Width: <u>8.0</u> ft.	(crieck all triat app	(ע יי		on bank	ie		g		Z	Scouring	staining
Height:	□Bent,	matted, or m	issing	□Wrack lin	ne	⊠Litter ar	nd	□Abrupt plan	nt	□Soil cl	naracteristic change
<u> </u>	vegetati	on				debris		community ch	nange		
Width of Waterbody - T	op of Width	of Waterboo	dy - To	e of Slope	Width	of Waterbo	ody - W	ater Edge to	Depth	of Water	:
Bank to Top of Bank:	to I de	of Slope:			water	Eage:			(Approx.,)	
<u>_10_</u> ft.		<u>3.0</u> ft.					<u>6.0_</u> ft.		N/A 🗆	-	<u> 0.5 </u> ft.
Sinuosity:	Water	velocity:			Bank	height			Bank	slope	
(check one)	(Approx.)				Right:				Right	:
		1.5	_fps			l eft [.]	<u>3.5_</u> ft.			l eft	<u>90</u> degrees
⊠Meanderir	ng N/A□					2010	<u>2</u> ft.			2010	_ <u>80</u> degrees
Qualitative Attribu	tes										
Water Appearance: (check one)	No water ⊠	Clear 🛛	Turbid	⊡Sh on	een surface	⊡Sur e scu	face um	□Algal mats	□Othe	r:	
Substrate:	Bedrock 🗆 B	oulder 🖂 (Cobble	Grave	el 🛛	Sand 2	⊠ Silt/ c	lay 🗆 Organic	; [](Other:	
(check all that apply) % of Substrate:		<u>%</u> 5	%	<u>25_</u> %	_4	<u>0</u> %	<u>30_</u> %	%		_%	
Width of Riparian Zone	: Vegetativ	e Layers:									
	(check all the	at apply)	- 1	⊠ Trees:	:	\square	Saplir	ngs/Shrubs:		Herbs	
_ <u>>70_ft</u> . N/A□	AVG. DBF (approx.)	i of Dominal	nts:	<u>_10_</u> in.		-	<u>2</u> in.				
Dominant Bank Vegeta	tion (list):										
White oak, white pir	ne, musclewoo	bd									
Aquatic Habitats (ex: su	Ibmerged or emerge	ed aquatic vege	etation,	overhanging	banks/rc	oots, leaf pac	ks, large	submerged wood	l, riffles,	deep pool	5):
Cobble, roots along	bank, debris	pile									
Aquatic Organisms Ob	served (list):										
None											
T&E Species Observed	(list):										
none											
Disturbances (ex: livesto	ock access, manure	in waterbody,	waste d	lischarge pipe	es):						
Selectively logged											
Tributary is: (check one)	⊠ Natural	[] Artifi	cial, man-m	ade	□ Manipu	ulated				
Stream Quality ^a : (check one)	□ High		Mod	erate		□ Low					

Waterbody ID: SAUA436

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Strong sinuosity, weak riffle pool, strong grade control, well developed bars and benches, debris piles. Banks undercut and unstable on outside of bends. Previously named saub108.

Waterbody Sketch (Include north arrow, centerline, distance from centerline, data point location, survey boundary, and IDs of associated features)





Waterbody SAUA436 facing north upstream



Waterbody SAUA436 facing west across



Waterbody SAUA436 facing south downstream

Updated Waterbody ID: saua435

ical materbody Data offect	t	1		
rvey Description				14-5
oject Name:	Waterbody Name:	Wa	terbody ID:	Date: 9/27/16
ACP	Braley Brai	nch s	Jaup 003. 1	19 AUG 2015
ate: County/Parish:	Company:	Crew M	ember Initials: Phot	os:
VA Avgusta	ESI	KM KWN	1, CSIGB, AS N	S,E
act Number(s):	Nearest Milep	ost:	Associated Wetland ID(s	:
17-001-A010, 07-00	11-A009 116.5		None	
rvey Type: eck one) ACenterlin	e 🛛 Re-Route	Access Road	□Other:	
nysical Attributes				
ream Classification: eck one) DEphemer	ral Vintermittent	□Perennial		
aterbody Type: (eck one)	tream Ditch Car	nal 🗆 Other:		
Width: 14 OHWM Indic.	ator:	a Shelving	⊠Wrested ⊡Sco	ouring DWater
Height: 2.0 Bent	, matted, or missing □Wrack lin	ie DLitter and	Abrupt plant	ioil characteristic change
AD vegetat	lon	debns	community change	
idth of Waterbody - Top of Width	n of Waterbody - Toe of Slope	Width of Waterbody - W	ater Edge to Depth of V	Vater:
ank to lop of Bank; to lo	e of Slope:	water Edge.	(Approx.)	
<u>ft.</u>	ft.	N/AN	t. N/AN	π.
inuosity: Wate	er velocity:	Bank height	Bank slor	De la
heck one) (Appro		Right: / I		Right: 9,35
	fps	4	ft.	degrees
Meandering	4	Left: 35.0	ft	Left: 3090egrees
	<u>q</u>			
Jualitative Attributes				
theck one)	Clear DTurbid DSH	neen 🗆 Surface n surface scum	□Algal □Other: mats	
ubstrate: Bedrock	Boulder Cobble Grav	el 🖸 Sand 🖾 Silt/	clay Organic Oth	er:
check all that apply) % of Substrate:%	% 50 % 40	%% 10	_%%	_%
	tive Lavers:			
Night of Piparian Zono: Mogota	IIVE LAVELS.			
Width of Riparian Zone: Vegeta	that apply)	s: 👘 Sap	lings/Shrubs: 🔯 H	erbs
Width of Riparian Zone: Vegeta (check all Avg. Di	Hhat apply) Tree BH of Dominants: 5	s: Masap in. 2	lings/Shrubs: XH in. N	erbs /A in.
Vidth of Riparian Zone: Vegeta (check all Avg. Di (approx)	BH of Dominants:	in	lings/Shrubs: X H in	erbs <u>/A_</u> in.
VIAD VIAD Dominant Bank Vegetation (list):	um. Hamamelis Vit	is: \$\$ Sap _in. 2 Giniana, Micros	lings/Shrubs: XH inN Hajum Vimiolu	erbs <u>/A</u> in. m. Lonicera japo
Width of Riparian Zone: Vegeta (check all Avg. Di (approx) Dominant Bank Vegetation (list): Acer rubrum, Acer Sacchart	um, Hamamelis Vil	is: Asap	lings/Shrubs: AH	erbs <u>/A_in.</u> m, Lonicera japo
NIAD <u>100 ft</u> . Vegeta (check all Avg. Di (approx) Dominant Bank Vegetation (list): Acer rubrum, Acer Sacchart Aquatic Habitats (ex: submerged or eme POOLS, informitient flow	um, Hamamelis Villerged aquatic vegetation, overhanging	in. 2 Iginiana, Micros g banks/roots, leaf packs. lar mats	lings/Shrubs: A H inA Hgium Vimineu ge submerged wood, riffles de	erbs <u>/A_in.</u> m, LONICERAJAPO sep pools):
NAD NAD NAD NAD NAD NAD NAD NAD	um, Hamamelis Vir erged aquetic vegetation. overhangin Wood Y debris, root	is: A Sap in. 2 Iginiana, Micros g banks/roots, leaf packs. lar mats	lings/Shrubs: A H in. A Hgium Vimineu ge submerged wood, riffies de	erbs <u>/A</u> in. m, LONICERAJAPO :ep pools):
NAD NAD NAD NAD NAD NAD Dominant Bank Vegetation (list): Acer rubrum, Acer sacchar Aquatic Habitats (ex: submerged or eme POOLS, informitient flow, Aquatic Organisms Observed (list): NONE minnows, water	The apply) BH of Dominants: 4 um, Hamamelis Vir arged aquetic vegetation, overhangin Wood Y debris, root	in. giniana, Micros g banks/roots, leaf packs, lar mats er penny	lings/Shrubs: A H in Hegium Vimineu ge submerged wood, riffies da	erbs <u>/A</u> in. m, LONICERAJAPO :ep pools):
Vidth of Riparian Zone: Vegeta <u>100</u> ft. Vegeta (check all Avg. D' (approx) Dominant Bank Vegetation (list): Acer ruburn, Acer sacchar Aquatic Habitats (ex: submerged or eme POOLS, informittenf flow, Aquatic Organisms Observed (list): NONE minnows, water T&E Species Observed (list): NONE	Hinat apply) BH of Dominants:	in. giniana, Micros g banks/roots, leaf packs. lar mats er penny	lings/Shrubs: A H	erbs <u>/A</u> in. m, LONICEra japo :ep pools):
Vidth of Riparian Zone: Vegeta <u>100</u> ft. Vegeta (check all Avg. Di (approx) Dominant Bank Vegetation (list): Acer ruburn, Acer sacchar Aquatic Habitats (ex: submerged or eme POOLS, informittent flow, Aquatic Organisms Observed (list): NONE minnows, water T&E Species Observed (list): NONE minnows, water T&E Species Observed (list): NONE Disturbances (ex: Investock access man CXCESSIVE COODIE 0	That apply) BH of Dominants:	in. 2 in. 2 ightiana, Micros g banks/roots, leaf packs, lar mats er penny d and wire fencing wire e severely undercut a	Iings/Shrubs:	erbs <u>/A_in</u> . m, LONICEYA_Japo :ep pools): to limit bank erosion bends.
Vidth of Riparian Zone: Vegeta <u>100</u> ft. Vegeta (check all Avg. D (approx) Dominant Bank Vegetation (list): Acer ruburn, Acer Sacchar Aquatic Habitats (ex: submerged or eme POOLS, informittenf flow, Aquatic Organisms Observed (list): NONE minnows, water T&E Species Observed (list): NONE Disturbances (ex: investock access mar CXCCSS IVE COODIE () Tributary is: (check one) X Nat	The apply) BH of Dominants: UM, Hamanelis VII erged aquatic vegetation, overhanging Wood Y debris, root striders, stonefly, wate Paralleled by existing road outside of bend. Banks ar ural	s: Sap in. 2 Giniana, Micros g banks/roots, leaf packs, lar mats er penny d and wire fencing wi e severely undercut a -made Manipulate	Iings/Shrubs: A H	erbs <u>/A_in.</u> m, LONICEYA Japo rep pools): to limit bank erosion bends.

saua435 Waterbody ID: Saup003 High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man. Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man. Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man. Notes: changed ID from saup003i to saua435 Waterbody Sketch (Include north arrow, centerline, distance from centerline, data point location, survey boundary, and IDs of associated features) 07-001-A069 NRI 07-001 soupoo3i INtermittent PARcel 67-001-A010 111.8 Shever progress 20150804 SAUPDOBP INter Hent 07-001 - AUD" Access RooD

Environmental Field Surveys Waterbody Photo Page



Waterbody saua435 facing north upstream.



Waterbody saua435 facing south downstream.

Environmental Field Surveys Waterbody Photo Page



Waterbody saua435 'facing east across bank.

Survey Descriptio	n								
Project Name:		Waterbody Na	me:		w	aterbody ID:		Date:	
Atlantic Coast Pipe	line	Dowell's Dra	aft		S	AUA416		9/20/2	2016
State:	County:		Company:		Crew N	Vember	PI	hotos:	
Virginia	Augusta		NRG		Initials	s: GB, AS	S	AUA416_0	01-004
Tract Number(s):			Nearest Mile	epost:		Associated W	etland II	D(s):	
07-001			112			WAUC002			
Survey Type: (check one)	⊠Centerline	e □Re-l	Route	□Access Road		□Other:			
Physical Attribute	S								
Stream Classification: (check one)	Ephemera	al 🗆 Inter	rmittent	⊠Perennial					
Waterbody Type:									
(check one)	□River ⊠ Str	eam 🗆 Dite	ch 🗆 C	anal 🗌 Other:	:				
OHWM Width:	OHWM Indicat (check all that apply	tor: /)	⊠ Clear lir	ne 🗆 Shelvin	g	□Wrested	□s	Scouring	□Water
<u>16</u> ft.			on bank			vegetation			staining
Height: <u>2 ft.</u>	□Bent, n vegetatio	natted, or missir n	ng □Wrack li	ne 🗆 Litter ar debris	nd	□Abrupt plant community ch	t 🛛 ange	Soil characte	eristic change
Width of Waterbody -	Γop of Width α	of Waterbody -	Toe of Slope	Width of Waterb	ody - W	ater Edge to	Depth o	f Water:	
Bank to Top of Bank:	to Toe	of Slope:	•	Water Edge:	-	_	(Approx.)		
<u>18</u> ft.	_	<u>12_</u> ft.			<u>15_</u> ft.			0.8	_ft.
Sinuosity	Water	velocity		N/A⊡ Bank beight			N/A⊟ Bank slo	one	
(check one)	(Approx.)	velocity.		Right:		I	Dank Sk	Right:	
		<u>2</u> fps		Loft	<u>4</u> ft.			<u>70</u>	degrees
⊠Meanderi	ng N/A□			Leit.	<u>4_</u> ft.			<u>70</u>	degrees
Qualitative Attribu	ites					I			
Water Appearance: (check one)	[□] No water ⊠0	Clear □Turt	oid □Sh	neen Su	rface		□Other:		
Substrato:			or	surface scu				bor	
(check all that apply)						lay 🗆 Organic			
% of Substrate:	%	<u>60</u> %	<u>40</u> %	%		_%%		%	
Width of Riparian Zone	e: Vegetative	Eavers:			7.0			l ll	
<u>90_ft.</u>	Avg. DBH	of Dominants:	⊠ Trees _ <u>14_</u> in.	:	⊠ Saplir _ <u>2_</u> in.	ngs/Shrubs:		Herbs	
N/ALI	ation (list):								
Eastern Hemlock, V	Vhite Pine, Wh	ite Oak, Viole	et, Red Map	ole, Christmas	Fern				
Aquatic Habitats (ex: s	ubmerged or emerged	aquatic vegetatic	on, overhanging	banks/roots, leaf pac	ks, large	submerged wood,	, riffles, de	eep pools):	
Riffles and pools, d	owned logs in I	oed, Over ha	nging bank	s and roots					
Aquatic Organisms Ob	oserved (list):								
None									
T&E Species Observed	d (list):								
None									
Disturbances (ex: livest	ock access, manure i	n waterbody, wast	e discharge pipe	es):					
Access road with a	four foot diame	eter culvert							
Tributary is: (check one)	⊠ Natural	□ Ar	tificial, man-m	nade 🗆 Manip	ulated				
Stream Quality ^a : (check one)	□ High	⊠ Mo	oderate	□ Low					

Waterbody ID:

SAUA416

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

former sauc002 is now saua416

Waterbody Sketch (Include north arrow, centerline, distance from centerline, data point location, survey boundary, and IDs of associated features)





Waterbody SAUA416 facing west upstream



Waterbody SAUA416 facing east downstream



Waterbody SAUA416 facing south across



Waterbody saua416 facing north upstream - culvert

Survey Descriptio	n							
Project Name:		Waterbody Na	me:		w	aterbody ID:		Date:
Atlantic Coast Pipel	ine	UNT to Dow	ell's Draft		S	AUA417		9/20/2016
State:	County:		Company:		Crew N	lember	Ph	otos:
Virginia	Augusta		NRG		Initials	: GB, AS	SA	AUA417_001-003
Tract Number(s):	I		Nearest Mile	epost:		Associated W	etland ID	(s):
07-001			112			WAUC002		
Survey Type: (check one)	⊠Centerline	e □Re-	Route	□Access Road		□Other:		
Physical Attribute	e							
Stream Classification: (check one)	[⊠] Ephemera	al ⊡Inte	rmittent	□Perennial				
Waterbody Type: (check one)	River ⊠ Str	ream 🗆 Dit	ch 🗆 Ca	anal 🗆 Other	:			
ОНШМ	OHWM Indica	tor:						
Width: _ <u>6_</u> ft.	(check all that apply	<i>Y)</i>	Clear lir on bank	ne 🗆 Shelvin	g	□Wrested vegetation	□Sc	ouring DWater staining
Height:	⊠Bent, r	natted, or missir	ng ⊡Wrack li	ne 🗆 Litter ai	nd	□Abrupt plan	t 🗆	Soil characteristic change
N/A□	vegetatio	DI I		debris		community ch	ange	
Width of Waterbody - 1 Bank to Top of Bank:	op of Width to Toe	of Waterbody - of Slope:	Toe of Slope	Width of Waterb Water Edge:	ody - W	ater Edge to	Depth of ' (Approx.)	Water:
6 ft		2 #			6 ft			0.3 ft
<u></u> n.	-	<u> </u>		N/A□	<u> </u>		N/A□	
Sinuosity:	Water	velocity:		Bank height			Bank sloj	ре
	(Approx.)	0.5 fp	c	Right:	4 ft			Right: 60 degrees
⊠Meanderi		<u>_0.5</u> _ip:	5	Left:	<u> </u>			Left:
				· · · ·	<u>10</u> 11.			<u>70</u> degrees
Qualitative Attribu	ites							
(check one)	No water ⊠0	Clear □Turl	bid □Sh on	neen ⊡Su n surface sci	rface um	□Algal [mats	□Other:	
Substrate:	Bedrock 🗆 Bc	oulder 🛛 Cobl	ble 🛛 Grave	el 🛛 Sand	⊠ Silt/ c	lay 🗆 Organic	□ Oth	er:
(check all that apply) % of Substrate:	%	<u>%</u> 5%	<u> 5 </u> %	<u> 10 </u> %	<u>80 </u> %	%		_%
Width of Riparian Zone	e: Vegetative	e Layers:						
	(check all that	apply)	☑ Trees	:	⊠ Saplin	igs/Shrubs:	$\boxtimes H$	erbs
<u>π</u> . N/A⊠	AVG. DBH (approx.)	of Dominants:	<u>_12_</u> in.	-	<u>2</u> in.			
Dominant Bank Vegeta	tion (list):							
Christmas Fern, WI	nite Pine, Easte	er Hemlock, \	Nhite Oak					
Aquatic Habitats (ex: se	ubmerged or emerged	d aquatic vegetatio	on, overhanging	banks/roots, leaf pac	ks, large	submerged wood	, riffles, dee	p pools):
None								
Aquatic Organisms Ob	served (list):							
None								
T&E Species Observed	l (list):							
None								
Disturbances (ex: liveste	ock access, manure i	n waterbody, wast	e discharge pipe	es):				
None								
Tributary is: (check one)	⊠ Natural	□ Ar	tificial, man-m	ade 🗆 Manip	ulated			
Stream Quality ^a : (check one)	□ High	⊠ M	oderate	□ Low				

Waterbody ID:

SAUA417

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

saua417 was previously named sauc003.

Waterbody Sketch (Include north arrow, centerline, distance from centerline, data point location, survey boundary, and IDs of associated features)





Waterbody SAUA417 facing north upstream



Waterbody SAUA417 facing south downstream



Waterbody SAUA417 facing east across

Survey Descripti	on										
Project Name:		Waterb	ody Nam	ne:			w	aterbody ID:			ate:
Atlantic Coast Pip	eline	UNT to	Dowe	ll's Draft			S	AUA418		9/20/2016	
State:	County:			Company:			Crew M	Nember		Photos:	
Virginia	Augusta		E	ERM			Initials	: GB, AS		SAUA41	8_001-003
Tract Number(s):				Nearest Mile	epost:			Associated W	etland	ID(s):	
07-001			•	112				None			
Survey Type: (check one)	⊠Cei	nterline	□Re-R	oute		ss Road		□Other:			
Physical Attribut	es										
Stream Classification (check one)	n: □Epł	hemeral	X Interr	nittent	⊠Perer	nnial					
Waterbody Type:											
(check one)	□River	Stream Stream	□ Ditch	n □C	anal [Other	:				
онwм	OHWM	Indicator:									
Width: <u>8</u> ft.	(check all i	that apply)		⊠ Clear lir on bank	ne 🗆	Shelvin	g	☐Wrested vegetation		Scouring	□Water staining
Height:	\boxtimes	Bent, matted, o	r missing	j ⊡Wrack li	ne 🗆	Litter ar	nd	□Abrupt plar	nt	□Soil ch	aracteristic change
_ <u>1_</u> ft. N/A□	ve	getation			de	ebris		community ch	nange		
Width of Waterbody	Top of	Nidth of Water	body - T	oe of Slope	Width of	Waterb	ody - W	ater Edge to	Depth	of Water:	
вапк to тор от вапк	t t	o loe of Slope	:		water Ed	ge:			(Approx.)	
<u>_12_</u> ft.		<u>3</u> ft.				-	<u>8_</u> ft.		N/A□	-	<u>0.8_</u> ft.
Sinuosity:		Water velocity:			Bank hei	ght			Bank	slope	
(check one)	((Approx.)			R	light:				Right:	
			<u>1.5_</u> fps			l eft [.]	<u>4_</u> ft.			l eft [.]	<u>70</u> degrees
⊠Meande	ering 1	N/A□				_0	<u>3_</u> ft.			2010	<u>75</u> degrees
Qualitative Attrib	outes										
Water Appearance: (check one)	□No water	⊠Clear	□Turbi	d ⊡Sh	neen	□Su	rface	□Algal	□Othe	r:	
				or	surface	SCI	um	mats			
Substrate:	Bedrock	Boulder		e 🛛 Grav	el 🛛 Sa	ind [□ Silt/ c	lay 🗆 Organio		Other:	
% of Substrate:	<u>80</u> %	%		% <u>15</u> %	<u> 5 </u> %	, <u> </u>		_%%	,	_%	
Width of Riparian Zo	ne: Veg	etative Layers									
30 ft.	(chec	k all that apply)	nante	⊠ Trees	:	Σ	⊠ Saplir	ngs/Shrubs:	\triangleright	Herbs	
<u> </u>	appr (appr	rox.)	nams.	<u>_12</u> _in.		-	<u>2</u> in.				
Dominant Bank Vege	tation (list):		•			.					
White Pine, White	Oak, Red	Maple, Com	mon Sr	milax, May	/-apple, (Christn	nas fei	rn, bedstraw			
Aquatic Habitats (ex:	submerged or e	emerged aquatic	egetation/	, overhanging	banks/roots	, leaf pac	ks, large	submerged wood	l, riffles,	deep pools):
Riffles and pools											
Aquatic Organisms C	Dbserved (list	t):									
None											
T&E Species Observ	ed (list):										
None											
Disturbances (ex: live Stream runs through a cu	stock access, m lvert under an a	nanure in waterbo access road down	dy, waste stream	discharge							
Tributary is: (check one)	⊠ Na	atural		ficial, man-m	ade	Manip	ulated				
Stream Quality ^a : (check one)	🗆 Hię	gh	⊠ Moo	derate		Low					

Waterbody ID: SAUA418

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

saua418 was previously named sauc004.

Waterbody Sketch (Include north arrow, centerline, distance from centerline, data point location, survey boundary, and IDs of associated features)





Waterbody SAUA418 facing north upstream



Waterbody SAUA418 facing south downstream



Waterbody SAUA418 facing west across


Waterbody saua418 facing south - culvert

Survey Description	n							
Project Name:		Waterbody Na	me:		w	/aterbody ID:		Date:
Atlantic Coast Pipel	ine	East Branch	Dowell's D	Praft	S	AUA420		9/20/2016
State:	County:		Company:		Crew I	Member	Pho	itos:
Virginia	Augusta		NRG		Initials	s: GB, AS	01	-03
Tract Number(s):			Nearest			Associated We	tland ID(s	s):
07-001			Milepost: 11	17.3		none		
Survey Type: (check one)		e □Re-l	Route	⊠Access Road		□Other:		
Physical Attribute	s							
Stream Classification: (check one)	□ Ephemera	al 🗆 Inte	rmittent	⊠Perennial				
Waterbody Type	•							
(check one)	River Str	eam 🗆 Dite	ch 🗆 Ca	anal 🗌 Other:	:			
онwм	OHWM Indica	tor:						
Width: <u>10.0</u> ft.	(check all that appl	V)	☑ Clear lir on bank	ne ⊠Shelvin	g	□Wrested vegetation	⊠Sco	ouring
Height:	□Bent, r	natted, or missir	ng ⊡Wrack li	ne 🛛 Litter ar	nd	□Abrupt plant		Soil characteristic change
<u> </u>	vegetatio	n		debris		community cha	inge	
Width of Waterbody - T Bank to Top of Bank:	op of Width	of Waterbody -	Toe of Slope	Width of Waterbo	ody - W	ater Edge to	Depth of V	Vater:
Bank to Top of Bank.	10 100	of Stope.		water Luge.		(ippiox.)	0 F (
<u>_12_ft</u> .	-	<u>3.0</u> ft.			<u>6.0</u> ft.		J/A□	<u> </u>
Sinuosity:	Water	velocity:		Bank height		E	Bank slop	e
(check one)	(Approx.)	-		Right:			F	Right:
		<u>_1.5</u> fps	S	Left:	<u>4_</u> ft.			<u>85</u> degrees
⊠Meanderii	ng N/A□			2011	<u>4</u> ft.			degrees
Qualitative Attribu	tes							
Water Appearance: (check one)	No water ⊠0	Clear 🗆 Turb	oid ⊡Sh on	leen ⊡Sui i surface sci	rface um	□Algal □ mats	Other:	
Substrate:	Bedrock 🗆 Bo	oulder 🛛 Cobl	ole 🛛 Grave	el 🛛 Sand 🛛	⊠ Silt/ c	ay 🗆 Organic	□ Othe)r:
(check all that apply) % of Substrate:	%	<u>% 30</u> %	<u>35</u> %	<u>25_</u> %	<u>10_</u> %	%		_%
Width of Riparian Zone	e: Vegetative	e Lavers:						
	(check all that	apply)	□ Trees	: D	⊠ Saplir	ngs/Shrubs:	🗆 He	erbs
<u>>50 ft</u> - N/A□	Avg. DBH (approx.)	of Dominants:	<u>13</u> in.	-	<u>2</u> in.			
Dominant Bank Vegeta	tion (list):							
White oak, sugar m	aple, musclew	/ood						
Aquatic Habitats (ex: su	ubmerged or emerge	d aquatic vegetatic	on, overhanging	banks/roots, leaf pac	ks, large	submerged wood,	riffles, deep	pools):
Cobble, roots along	ı bank, debris p	bile						
Aquatic Organisms Ob	served (list):							
Mayfly, caddis fly								
T&E Species Observed	l (list):							
none								
Disturbances (ex: livesto	ock access, manure i	n waterbody, wast	e discharge pipe	es):				
Logging road, no cu	ulvert							
Tributary is: (check one)	⊠ Natural	□ Ar	tificial, man-m	ade 🗌 Manipi	ulated			
Stream Quality ^a : (check one)	□ High	⊠ Mo	oderate	□ Low				

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Moderate sinuosity, moderate riffle pool, strong grade control, well developed bars and benches, debris piles.

SAUA420 previously named SAUB110







Waterbody SAUA420 facing east upstream



Waterbody SAUA420 facing north across



Waterbody SAUA420 facing west downstream

Survey Descriptio	n								
Project Name:		Waterbody Na	me:		w	aterbody ID:		Date:	
Atlantic Coast Pipel	ine	UNT to Dow	ell's Draft		S	AUA419		9/20/2016	
State:	County:	1	Company:		Crew M	Nember	Ph	otos:	
Virginia	Augusta		ERM		Initials	: GB, AS	SA	AUA419_001-003	
Tract Number(s):			Nearest Mile	epost:		Associated We	etland ID	(s):	
07-001			113			None			
Survey Type: (check one)	⊠Centerline	e □Re-	Route	□Access Road		□Other:			
Physical Attribute	s								
Stream Classification: (check one)		al ⊠Inte	rmittent	□Perennial					
Waterbody Type: (check one)]River ⊠ Str	ream 🗆 Dite	ch 🗆 Ca	anal 🗆 Other:	:				
OHWM		tor							
Width: <u>7 ft</u> .	(check all that appl	y)	⊠ Clear lir on bank	ne 🗆 Shelving	g	□Wrested vegetation	□Sc	couring	
Height:	□Bent, r	matted, or missir	ng ⊡Wrack li	ne 🗆 Litter ar	nd	□Abrupt plant		Soil characteristic change	
<u>1.5</u> ft. N/A□	vegetatio	n	-	debris		community cha	ange	-	
Width of Waterbody - 1 Bank to Top of Bank:	op of Width	of Waterbody -	Toe of Slope	Width of Waterbo	ody - W	ater Edge to	Depth of Approx.)	Water:	
45 A	10 100			Trater Euge.		,		1 ft	
<u>_15</u> π.	-	<u>_3_</u> ft.		N/A□	<u> 5 </u> ft.	1	N/A□	<u></u> ıt.	
Sinuosity:	Water	velocity:		Bank height		E	Bank slo	ре	
□Straight	(Approx.)	4 6		Right:	5 ft			Right:	
		_ <u>1_</u> tps		Left:	<u> </u>			Left:	
	ng N/A□			-	<u>10_</u> ft.			75 degrees	
Qualitative Attribu	tes								
Water Appearance: (check one)	No water ⊠0	Clear	oid ⊡Sh on	leen ⊡Sui i surface scu	rface um	□Algal □ mats	Other:		
Substrate:	Bedrock 🗆 Bo	oulder 🛛 Cobl	ole 🛛 Grave	el 🛛 Sand 🛛	□ Silt/ c	lay 🗆 Organic	□ Oth	er:	
(check all that apply) % of Substrate:	%	% <u>20</u> %	<u>40</u> %	_40_%		_%%		%	
Width of Riparian Zone	e: Vegetative	e Layers:							
	(check all that	t apply)	☑ Trees	: 🛛 🛛	⊠ Saplin	ngs/Shrubs:	$\boxtimes H$	lerbs	
<u>_20 ii</u> . N/A□	ауд. DBn (approx.)	or Dominants:	<u>_12_</u> in.	-	_ <u>2_</u> in.				
Dominant Bank Vegeta	tion (list):								
White Pine, White C	Dak, Red Maple	e, Post Oak,	Mountain L	aurel, River Oa	ats, Po	ison Ivy			
Aquatic Habitats (ex: su	ubmerged or emerge	d aquatic vegetatio	on, overhanging	banks/roots, leaf pac	ks, large	submerged wood,	riffles, dee	ep pools):	
Riffles and Pools, le	eaf packs								
Aquatic Organisms Ob	served (list):								
None									
T&E Species Observed	l (list):								
Disturbances (av. livest	ock access monure :	in waterbody west	e dischargo pia	ac).					
None	JUK AUUESS, MANUFE I	m waterbouy, wast	e usenarge pipe	->).					
Tributary is: (check one)	⊠ Natural	□ Ar	tificial, man-m	ade 🗆 Manipi	ulated				
Stream Quality ^a : (check one)	□ High	× M	oderate	□ Low					

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Stream branches downstream and then quickly merges back into a single stream

saua419 was previously named sauc005







Waterbody SAUA419 facing north upstream



Waterbody SAUA419 facing south downstream



Waterbody SAUA419 facing east across



Waterbody saua419 headcut

Survey Descriptio	n								
Project Name:		Waterbody Na	ame:		w	aterbody ID:		[Date:
Atlantic Coast Pipel	line	Buckhorn C	reek		S	AUA427e		c,	9/23/2016
State:	County:		Company:		Crew I	Nember Initials	:	Photos:	
Virginia	Augusta		ERM		GB, A	AS	,	SAUA4	27e_001-003
Tract Number(s):	-1		Nearest			Associated W	etland	ID(s):	
07-001			Milepost: 12	20.2		None			
Survey Type: (check one)	⊠Centerline	e □Re-	Route	□Access Road		□Other:			
Physical Attribute	S								
Stream Classification: (check one)	⊠Ephemera	al 🗌 Inte	ermittent	□Perennial					
Waterbody Type:									
(check one)	□River ⊠ Str	ream 🗆 Dit	tch 🗆 Ca	anal 🗌 Other	:				
ОНШМ	OHWM Indica	tor:							
Width: _2_ft.	(cneck all that appl	<i>y)</i>	☐ Clear lir on bank	ne ⊔Shelvin	g	☐Wrested vegetation	L	Scouring	⊡Water staining
Height:	□Bent, r	matted, or missi	ng 🗆 Wrack li	ne 🛛 Litter ar	nd	□Abrupt plan	t	□Soil ch	aracteristic change
ft. N/A□	vegetatio	on		debris		community ch	ange		
Width of Waterbody - 1 Bank to Top of Bank:	Fop of Width	of Waterbody -	Toe of Slope	Width of Waterbo	ody - W	ater Edge to	Depth	of Water:	
	10 100	of Slope.		Water Euge.			(* 1-1)		£1
<u>15</u> ft.	-	<u> 1 </u> ft.		N/A⊠	ft.		N/A⊠		11.
Sinuosity:	Water	velocity:		Bank height			Bank s	slope	
(check one)	(Approx.)			Right:				Right:	
		fps		Left:	<u>8_</u> π.			Left:	<u>70</u> degrees
Meanderi	ng N/A⊠				<u>4</u> ft.				40 degrees
Qualitative Attribu	ites								
Water Appearance: (check one)	[⊴] No water □0	Clear □Tur	bid □Sh on	leen ⊡Sui i surface sci	rface um	□Algal [mats	□Othe	r:	
Substrate:	Bedrock 🛛 Bo	oulder 🛛 Cob	ble 🛛 Grave	el 🗆 Sand 🛛	□ Silt/ c	lay 🗆 Organic		Other:	
(check all that apply) % of Substrate:	% 10 9	% 80 %	10 %	%		% %		%	
Width of Riparian Zong	e Vegetativ	a lavers:							
Whath of Ripanan Zone	(check all that	t apply)	⊠ Trees	: D	⊴ Saplir	ngs/Shrubs:	\boxtimes	Herbs	
<u>150_ft</u> - N/A □	Avg. DBH (approx.)	of Dominants:	<u>_12_</u> in.	-	<u>2</u> in.				
Dominant Bank Vegeta	ation (list):								
White Oak, White F	Pine, American	Hornbeam, I	Red Maple,	May-Apple, Vie	olet, S	milax			
Aquatic Habitats (ex: si	ubmerged or emerge	d aquatic vegetati	on, overhanging	banks/roots, leaf pac	ks, large	submerged wood	, riffles,	deep pools):
None									
Aquatic Organisms Ob	served (list):								
None									
T&E Species Observed	1 (list):								
None									
Disturbances (ex: liveste	ock access, manure i	in waterbody, was	te discharge pipe	es):					
None									
Tributary is: (check one)	⊠ Natural	□ A	rtificial, man-m	ade 🗌 Manipi	ulated				
Stream Quality ^a : (check one)	□ High	⊠ M	loderate	□ Low					

Waterbody ID: SAUA427e

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Stream receives runoff from the nearby hillslope and from White Oak draft during flood events. Due to the high cobble content the OHWM is obscured.

saua427e was previously named sauc007.







Waterbody SAUA427e facing north upstream



Waterbody SAUA427e facing south downstream



Waterbody SAUA427e facing west across

Survey Descrip	tion									
Project Name:		w	aterbody Nan	ne:		w	aterbody ID:		Da	ite:
Atlantic Coast Pi	peline	В	uckhorn Cre	eek		S	AUA427p		9/2	23/2016
State:	County:			Company:		Crew M	lember	Pho	tos:	
Virginia	Augusta	a		ERM		Initials	: GB, AS	SA	JA427	7p_001-003
Tract Number(s):				Nearest			Associated V	Vetland ID(s	5):	
07-001				Milepost: 12	20.2		None			
Survey Type: (check one)	⊠Ce	enterline	□Re-R	loute	□Access Roa	ad	□Other:			
Physical Attribu	utes									
Stream Classification	on:									
(check one)	⊔E	phemeral		mittent	Perennial					
Waterbody Type: (check one)	□River	⊠ Strea	m 🗆 Ditc	h 🗆 Ca	anal 🗌 Oth	er:				
OHWM Width: _ <u>20_</u> ft.	OHWN (check al	Indicator	:	⊠ Clear lir on bank	ie ⊡Shelv	ing	□Wrested vegetation	□Scc	ouring	□Water staining
Height: _ <u>2.5_</u> ft. N/A□	∑ v	Bent, mat egetation	ted, or missing	g	ne □Litter debris	and	□Abrupt pla community c	nt ⊠S hange	oil chai	racteristic char
Width of Waterbody Bank to Top of Ban	/ - Top of k:	Width of V to Toe of	Waterbody - T Slope:	oe of Slope	Width of Water Water Edge:	rbody - W	ater Edge to	Depth of W (Approx.)	/ater:	
<u>_25</u> ft		8	_ft.		N/A□	<u>10</u> ft.		N/A□		<u>1_</u> ft.
Sinuosity:		Water vel	ocity:		Bank height			Bank slop	e	
(check one)	ht	(Approx.)			Right:	ог 4		R	ight:	20 desmass
			<u>_1.5</u> fps		Left:	<u>3.5</u> π.			Left:	<u>30</u> degrees
⊠Meano	dering	N/A□				<u>5.5</u> ft.				90_degrees
Qualitative Attri	ibutes									
Water Appearance: (check one)	\Box No water	⊠Cle	ar ⊡Turbi	id ⊡Sh on	een ⊡S surface s	Surface	□Algal mats	□Other:		
Substrate:	□ Bedrock	Bould	ler 🛛 Cobb	le 🛛 Grave	el 🛛 Sand	□ Silt/ c	lay 🗆 Organi	c 🗆 Othe	r:	
(check all that apply) % of Substrate:	%		<u>% 60</u> %	<u> 30 </u> %	<u> 10 </u> %		<u>%</u> %	6	_%	
Width of Riparian Z	one: Ve	getative L	ayers:							
	(che A∨ (ap)	eck all that app g. DBH of prox.)	^{bly)} Dominants:	⊠ Trees _ <u>10</u> _in.		⊠ Saplin _ <u>2_</u> in.	gs/Shrubs:	⊠ He	rbs	
<u>150_ft</u> - N/A□	1.1.1									
<u>150_ff</u> . N/A⊡ Dominant Bank Veç	getation (list):									
<u>150_ft</u> . N/A⊟ Dominant Bank Veç White Oak, White	getation (list): e Pine, Syc	amore, F	Red Maple,	May-Apple	e, Violet, Smil	ax				
<u>150_ff</u> . N/A□ Dominant Bank Veg White Oak, White Aquatic Habitats (e)	getation (list): e Pine, Syc	amore, F	Red Maple,	May-Apple	e, Violet, Smil	ax acks, large	submerged woo	d, riffles, deep	pools):	

Aquatic Organisms O	bserved (list):			
None				
F&E Species Observe	d (list):			
None				
Disturbances (ex: lives	tock access, manure in wat	terbody, waste discharge pipes):		
None				
Fributary is:				
check one)	⊠ Natural	🗆 Artificial, man-made	Manipulated	
Stream Quality ^a :				
check one)	🖾 High	Moderate	□ Low	

Soil characteristic change

Waterbody ID: SAUA427p

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Stream located a few hundred feet from a camp ground

saua427p was previously named sauc006

Waterbody Sketch (Include north arrow, centerline, distance from centerline, data point location, survey boundary, and IDs of associated features)





Waterbody SAUA427p facing east upstream



Waterbody SAUA427p facing west downstream



Waterbody SAUA427p facing south across

Survey Description	า								
Project Name:		Waterbody Na	me:		w	aterbody ID:		Da	ate:
Atlantic Coast Pipeli	ine	UNT to Buck	thorn Creel	K	S.	AUA426		9/	23/2016
State:	County:		Company:		Crew N	Nember	F	Photos:	
Virginia	Augusta		ERM		Initials	s: GB, AS		01-03	
Tract Number(s):	I		Nearest			Associated W	etland	ID(s):	
07-001- AR466A			Milepost: 1	20.2		none			
Survey Type: (check one)		□Re-F	Route	⊠Access Road		□Other:			
Physical Attributes	6								
Stream Classification: (check one)	□ Ephemera	I □Inter	mittent	⊠Perennial					
Waterbody Type:									
(check one)	River Stre	eam 🗌 Dito	ch 🗆 Ca	anal 🗌 Other:					
ОНWM	OHWM Indicat	or:						0	
Width:ft.	(Check all that apply)	on bank		g		X	Scouring	⊡water staining
Height:	□Bent, n	natted, or missin	ig ⊡Wrack li	ne 🛛 Litter ar	nd	□Abrupt plan	t	□Soil cha	racteristic change
<u>2.0</u> π. N/A□	vegetatio	n		debris		community ch	ange		
Width of Waterbody - T Bank to Top of Bank:	op of Width of to Toe	of Waterbody -	Toe of Slope	Width of Waterbo	ody - W	ater Edge to	Depth (of Water:	
				Trator Lagor			,	()5 ft
<u>15_</u> ft.	-	<u>5.0_</u> ft.		N/A□	<u>8.0_</u> ft.		N/A□		<u></u> n.
Sinuosity:	Water	/elocity:		Bank height			Bank s	lope	
(check one)	(Approx.)			Right:	6 4			Right:	95 degrees
		<u>_1.5_</u> fps	6	Left:	<u> </u>			Left:	<u>oo</u> degrees
Meanderin	ng N/A□				<u>6</u> ft.				<u>85</u> degrees
Qualitative Attribu	tes								
(check one)	No water ⊠C	Clear □Turb	oid □Sh on	leen ⊡Sur i surface scu	face um	□Algal [mats	□Other	:	
Substrate:	Bedrock 🗆 Bo	ulder 🛛 Cobb	ole 🛛 Grav	el 🛛 Sand 🛛	⊠ Silt/ c	lay 🗆 Organic)ther:	
(check all that apply) % of Substrate:	%	_% <u>45</u> %	<u> 30 </u> %	<u> 15 </u> %	<u>10_</u> %	%		%	
Width of Riparian Zone	: Vegetative	Layers:							
> 00 ft	(check all that	apply) of Dominants:	⊠ Trees	: 2	I Saplir	ngs/Shrubs:		Herbs	
<u>_>80_11</u> . N/A□	(approx.)	or Dominants.	<u>_10_</u> in.	-	<u>2</u> in.				
Dominant Bank Vegeta	tion (list):								
Northern red oak, su	ugar maple, Ea	stern hemloo	ck, white pi	ne, mountain la	aurel				
Aquatic Habitats (ex: su	bmerged or emerged	l aquatic vegetatio	n, overhanging	banks/roots, leaf pac	ks, large	submerged wood	, riffles, c	deep pools):	
Cobble, roots along	bank, debris p	ile							
Aquatic Organisms Ob	served (list):								
Mayfly, caddis fly, st	tonefly								
T&E Species Observed	(list):								
none									
Disturbances (ex: livesto	ock access, manure ir	n waterbody, waste	e discharge pipe	es):					
Logging road, no cu	llvert								
Tributary is: (check one)	⊠ Natural		tificial, man-m	ade 🗌 Manipu	ulated				
Stream Quality ^a : (check one)	□ High	⊠ Mo	oderate	□ Low					

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Moderate sinuosity, weak to moderate riffle pool, strong grade control, moderate bars and benches, debris piles.

saua426 previously named saub111

Waterbody Sketch (Include north arrow, centerline, distance from centerline, data point location, survey boundary, and IDs of associated features)





Waterbody SAUA426 facing southwest upstream



Waterbody SAUA426 facing northwest across



Waterbody SAUA426 facing northeast downstream

Survey Description	n							
Project Name:		Waterbody Nar	ne:		W	aterbody ID:		Date:
Atlantic Coast Pipel	ine	UNT to Buck	horn Creel	k	S	AUA424		9/23/2016
State:	County:	•	Company:		Crew I	Nember	Ph	otos:
Virginia	Augusta		ERM		Initials	: GB, AS	01	1-03
Tract Number(s):			Nearest			Associated We	etland ID	(s):
07-001- AR466			Milepost: 12	20.2		none		
Survey Type: (check one)		□Re-F	Route	Access Road		□Other:		
Physical Attributes	S							
Stream Classification: (check one)	Ephemera	l ⊡Inter	mittent	⊠Perennial				
Waterbody Type:								
(check one)	River Str	eam 🗆 Dito	h 🗆 Ca	anal 🗌 Other:				
OHWM	OHWM Indicat	tor:		S Chabin				
<u>20.0</u> ft.	(check an that apply	7	on bank		g	vegetation	×30	staining
Height:	□Bent, n	natted, or missin	g	ne 🛛 Litter ar	nd	□Abrupt plant		Soil characteristic change
<u> </u>	vegetatio	n		debris		community cha	ange	
Width of Waterbody - T Bank to Top of Bank:	op of Width of to Toe	of Waterbody - "	Foe of Slope	Width of Waterbo	ody - W	ater Edge to	Depth of Approx.)	Water:
				g		·	,	10 f f
<u></u> ft.	-	<u>10.0</u> ft.		 N/A□	<u>15.0_</u> ft.		N/A□	<u>1.0</u> n.
Sinuosity:	Water	velocity:		Bank height		E	Bank slo	ре
(check one)	(Approx.)			Right:	6 4			Right:
		<u>_2.0</u> _tps		Left:	<u> </u>			Left:
Meanderir	ng N/A□				<u>5_</u> ft.			_ <u>88</u> _degrees
Qualitative Attribu	tes							
Water Appearance: (check one)	No water ⊠C	Clear □Turb	id □Sh on	neen ⊡Sui n surface scu	rface um	□Algal □ mats	Other:	
Substrate:	Bedrock 🛛 Bo	ulder 🛛 Cobb	le 🛛 Grave	el 🛛 Sand 🛛	⊠ Silt/ c	lay 🗆 Organic	□ Oth	ier:
(check all that apply)	% 10 %	<u>40 %</u>	40 %	5 %	5 %	0/		0/_
	/0 <u></u> /	• <u>+0</u> /0	<u>40</u> /0	/0	<u> </u>	70		
width of Riparian Zone	c: vegetative (check all that	apply)	⊠ Trees	:	⊠ Saplir	ngs/Shrubs:	□H	lerbs
<u>125_ft</u>		of Dominants:	<u>_10_</u> in.	-	<u>2</u> in.	-		
Dominant Bank Vegeta	tion (list):							
Northern red oak, si	ugar maple, ch	estnut oak, w	hite pine, r	mountain laurel	l			
Aquatic Habitats (ex: su	Ibmerged or emerged	aquatic vegetation	n, overhanging	banks/roots, leaf pac	ks, large	submerged wood,	riffles, dee	ep pools):
Cobble, roots along	bank, debris p	oile						
Aquatic Organisms Ob	served (list):							
Mayfly, caddis fly, s	tonefly							
T&E Species Observed	(list):							
none								
Disturbances (ex: livesto	ock access, manure i	n waterbody, waste	e discharge pipe	es):				
Forest service road	along left bank	K						
Tributary is: (check one)	⊠ Natural	□ Art	ificial, man-m	ade 🗌 Manipi	ulated			
Stream Quality ^a : (check one)	□ High	⊠ Mo	derate	□ Low				

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Moderate sinuosity, weak to moderate riffle pool, strong grade control, strong bars and benches, debris piles.

saua424 previously named saub113

Waterbody Sketch (Include north arrow, centerline, distance from centerline, data point location, survey boundary, and IDs of associated features)





Waterbody SAUA424 facing north upstream



Waterbody SAUA424 facing west across



Waterbody SAUA424 facing south downstream

Survey Description	on							
Project Name:		Waterbody	Name:		w	aterbody ID:		Date:
Atlantic Coast Pipe	eline	UNT to Bu	ickhorn Creel	k	S	AUA425		9/23/2016
State:	County:		Company:		Crew N	lember	Photos	
Virginia	Augusta		ERM		Initials	: GB, AS	01-03	
Tract Number(s):			Nearest Mile	epost: 120.2		Associated We	tland ID(s):	
07-001- AR466A						none		
Survey Type: (check one)		e □R	e-Route	⊠Access Road		□Other:		
Physical Attribute)c							
Stream Classification: (check one)	Epheme	ral □Ir	ntermittent	Perennial				
Waterbody Type: (check one)	□River ⊠ St	tream 🗆 I	Ditch 🗆 C	anal	:			
OHWM Width:	OHWM Indic (check all that app	ator: ^{bly)}	Clear lir on bank	ne 🗆 Shelving	g	□Wrested vegetation	⊠Scourir	ng ⊟Water staining
<u>Height:</u> <u>0.2</u> ft.	□Bent, vegetati	matted, or mis on	sing ⊡Wrack li	ne ⊠Litter ar debris	nd	□ Abrupt plant community cha	□Soil o	characteristic change
N/A 🗆								
Bank to Top of Bank:	Top of Width to Toe	of Waterbody of Slope:	/ - Toe of Slope	Width of Waterbo Water Edge:	ody - W	ater Edge to D	epth of Wate pprox.)	er:
<u>_2_</u> ft.		_ <u>0.5_</u> ft.		N/A⊠	<u>.0_</u> ft.	N	/A⊠	<u>0</u> ft.
Sinuosity:	Water	velocity:		Bank height		В	ank slope	
(check one)	(Approx	.)		Right:			Righ	t:
		fp	DS	Left:	<u>2</u> π.		Le	<u>85</u> degrees
⊠Meander	ing N/A⊠				<u>2</u> ft.			<u>85</u> degrees
Qualitative Attrib	utes							
Water Appearance: (check one)	$^{ imes}$ No water \Box	Clear 🗆 T	urbid □Sr or	neen ⊡Sur n surface scu	rface um	□Algal □ mats	Other:	
Substrate:	Bedrock B	oulder 🛛 Co	obble 🛛 Grav	el 🛛 Sand 🛛	⊠ Silt/ cl	lay 🗆 Organic	□ Other:	
(check all that apply) % of Substrate:	%	<u>% 10</u>	% <u>30</u> %	_10_%	<u>50_</u> %	%	%	
Width of Riparian Zon	e: Vegetativ	ve Layers:						
<u>> ft.</u>	(check all the Avg. DB (approx.)	at apply) I of Dominant	⊠ Trees : s: _ <u>6_</u> in.	: 2	⊠ Saplin _ <u>2_</u> in.	igs/Shrubs:	□ Herbs	
Dominant Bank Veget	ation (list):							
Northern red oak, s	sugar maple, w	hite oak, m	ountain laure	I				
Aquatic Habitats (ex: s	submerged or emerge	ed aquatic vegeta	ation, overhanging	banks/roots, leaf pac	ks, large	submerged wood, r	iffles, deep poo	ols):
none								
Aquatic Organisms O	bserved (list):							
T&E Species Observe	d (list):							
none	u (<i>iist)</i> .							
Disturbances (ex: lives	tock access, manure	in waterbody, w	aste discharge pipe	es):				
Logging road, no c	ulvert, timbere	d						
Tributary is: (check one)	⊠ Natural		Artificial, man-m	iade 🗆 Manipi	ulated			
Stream Quality ^a : (check one)	□ High	\boxtimes	Moderate	□ Low				

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Weak sinuosity, leaf letter and fibrous roots present in channel, weak to absent ordinary high water mark, lacked hydric soils.





Form Rev. 07/09/2014



Waterbody SAUA425 facing north upstream



Waterbody SAUA425 facing east across



Waterbody SAUA425 facing south downstream

Survey Description	on	-						
Project Name:		Waterbody Na	me:		w	aterbody ID:	D	ate:
Atlantic Coast Pipe	eline	UNT to Buck	horn Creek	(S	AUA428	9	/23/2016
State:	County:		Company:		Crew N	lember	Photos:	
Virginia	Augusta		ERM		Initials	: GB, AS	SAUA42	8_001-003
Tract Number(s):			Nearest Mile	epost:		Associated Wetland	d ID(s):	
07-001			120.4			None		
Survey Type: (check one)	⊠Centerline	e □Re-I	Route	□Access Road		Other:		
Physical Attribute	es							
Stream Classification: (check one)		al 🗆 🗆 Inter	mittent	⊠Perennial				
Waterbody Type:	_p							
(check one)	□River ⊠ Str	eam 🗆 Dito	ch 🗆 Ca	anal 🗌 Other:	:			
OHWM Width: <u>15</u> ft.	OHWM Indica (check all that appl	tor: //	⊠ Clear lin on bank	ne 🗆 Shelving	g	□Wrested vegetation	⊠Scouring	□Water staining
Height: 3 ft.	⊠Bent, r vegetatio	natted, or missin	ig	ne ⊠Litter ar debris	nd	□Abrupt plant community change	□Soil cha	aracteristic change
N/A□								
Width of Waterbody - Bank to Top of Bank:	Top of Width to Toe	of Waterbody - of Slope:	Toe of Slope	Width of Waterbo Water Edge:	ody - W	ater Edge to Depth (Approx	n of Water:	
<u>_25_</u> ft.	-	<u>6</u> ft.			<u>10</u> ft.	N/A 🗆	-	<u>1</u> ft.
Sinuosity:	Water	velocity:		Bank height		Bank	slope	
(check one)	(Approx.)			Right:			Right:	
		<u> 1 </u> fps		l eft:	<u>5</u> ft.		l eft [.]	40 degrees
⊠Meander	ing N/A□				<u>6</u> ft.			90 degrees
Qualitative Attrib	utes							
Water Appearance:			sid ⊡ Ch		rfaaa		~ r:	
			on Dia	surface scu	um	mats	.	
Substrate:	Bedrock 🔀 Bo	oulder 🛛 Cobb	ole 🛛 Grave	el 🛛 Sand 🛛	□ Silt/ c	lay 🗆 Organic 🛛	Other:	
% of Substrate:	%10%	% <u>50 %</u>	<u>35_%</u>	<u>5 %</u>		_%%	%	
Width of Riparian Zon	e: Vegetative	E Layers:						
	(check all that	apply)	⊠ Trees:	: 2	⊠ Saplin	igs/Shrubs:	⊠ Herbs	
<u>100_ft</u> - N/A□	AVG. DBH (approx.)	of Dominants:	<u>_14_</u> in.	-	<u>2</u> in.			
Dominant Bank Veget	ation (list):							
Red Oak, White Pi	ne, American H	ornbeam, Str	iped Maple	e, Violet, Christi	mas fe	ern, multiflora rose	e, winterg	Ireen
Aquatic Habitats (ex: s	submerged or emerge	d aquatic vegetatio	n, overhanging	banks/roots, leaf pac	ks, large	submerged wood, riffles	, deep pools)	:
Deep pools and rif	fles, over hangi	ng banks and	l roots, dow	ned logs in str	eam b	ed		
Aquatic Organisms O	bserved (list):							
None								
T&E Species Observe	d (list):							
None								
Disturbances (ex: lives	tock access, manure i	n waterbody, waste	e discharge pipe	es):				
None								
Tributary is: (check one)	⊠ Natural	□ Ar	tificial, man-m	ade 🗆 Manipi	ulated			
Stream Quality ^a : (check one)	🛛 High	□ Mo	oderate	□ Low				

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Stream located in natural valley

saua428 previously named sauc008

Waterbody Sketch (Include north arrow, centerline, distance from centerline, data point location, survey boundary, and IDs of associated features)





Waterbody SAUA428 facing north upstream



Waterbody SAUA428 facing south downstream



Waterbody SAUA428 facing east across

Survey Description	n								
Project Name:		Waterbody Na	me:		w	aterbody ID:		Date:	
Atlantic Coast Pipel	ine	UNT to Stou	tameyer Br	anch	S	AUA429		9/23/2	016
State:	County:		Company:		Crew I	Vember	Ph	notos:	
Virginia	Augusta		ERM		Initials	s: GB, AS	S	AUA429_00	1-003
Tract Number(s):			Nearest Mile	epost:		Associated W	etland ID)(s):	
07-001			120.55			None			
Survey Type: (check one)	⊠Centerline	e □Re-F	Route	□Access Road		□Other:			
Physical Attributes	5								
Stream Classification: (check one)		al 🛛 🖾 Inter	rmittent	Perennial					
Waterbody Type:									
(check one)	River Str	eam 🗆 Dito	ch 🗆 C	anal 🗌 Other	:				
OHWM Width:	OHWM Indicat (check all that apply	tor: /)	⊠ Clear lir	ne 🗆 Shelvin	g	□Wrested	□S	couring [Water
<u> </u>						vegetation	_		stanning
	⊠Bent, n vegetatio	natted, or missin n	ig ⊡Wrack li	ne Ditter ar debris	nd	□Abrupt plan community ch	t ange	Soil character	istic change
Width of Waterbody - T	op of Width o	of Waterbody -	Toe of Slope	Width of Waterb	ody - W	ater Edge to	Depth of	Water:	
Bank to Top of Bank:	to Toe	of Slope:		Water Edge:			(Approx.)		
<u>_10_</u> ft.	-	<u>1_</u> ft.			<u>1</u> ft.		N/A□	<u>0.2</u> ft	
Sinuosity:	Water	velocity:		Bank height			Bank slo	pe	
(check one)	(Approx.)	•		Right:				Right:	
		<u>0.5</u> fps	3	Left:	<u>3</u> ft.			<u>50</u> c Left:	legrees
	ng N/A□				_ <u>4_</u> ft.			<u>50</u> c	legrees
Qualitative Attribu	tes								
Water Appearance: (check one)	No water	Clear 🗆 Turb	oid □Sh or	neen ⊡Sui i surface sci	rface um	□Algal [mats	□Other:		
Substrate:	Bedrock 🗆 Bo	ulder 🗆 Cobb	ole 🛛 Grav	el 🛛 Sand 🛛	⊠ Silt/ c	lay 🗆 Organic	□ Otł	ner:	
(check all that apply) % of Substrate:	% %	0/2	5 %	20 %	75 %	0/2		%	
	%%	/0	%	<u></u> ,,	<u>10</u> /0	/0			
Width of Riparian Zone	: Vegetative (check all that	e Layers: apply)	⊠ Trees	:	⊠ Saplir	nas/Shrubs:	⊠⊦	Herbs	
<u>ft</u> .		of Dominants:	<u>8</u> in.	_	<u>2</u> in.	0			
Dominant Bank Vegeta	tion (list):								
White Oak, Chestnu	it Oak, Red Ma	aple, America	an Hornbea	m					
Aquatic Habitats (ex: su	bmerged or emerged	d aquatic vegetatio	n, overhanging	banks/roots, leaf pac	ks, large	submerged wood	, riffles, de	ep pools):	
None									
Aquatic Organisms Ob	served (list):								
None									
T&E Species Observed	(list):								
None									
Disturbances (ex: livesto	ock access, manure i	n waterbody, waste	e discharge pipe	es):					
None									
Tributary is: (check one)	⊠ Natural	□ Ar	tificial, man-m	ade 🗆 Manip	ulated				
Stream Quality ^a : (check one)	□ High	⊠ Mo	oderate	□ Low					

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Stream located in a drainage way

saua429 previously name sauc009




Waterbody SAUA429 facing north upstream



Waterbody SAUA429 facing south downstream



Waterbody SAUA429 facing east across

Survey Description	n								
Project Name:		Waterbody Na	ne:		w	aterbody ID:		Date:	
Atlantic Coast Pipel	ine	UNT to Jenn	ings Branc	h	S	AUA421		9/20/2016	
State:	County:		Company:		Crew I	Member Initials:	: Ph	iotos:	
Virginia	Augusta		NRG		CR, S	SA	SA	AUA421_001-003	
Tract Number(s):	- -		Nearest Mile	epost:		Associated W	etland ID)(s):	
07-001			122.45			None			
Survey Type: (check one)	Centerline	e □Re-F	Route	□ Access Road		□Other:			
Physical Attributes	S								
Stream Classification: (check one)	Ephemera	al 🛛 🖾 Inter	mittent	Perennial					
Waterbody Type:									
(check one)	River Str	eam 🗆 Dito	h □ Ca	anal 🗌 Other:	:				
OHWM	OHWM Indica	tor:							
<u>3 ft.</u>	(oncon an mar app)	<i>''</i>	on bank		g			staining	
Height:	⊟Bent, n	natted, or missin	g ⊡Wrack li	ne 🗆 Litter ar	nd	□Abrupt plant	t 🗆	Soil characteristic change	
ft. N/A□	vegetatio	n	•	debris		community ch	ange	Ū.	
Width of Waterbody - T	op of Width	of Waterbody -	Toe of Slope	Width of Waterbo	ody - W	ater Edge to	Depth of	Water:	
Bank to Top of Bank:	to loe	of Slope:		water Edge:			(Αρριοχ.)	<i>"</i>	
<u>_15_ft</u> .	-	<u>1</u> ft.			<u>2</u> ft.		N/A□	<u>0.3</u> ft.	
Sinuosity:	Water	velocity:		Bank height		i	Bank slo	pe	
(check one)	(Approx.)			Right:				Right:	
		<u>_0.5</u> fps		Left:	<u>4_</u> ft.			<u>50</u> degrees	
Meanderir	ng N/A□				<u>3_</u> ft.			<u>30</u> degrees	
Qualitative Attribu	tes								
Water Appearance: (check one)	No water ⊠0	Clear 🗆 Turb	id □Sh on	neen ⊡Sui i surface scu	rface um	□Algal [mats	□Other:		
Substrate:	Bedrock 🗆 Bo	ulder 🗆 Cobb	le 🛛 Grave	el 🛛 Sand 🛛	□ Silt/ c	lay 🗆 Organic	□ Oth	ner:	
(check all that apply) % of Substrate:	%	%	<u>% 30</u> %	_70_%		_%%		%	
Width of Riparian Zone	e: Vegetative	Eavers:							
	(check all that	apply)	□ Trees	: 🛛 🛛	⊠ Saplir	ngs/Shrubs:	\boxtimes H	lerbs	
<u>π</u> . N/A⊠	Avg. DBн (approx.)	of Dominants:	<u>_14_</u> in.	-	<u>2</u> in.				
Dominant Bank Vegeta	tion (list):								
White pine, mounta	in laurel, comm	non smilax, de	ogwood, sp	bhagnum					
Aquatic Habitats (ex: su	ubmerged or emerged	d aquatic vegetatio	n, overhanging	banks/roots, leaf pac	ks, large	submerged wood,	, riffles, de	ep pools):	
Leaf packs									
Aquatic Organisms Ob	served (list):								
None									
T&E Species Observed	l (list):								
None									
Disturbances (ex: livesto	ock access, manure i	n waterbody, waste	e discharge pipe	es):					
None									
Tributary is: (check one)	⊠ Natural	□ Ar	ificial, man-m	ade 🗆 Manipu	ulated				
Stream Quality ^a : (check one)	⊠ High		oderate	□ Low					

SAUA421

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Stream loses bed in some sections when the stream goes underground

saua421 previously named sauc010





Waterbody SAUA421 facing northeast upstream



Waterbody SAUA421 facing southwest downstream



Waterbody SAUA421 facing east across

Survey Description	on							
Project Name:		Waterbody Na	me:		w	aterbody ID:		Date:
Atlantic Coast Pipe	eline	UNT to Jenr	ings Branc	h	S	AUA422		9/20/2016
State:	County:		Company:		Crew M	Nember	Р	hotos:
Virginia	Augusta		ERM		Initials	: GB, AS	S	AUA422_001-003
Tract Number(s):			Nearest Mile	epost:		Associated W	etland II	D(s):
07-001			118.1			None		
Survey Type: (check one)	⊠Centerline	e □Re-l	Route	□ Access Road	1	□Other:		
Physical Attribute	es							
Stream Classification (check one)	: □Ephemera	al 🗆 Inter	rmittent	⊠Perennial				
Waterbody Type:								
(check one)	□River ⊠ Str	ream 🗌 Dite	ch 🗆 C	anal 🛛 Other	:			
ОНWM	OHWM Indica	tor:						
Width: _ <u>4_ft</u> .	(check all that appl	<i>y)</i>	⊠ Clear lir on bank	ne ⊡Shelvin	g	☐Wrested vegetation		Scouring DWater staining
Height:	⊟Bent, r	natted, or missir	ig ⊡Wrack li	ne 🗆 Litter ar	nd	□Abrupt plan	t [☐Soil characteristic change
<u>0.8</u> ft. N/A□	vegetatio	n	-	debris		community ch	ange	-
Width of Waterbody - Bank to Top of Bank:	Top of Width	of Waterbody - of Slope:	Toe of Slope	Width of Waterb Water Edge:	ody - W	ater Edge to	Depth o (Approx.)	f Water:
45.8		0. 6		g	0.5			05 ft
<u>15</u> π.		<u>2</u> π.		N/A□	<u>_3 ft</u> .		N/A□	<u></u> n.
Sinuosity:	Water	velocity:		Bank height			Bank sl	оре
(check one)	(Approx.)			Right:	o 4			Right:
		<u>_1_</u> fps		Left:	<u>3</u> π.			<u>30</u> degrees
Meander	ring N/A 🗆				<u>4</u> ft.			<u>70</u> degrees
Qualitative Attrib	utes							
Water Appearance: (check one)	□No water ⊠0	Clear 🗆 Turk	oid □Sh or	neen ⊡Su i surface sci	rface um	□Algal [mats	□Other:	
Substrate:	Bedrock 🛛 Bo	oulder 🛛 Cobb	ole 🛛 Grav	el 🛛 Sand 🛛	□ Silt/ c	lay 🗆 Organic	□ Ot	her:
(check all that apply) % of Substrate:	<u>5</u> %	<u>% 20</u> %	<u> 55 </u> %	<u>20</u> %		_%%		%
Width of Riparian Zor	ne: Vegetative	e Lavers:						
	(check all that	t apply)	☑ Trees	: 2	🛛 Saplin	ngs/Shrubs:	\boxtimes	Herbs
<u>10 ft</u> - N/A□	Avg. DBH (approx.)	of Dominants:	<u>_12_</u> in.	-	<u>2</u> in.			
Dominant Bank Vege	tation (list):							
White pine, mount	ain laurel, chest	nut oak, scar	let oak, low	/bush blueberry	y, past	ure rose		
Aquatic Habitats (ex:	submerged or emerge	d aquatic vegetatic	n, overhanging	banks/roots, leaf pac	ks, large	submerged wood,	, riffles, de	eep pools):
Leaf packs, downe	ed logs, overhar	nging roots						
Aquatic Organisms O	bserved (list):							
None								
T&E Species Observe	ed (list):							
None								
Disturbances (ex: lives	stock access, manure i	in waterbody, wast	e discharge pipe	es):				
None								
Tributary is: (check one)	⊠ Natural	□ Ar	tificial, man-m	ade 🗆 Manip	ulated			
Stream Quality ^a : (check one)	⊠ High		oderate	□ Low				

Waterbody ID: SAUA422

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

saua422 previously named sauc011





Waterbody SAUA422 facing east upstream



Waterbody SAUA422 facing west downstream



Waterbody SAUA422 facing south across

Survey Description	n								
Project Name:		Waterbody Na	me:		W	/aterbody ID:		Date:	
Atlantic Coast Pipel	ine	UNT to Jenn	nings Branc	h	S.	AUA423		9/20/2	016
State:	County:		Company:		Crew I	Member	P	hotos:	
Virginia	Augusta		ERM		Initials	s: GB, AS	S	AUA423_00	01-003
Tract Number(s):			Nearest		•	Associated We	etland II	D(s):	
07-001			Milepost: 12	23.0		None			
Survey Type: (check one)	⊠Centerline	e □Re-l	Route	□Access Road		□Other:			
Physical Attribute	s								
Stream Classification: (check one)	[™] Ephemera	al 🛛 Inter	rmittent	□Perennial					
Waterbody Type:									
(check one)	River ⊠ Str	ream 🗆 Dito	ch 🗆 C	anal 🗌 Other:					
OHWM Width:	OHWM Indica (check all that appl	tor:	🛛 Clear lir	ne ∏Shelvin	a	□Wrested		Scourina	□Water
<u>3 ft</u> .			on bank		5	vegetation		,	staining
Height:	□Bent, r	matted, or missin	ng ⊡Wrack li	ne 🗆 Litter ar	nd	□Abrupt plant		☐Soil character	ristic change
π. N/A□	vegetatio	n		debris		community cha	ange		
Width of Waterbody - T Bank to Top of Bank:	op of Width	of Waterbody -	Toe of Slope	Width of Waterbo	ody - W	ater Edge to	Depth o Approx.)	f Water:	
	10 100	of Slope.		Water Euge.		,	<i>)</i>	0.2 f	+
<u>_8 π</u> .	-	<u>1_</u> ft.		N/A□	<u>2</u> ft.	1	I/A□	0.21	ι.
Sinuosity:	Water	velocity:		Bank height		E	Bank slo	оре	
□Straight	(Approx.)	0.0 6	_	Right:	3 ft			Right:	degrees
		<u>_0.3</u> ips	5	Left:	<u> </u>			Left:	
					<u>5</u> ft.			<u>_60</u> _0	degrees
Qualitative Attribu	tes								
(check one)	No water ⊠0	Clear 🗆 Turk	oid ⊡Sh or	neen ⊡Sui n surface scu	rface um	□Algal □ mats	Other:		
Substrate:	Bedrock 🛛 Bo	oulder 🗆 Cobb	ole 🗆 Grav	el 🛛 Sand 🛛	⊠ Silt/ c	ay 🗆 Organic	□ Ot	ther:	
(check all that apply) % of Substrate:	% 10 %	%	% 0 %	20 %	70 %	%		%	
Width of Piparian Zone	v: Vegetative	a Lavore:							
	(check all that	t apply)	⊠ Trees	: 🛛	⊴ Saplir	ngs/Shrubs:	\boxtimes	Herbs	
<u>ft</u> . N/A⊠	Avg. DBH (approx.)	of Dominants:	<u>_22_</u> in.	-	<u>2</u> in.				
Dominant Bank Vegeta	ition (list):								
Red oak, post oak,	blackberry, rec	l maple, com	mon blue v	iolet					
Aquatic Habitats (ex: su	ubmerged or emerge	d aquatic vegetatio	on, overhanging	banks/roots, leaf pac	ks, large	submerged wood,	riffles, de	eep pools):	
Leaf packs									
Aquatic Organisms Ob	served (list):								
None									
T&E Species Observed	(list):								
None									
Disturbances (ex: livesto	ock access, manure i	in waterbody, waste	e discharge pipe	es):					
None									
Tributary is: (check one)	⊠ Natural	□ Ar	tificial, man-m	ade 🗌 🗆 Manipi	ulated				
Stream Quality ^a : (check one)	⊠ High		oderate	□ Low					

Waterbody ID: SAUA423

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Stream loses bed in some sections when the stream goes underground

saua423 was previously named sauc012





Waterbody SAUA423 facing southeast upstream



Waterbody SAUA423 facing northwest downstream



Waterbody SAUA423 facing southwest across

Linear Waterbody	Data Sheet							
Survey Description								
Project Name:		Waterbody Nar	ne:		w	aterbody ID:		Date:
Atlantic Coast Pipeline	9	UNT to Back	c Creek		sa	aua072		1/14/2016
State: Co	ounty:		Company:		Crew N	lember Initials:	Phot	tos:
Virginia A	ugusta		NRG		GB, S	A	3 p	hotos
Tract Number(s):			Nearest Mile	epost:		Associated We	etland ID(s	5):
07-001.AR1 Survey Type:			154.2			none		
(check one)	⊠Centerline	□Re-F	Route	□ Access Road		□Other:		
Physical Attributes								
Stream Classification:								
Waterbody Type:	□Epnemera	i Ainter	mittent					
(check one)	ver 🛛 Stre	eam 🗆 Ditc	h 🗆 Ca	anal 🛛 Other:				
OHWM Width:	OHWM Indicat (check all that apply	tor:	🗆 Clear lin		-	□Wrested	Sco	uring 🗆 Water
<u>3.0</u> ft.		,	on bank		9	vegetation		staining
Height: ft.	□Bent, n vegetatio	natted, or missing	g	ne ⊠Litter an debris	ıd	□Abrupt plant community ch	t ⊡S ange	oil characteristic change
N/A								N - 4
Bank to Top of Bank:	to Toe	of Waterbody - 1 of Slope:	foe of Slope	Width of Waterbo	ody - W	ater Edge to	Deptn of W (Approx.)	vater:
10.0.ft		25 ft			20 ft			0.20 ft.
<u></u> n.	-	<u></u> n.		N/A□	<u>2.0</u> _n.	1	N/A□	
Sinuosity:	Water	/elocity:		Bank height			Bank slope	e
⊠Straight	(1)	0.25 for		Right:	20 ft		R	Right: 65 degrees
Maandaring		_ <u>0.25</u> _ips	5	Left:	<u></u>			Left:
Analysis of Bank Stability		on Dotontial (i a			<u>2.5_</u> π.		-)-	<u>50</u> degrees
No bank instability ob	served, bank	s not well dev	veloped in	certain areas.	insuale		5).	
Analysis of Above Bank S Slopes are variable, ra	steep Slope Sta anging from (bility: aentle to mod	lerate (10-3	30%): no signs	of inst	ability observ	ved.	
	00	5	,	<i>,,</i> 0		,		
Qualitative Attribute	s							
Water Appearance:	•							
(check one)	o water ⊠C	Clear	id □She	een on surface	Surfac	e scum □A	lgal mats	□Other:
Water Quality: Total Dissolved Solids (TDS	5): <u>10.0 mg</u> /L	Turbidity: 1.9	<u>7 NTU</u>	Nitrogen: 0.00 m	ig/L	Phosphorous	s: <u>0.02</u> mg	g/L
Conductivity 11.2 US/om	Tomporatu	urou 9 21 °C		$\sum_{i=1}^{n} \frac{1}{2}$	- 0 ma/l	nU+ 6 15		
Last Rain Event:	remperato	lie. <u>0.31</u> 0	DISSOIVEU	0xygen (D.O). <u>10.2</u>	<u>.9_</u> mg/L	pri0.15_	-	
(check one) 🛛 🖾 🕻	Over 48 hours a	go 🗆 Within	Last 48 hours	G Within Last 24	4 hours	□ Currently ra	aining	
Width of Riparian Zone:	Vegetative	Layers:		_				
ft.	(check all that Avg. DBH	of Dominants:	⊠ Trees	: 🗵	Saplin	igs/Shrubs:	⊠ He	rbs
N/A⊠	(approx.)		<u>_10.0</u> II		<u>1.0</u> 111.			
Dominant Bank Vegetatio	n (list):							
Yellow popular, chesti Christmas fern	hut oak, blac	k cherry, nort	hern red o	ak, dogwood, n	nounta	ain laurel, huo	ckleberry	y, greenbrier,
Aquatic Habitats (ex: subm	erged or emerged	l aquatic vegetation	n, overhanging	banks/roots, leaf pack	ks, large	submerged wood,	riffles, deep	pools):
Leaf packs, small poo	ols, woody de	ebris						
Aquatic Organisms Obser	rved (list):							
none	ct):							
none	31/.							
Disturbances (ex: livestock	access, manure ir	n waterbody, waste	discharge pipe	es):				
None apparent		,,	5- F F					
Tributary is:								
(check one)	⊠ Natural	□ Art	ificial, man-m	ade 🗌 Manipu	ulated			

Form Rev. 07/09/2014

Waterbody ID: saua072 High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man. Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man. Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man. Stream Quality ^a: (check one) 🛛 High □ Moderate □ Low Notes: Stream begins at small head cut within a draw near centerline where subterranean flow comes to surface, downstream continues out of corridor, flow is subterranean in places along mapped course. Waterbody Sketch (Include porth arrow, centerline, distance from centerline, data point location, survey boundary, and IDs of associated features) ALLADY P



Waterbody SAUA072 facing south upstream



Waterbody SAUA072 facing north downstream



Waterbody SAUA072 facing east across

Survey Description	on							
Project Name:		Waterbody Na	me:		W	aterbody ID:		Date:
Atlantic Coast Pipe	eline	UNT to Back	Creek		S	aua434		9/24/2016
State:	County:		Company:		Crew M	Nember	Photos	:
Virginia	Augusta		ERM		Initials	: GB, AS	1-3	
Tract Number(s):			Nearest Mile	epost:		Associated Wet	tland ID(s):	
07-001.AR			155.45			None		
Survey Type: (check one)	⊠Centerline	e □Re-l	Route	□Access Road	1	□Other:		
Physical Attribute	es							
Stream Classification (check one)	Ephemera	al 🛛 Inter	mittent	X Perennial				
Waterbody Type:								
(check one)	□River ⊠ Str	eam 🗆 Dite	ch □C	anal 🛛 🗆 Other	:			
ОНWM	OHWM Indica	tor:						
Width: <u>8</u> ft.	(check all that apply	/)	⊠ Clear lir on bank	ne ⊡Shelvin	g	☐Wrested vegetation	⊠Scouri	ng ⊡Water staining
Height:	□Bent, r	natted, or missir	ig ⊠Wrack li	ne 🛛 Litter a	nd	□Abrupt plant	□Soil	characteristic change
_ <u>1_</u> ft. N/A□	vegetatio	n	-	debris		community char	nge	-
Width of Waterbody - Bank to Top of Bank:	Top of Width	of Waterbody -	Toe of Slope	Width of Waterb	ody - W	ater Edge to D	epth of Wat	er:
Bank to rop of Bank.	10 100	of Slope.		Water Luge.		(* .	pprom	0 F (1
<u>12_</u> ft.	-	<u>2_</u> ft.		N/A 🗆	<u>5</u> ft.	N	/A□	<u>_0.5_</u> π.
Sinuosity:	Water	velocity:		Bank height		В	ank slope	
(check one)	(Approx.)			Right:			Rigi	nt:
		<u>0.2</u> fps	6	l eft [.]	<u>5</u> ft.		٩١	<u>90</u> degrees
⊠Meander	ring N/A 🗆			Lon.	<u>2</u> ft.		20	60_degrees
Qualitative Attrib	utes							
Water Appearance: (check one)	\Box No water \boxtimes (Clear □Turt	oid ⊡Sh	neen 🗆 Su	rface	□Algal □	Other:	
Substrato:		ulder 🛛 Cobl		el 🛛 Sand I	um Silt/c		□ Other:	
(check all that apply)								
% of Substrate:	<u> % 5%</u>	<u>40_</u> %	<u>35_%</u>	<u> 10 </u> %	5 %	<u> 5 </u> %	%	
Width of Riparian Zor	e: Vegetative	e Layers:	⊠ Т == ==		Carlin		⊠ Llasha	
50 ft-	Avg. DBH	of Dominants:	□ Trees	. 6	⊠ Sapiir 2 in	igs/Shrubs:	⊠ Herbs	
N/A 🗆	(approx.)		<u>_1∠_</u>	-	<u> </u>			
Red oak, witch haz	tation (<i>list)</i> : zel, tulip-tree, fa	lsenettle, Jap	anese stilt	grass				
Aquatic Habitats (ex:	submerged or emerged	d aquatic vegetatic	n, overhanging	banks/roots, leaf pac	ks, large	submerged wood, r	iffles, deep po	ols):
Leaf Packs, overh	anging banks/rc	ots, downed	coarse wo	ody debris, poc	ols			
Aquatic Organisms O	bserved (list):							
Crayfish, minnows	, frogs, caddisfly	/ larvae, ston	efly nymph	IS				
T&E Species Observe	ed (list):							
None								
Disturbances (ex: lives	stock access, manure i	n waterbody, wast	e discharge pip	es):				
None								
Tributary is: (check one)	⊠ Natural	□ Ar	tificial, man-m	nade 🗆 Manip	ulated			
Stream Quality ^a : (check one)	🗶 High	⊠ Mo	oderate	□ Low				

Saua434

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Intermittent stream mapped on NHD. Stream is strongly intermittent with deep pools with minnows in them. Fringe wetland present for part of the stream.

saua434 was previously named sauc104





Waterbody SAUA434 facing northeast upstream



Waterbody SAUA434 facing southwest downstream



Waterbody SAUA434 facing northwest across

Linear W	aterbody	Data Shee	t						
Survey De	escription								
Project Nam	ne:		Waterbody Na	ne:		W	Vaterbody ID:		Date:
Atlantic Co	past Pipeline	9	UNT to Back	Creek		S	aua071		1/12/2016
State:	Co	ounty:		Company:		Crew I	Member Initials:	Photos	:
Virginia	Αι	ugusta		NRG		GB, S	SA	3 pho	tos
Tract Numb	er(s):			Nearest Mile	epost:		Associated Wet	land ID(s):	
07-001.AF	<u> </u>			154.5			none		
(check one)	J.	Centerline	e □Re-F	Route	□ Access Road		□Other:		
Physical A	Attributes								
(check one)	sincation:	Ephemer	al 🛛 Inter	mittent	□Perennial				
Waterbody (check one)	Type: □Ri'	ver 🖂 Sti	ream 🗆 Dito	:h □ Ca	anal 🗆 Other:				
онум		OHWM Indica	itor:						
Width:	<u>3.0</u> ft.	(check all that appl	y)	☑ Clear lin on bank	ne 🗆 Shelving	9	□Wrested vegetation	⊠Scourir	ng ⊡Water staining
Height:	<u>0.75</u> ft.	□Bent, i vegetatio	matted, or missin	g	ne ⊠Litter ar debris	nd	□Abrupt plant community cha	⊡Soil o nge	characteristic change
Width of Wa	aterbody - Top	of Width	of Waterbody -	Toe of Slope	Width of Waterbo	ody - W	ater Edge to	epth of Wate	ər:
вапк то тор	of Bank:	to loe	of Slope:		water Edge:		(A	ρριοχ.)	0. 40. <i>E</i>
	<u>10.0</u> ft.	-	<u>2.0</u> ft.		N/A□	<u>2.5_</u> ft.	N	/A□	<u>_0.40_</u> ft.
Sinuosity:		Water	velocity:		Bank height		В	ank slope	
(check one)	□Straight	(Approx.)	,		Right:	60 4		Righ	t: 75. dogrado
			<u>_1.0_</u> fps	;	Left:	<u>0.0_</u> II.	-	Let	ft:
	Meandering	N/A□				<u>4.5_</u> ft.	-		45 degrees
Banks app	bear stable,	little expose	d roots or soil	, litter laye	r nearly continu	IOUS	e characteristics):	
Analysis of Slopes ab	Above Bank S ove banks a	teep Slope Sta ppear stable	ability: e, gentle to m	oderate (10	0-25%)				
Qualitativ	e Attribute	S							
Water Appe	arance:	-							
(check one)	□No	water 🛛	Clear 🗆 Turb	id □She	en on surface	Surfac	ce scum 🗆 Alg	gal mats 🗌	Other:
Water Qualit Total Dissolv	t y: ed Solids (TDS): <u>9.0</u> mg/L	Turbidity: 0.32	NTU I	Nitrogen: <u>0.0</u> mg/	L	Phosphorous: 0	<u>.03_</u> mg/L	
Conductivity	: <u>8.6_</u> µS/cm	Temperatu	re: <u>5.65</u> °C	Dissolved O	xygen (D.O) <u>: 11.4</u>	_mg/L	pH: <u>6.91</u>		
Last Rain E (check one)	vent:	Over 48 hours a	ago 🗆 Within	Last 48 hours	G □ Within Last 24	4 hours	G Currently ra	ining	
Width of Rip	oarian Zone:	Vegetativ	e Layers: t apply)	⊠ Trees	· .	3 Sapli	nas/Shrubs	🛛 Herbs	
3	<u>0 ft</u> .	Avg. DBH	of Dominants:	<u>_10.0_</u> ii	n	<u>0.75</u> i	in.		
N/A∐ Dominant B	ank Vegetatio	(approx.)							
White oak	, red oak, ch	nestnut oak,	sweet birch, o	dogwood, r	nountain laurel	, Chri	stmas fern		
Aquatic Hat	bitats (ex: subm	erged or emerge	d aquatic vegetatio	n, overhanging	banks/roots, leaf pacl	ks, large	e submerged wood, r	iffles, deep poo	bls):
Small poo	ls, leaf pack	S							
Aquatic Org	janisms Obsei	rved (list):							
invertebra	tes								
T&E Specie	s Observed (li	st):							
none	/								
Disturbance	es (ex: livestock	access, manure	in waterbody, waste	e discharge pipe	es):				
Tributary is:	arent								
(check one)		☑ Natural	🗆 Art	ificial, man-m	ade 🗆 Manipu	ulated			

				Waterbody ID:
				saua071
^a High Quality: Natura roots; water color is disturbance by livesto	I channel, natural ve clear to tea-colored; ck or man.	getation extends at least or no barriers to fish movem	e or two active channel widths c ent; many fish cover types avail	on each side; banks stable and protected by able; diverse and stable aquatic habitat; no
Moderate Quality: A function or riparian ve greenish film; modera	Itered channel evide egetation only moder te odor; minor barrier	nced by rip-rap; natural ve ately compromised; banks s to fish movement; fair aqu	getation extends 1/3-1/2 of the moderately unstable; water color atic habitat; minimum disturbance	active channel width on each side; filtering is cloudy, submerged objects covered with by livestock or man.
Low Quality: Channe channel width on eac turbid; obvious polluta severe disturbance fro	el is actively down co ch side; lack of rege ants (algal mats, sur om livestock or man.	utting or widening; rip rap neration; filtering function s face scum, surface sheen)	and channelization excessive; na severely compromised; banks ur ; heavy odor; severe barriers to	atural vegetation less than 1/3 of the active stable (eroding); water color is muddy and fish movement; little to no aquatic habitat;
Stream Quality ^a : (check one)	⊠ High	□ Moderate	□ Low	
Notes:				
Upstream continues becomes subterrane	s out of corridor, an.	loses bed/bank/OHV	/M near western edge of	corridor in a rocky flat where flow
Waterbody Sketch	B	, centerline, distance from	centerline, data point location, sur	vey boundary, and IDs of associated features)
200			S A UA	071
	F b Sh	ELOW BOOMTES btckran		



Waterbody SAUA071 facing east upstream



Waterbody SAUA071 facing west downstream



Waterbody SAUA071 facing north across

Survey Descriptio	n								
Project Name:		Waterbody N	ame:		W	aterbody ID:		[Date:
Atlantic Coast Pipel	ine	UNT to Bad	ck Creek		S	aua433		C,)/24/2016
State:	County:		Company:		Crew I	Member	F	Photos:	
Virginia	Augusta		NRG		Initials	: GB, AS		1-3	
Tract Number(s):			Nearest			Associated W	etland	ID(s):	
07-001.AR			Milepost: 1	20.2		None			
Survey Type: (check one)	⊠Centerlin	ne ⊡R€	e-Route	□Access Road		□Other:			
Physical Attribute	s								
Stream Classification: (check one)	Epheme	ral ⊠Int	ermittent	□Perennial					
Waterbody Type: (check one)]River ⊠ St	tream 🗆 D	itch 🗆 C	anal 🗆 Other	:				
		-4							
Width: 10 ft.	(check all that app	ator: bly)	⊠ Clear li on bank	ne 🗆 Shelvin	g	□Wrested vegetation		Scouring	□Water staining
Height:	□Bent,	matted, or miss	sing ⊠Wrack I	ine 🛛 Litter ar	nd	 □Abrupt plan	t	□Soil ch	aracteristic change
ft. N/A□	vegetati	on	C C	debris		community ch	ange		C C
Width of Waterbody - 1 Bank to Top of Bank:	op of Width	of Waterbody	- Toe of Slope	Width of Waterbo	ody - W	ater Edge to	Depth (Approx.)	of Water:	
Bank to Top of Bank.		e of Slope.		Water Luge.			(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		<i>c</i> +
<u>14ft</u> .		<u>2</u> ft.		N/A⊠	<u>ft</u> .		N/A⊠		n.
Sinuosity:	Water	velocity:		Bank height			Bank s	lope	
(check one)	(Approx	<i>:.)</i>		Right:	0 - 0			Right:	70 1
_		fp:	5	Left:	<u>3.5</u> π.			Left:	<u>70</u> degrees
Meanderi	ng N/A⊠			-	<u>3.5_</u> ft.				60 degrees
Qualitative Attribu	tes								
Water Appearance: (check one)	[]] No water ⊠	lClear □Tu	ırbid □SI or	heen ⊡Sui n surface sci	rface um	□Algal [mats	□Other		
Substrate:	Bedrock 🛛 B	oulder 🛛 Co	bble 🛛 Grav	el 🛛 Sand 🛛	□ Silt/ c	lay 🛛 Organic	: 🗆 C	Other:	
(check all that apply) % of Substrate:	<u>% 10_</u> %	% <u>45 %</u>	<u>35 %</u>	5_%		<u>% 5</u> %		%	
Width of Riparian Zone	: Vegetativ	/e Lavers:							
	(check all tha	at apply)	⊠ Trees	s: D	Saplir 🛛	ngs/Shrubs:	\boxtimes	Herbs	
<u>n/a_ft.</u> N/A□	Avg. DBH (approx.)	I of Dominants	<u>12</u> in.	· _	<u>2</u> in.				
Dominant Bank Vegeta	tion (list):								
Red maple, white p	ine, American	beech, ches	stnut oak, re	d oak, Spicebus	sh, cor	mmon green	brier		
Aquatic Habitats (ex: su	ubmerged or emerge	ed aquatic vegeta	tion, overhanging	banks/roots, leaf pac	ks, large	submerged wood	, riffles, o	deep pools):
Leaf Packs, overha	nging banks, o	downed coar	rse woody d	ebris, pools					
Aquatic Organisms Ob	served (list):								
None									
T&E Species Observed	l (list):								
None									
Disturbances (ex: liveste	ock access, manure	in waterbody, wa	ste discharge pip	es):					
None									
Tributary is: (check one)	⊠ Natural		Artificial, man-m	nade 🗆 Manipi	ulated				
Stream Quality ^a : (check one)	□ High		Moderate						

Saua433

а	High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.
	Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.
	Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.
I	Notes:
nt	ermittent stream mapped on NHD
	saua433 was previously named sauc103
1	Naterbody Sketch (Include north arrow, centerline, distance from centerline, data point location, survey boundary, and IDs of associated features)
	/ / / / / / / / / / / / / / / / / / /
	/ ? /
	' SALL '
	1 133
	· /



Waterbody SAUA433 facing southeast upstream



Waterbody SAUA433 facing northwest downstream



Waterbody SAUA433 facing northeast across

Survey Description	า							
Project Name:		Waterbody Na	me:		w	aterbody ID:		Date:
Atlantic Coast Pipel	ine	UNT to Back	Creek		S	aua432		9/24/2016
State:	County:		Company:		Crew I	Vember	Photo	IS:
Virginia	Augusta		ERM		Initials	s: GB, AS	1-3	
Tract Number(s):			Nearest Mile	epost:		Associated We	tland ID(s):	
07-001.AR			155			None		
Survey Type: (check one)	⊠Centerline	e □Re-F	Route	□Access Road		□Other:		
Physical Attributes	6							
Stream Classification: (check one)	⊠Ephemera	al 🖄 Inter	mittent	□Perennial				
Waterbody Type: (check one)	River 🛛 Str	eam 🗆 Dite	ch 🗆 C	anal 🗆 Other				
OHWM Width: 4 ft	OHWM Indica (check all that apply	tor: //	□ Clear lir on bank	ne 🗆 Shelving	g	□Wrested vegetation	□Scou	ring ⊟Water staining
Height:	□Bent, n	natted, or missin	lg	ne ⊠Litter ar	nd	□Abrupt plant	□Soi	il characteristic change
<u> </u>	vegetatio	n		debris		community cna	nge	
Width of Waterbody - T Bank to Top of Bank:	op of Width of Toe	of Waterbody -	Toe of Slope	Width of Waterbo	ody - W	ater Edge to D	epth of Wa	iter:
				Trato: Lugo:	_		,	f 4
<u>10 ft</u> .	-	<u>1_</u> tt.			t	t. N	I/A⊠	1L.
Sinuosity:	Water	velocity:		Bank height		B	ank slope	
(check one)	(Approx.)			Right:	4 - 6		Rig	jht:
_		fi	ps	Left:	<u>1.5</u> π.		L	degrees _eft:
Meanderir	ng N/A⊠				<u>2.5_</u> ft.			<u>70</u> degrees
Qualitative Attribu	tes							
Water Appearance: (check one)	No water	Clear 🗆 Turb	oid ⊡Sh or	neen ⊡Sui i surface sci	face Im	□Algal □ mats	Other:	
Substrate:	Bedrock 🗆 Bo	ulder 🛛 Cobb	ole 🛛 Grav	el 🛛 Sand 🛛	□ Silt/ c	lay 🗆 Organic	□ Other:	
(check all that apply) % of Substrate:	%	_% <u>20</u> %	<u> 70 </u> %	<u> 10 </u> %		_%%	%	6
Width of Riparian Zone	: Vegetative	Lavers:						
	(check all that	apply)	⊠ Trees	: 🛛 🛛	Saplir 🛛	ngs/Shrubs:	🛛 Herb	S
<u>ft</u> . N/A⊠	Avg. DBH (approx.)	of Dominants:	<u>_12_</u> in.	-	<u>2</u> in.			
Dominant Bank Vegeta	tion (list):							
American beech, re	d oak, red map	ole, American	hog peanu	ut, witch hazel,	cucun	nber tree, con	nmon gree	enbrier, hackberry
Aquatic Habitats (ex: su	bmerged or emerged	d aquatic vegetatio	n, overhanging	banks/roots, leaf pac	ks, large	submerged wood,	riffles, deep p	ools):
Leaf Packs								
Aquatic Organisms Ob	served (list):							
None								
T&E Species Observed	(list):							
None								
Disturbances (ex: livesto	ock access, manure i	n waterbody, waste	e discharge pipe	es):				
None								
Tributary is: (check one)	⊠ Natural		tificial, man-m	ade 🗌 Manipi	ulated			
Stream Quality ^a : (check one)	□ High	⊠ Mo	oderate	□ Low				

Saua432

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Channel may be weakly ephemeral. There are a few FACU plants growing in the bed of the channel, numerous fibrous roots, and leaf piles found throughout the stream.

sauc102 previously named saua432



Waterbody SAUA432 facing east upstream



Waterbody SAUA432 facing west downstream



Waterbody SAUA432 facing south across

Survey Description	n							
Project Name:		Waterbody Nar	ne:		W	aterbody ID:		Date:
Atlantic Coast Pipel	ine	UNT to Back	Creek		Sa	aua431		9/24/2016
State:	County:		Company:		Crew N	lember	Photo	5:
Virginia	Augusta		NRG		Initials	: GB, AS	1-3	
Tract Number(s):			Nearest Mile	epost:		Associated W	etland ID(s):	
07-001.AR			155			None		
Survey Type: (check one)	⊠Centerline	e □Re-F	Route	□Access Road		□Other:		
Physical Attributes	S							
Stream Classification: (check one)	Ephemera	al ⊠Inter	mittent	Perennial				
Waterbody Type:	F							
(check one)	River 🛛 Str	eam 🗆 Dito	h 🗆 Ca	anal 🗌 Other:				
ОНWM	OHWM Indica	tor:						
Width:ft.	(check all that apply	()	⊠ Clear lir on bank	ne 🗆 Shelving	g	☐Wrested vegetation	□Scour	ing ⊟Water staining
Height:	□Bent, n	natted, or missin	g ⊡Wrack li	ne 🛛 Litter ar	nd	□Abrupt plan	it ⊡Soil	characteristic change
ft. N/A□	vegetatio	'n		debris		community ch	ange	C C
Width of Waterbody - T Bank to Top of Bank:	op of Width to Toe	of Waterbody - [·] of Slope:	Toe of Slope	Width of Waterbo Water Edge:	ody - W	ater Edge to	Depth of Wat (Approx.)	ter:
8 ft		1 ft			1 ft			0.05 ft.
<u></u> it.	-	<u> </u>		N/A□	<u> </u>		N/A□	
Sinuosity:	Water	velocity:		Bank height			Bank slope	
□Straight	(Approx.)			Right:	о н		Rig	ht:
		<u>_0.2</u> fps		Left:	<u></u> II.		L	eft:
Meanderir	ng N/A□			-	<u>2.5_</u> ft.			_70_degrees
Qualitative Attribu	tes							
(check one)	No water ⊠0	Clear □Turb	id □Sh on	leen ⊡Sur surface scu	face Im	□Algal mats	□Other:	
Substrate:	Bedrock 🗆 Bo	oulder 🛛 Cobb	le 🛛 Grave	el 🛛 Sand 🛛	□ Silt/ cl	lay 🛛 Organic	c 🗆 Other:	
(check all that apply) % of Substrate:	%	_% <u>5</u> %	<u> 70 </u> %	<u> 15 </u> %		<u>% 10</u> %	%	
Width of Riparian Zone	: Vegetative	e Layers:						
n/a ft.	(check all that Avg. DBH	apply) of Dominants:	⊠ Trees	: 🛛 🛛	Saplin	igs/Shrubs:	⊠ Herbs	8
N/A 🗆	(approx.)		<u>_14</u> _111.	-	<u></u>			
Dominant Bank Vegeta	tion (list): beech red or	ak red maple	common	areenbrier sas	safras			
Aquetia Llabitata (,					1.)
Leaf Packs, overha	nging banks	a aquatic vegetation	n, overnanging	banks/roots, leat pac	ks, large	submergea wood	, rimes, deep po	oois):
Aquatic Organisms Ob	served (list):							
Caddisfly larvae, sto	onefly nymph							
T&E Species Observed	(list):							
None								
Disturbances (ex: livesto	ock access, manure i	n waterbody, waste	e discharge pipe	es):				
None								
Tributary is: (check one)	⊠ Natural	nA 🗆	ificial, man-m	ade 🗆 Manipu	ulated			
Stream Quality ^a : (check one)	□ High	⊠ Mc	oderate	□ Low				

Saua431

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Seep fed intermittent stream

saua431 previously named sauc101






Waterbody SAUA431 facing southeast upstream



Waterbody SAUA431 facing northwest downstream



Waterbody SAUA431 facing southwest across

Linear Waterbody Data Sheet

Survey Description	1	I =						
Project Name:		Waterbody Na	me:		Wa	terbody ID:		Date:
Atlantic Coast Pipeli	ne	UNI to Back	Сгеек		Sa	ua430		9/24/2016
State:	County: Augusta		Company:		Crew Member		Ρ	Photos:
Virginia	/irginia Augusta		ERM		Initials:	nitials: GB, AS		1-3
Tract Number(s):			Nearest Mile	epost:		Associated W	etland I	D(s):
07-001.AR; 07-058-	E049		155.1			None		
Survey Type: (check one)	⊠Centerline	e □Re-F	Route	□Access Road		Other:		
Physical Attributes	;							
Stream Classification: (check one)	⊠Ephemera	al 🗆 Inter	mittent	Perennial				
Waterbody Type: (check one)	River 🛛 Str	eam 🗆 Dito	ch 🗆 C	anal 🗌 Other:	:			
OHWM Width: _ <u>4_</u> ft.	OHWM Indica (check all that apply	tor: //	⊠ Clear lir on bank	ne 🗆 Shelving	g	□Wrested vegetation		Scouring □Water staining
Height: ft. N/A□	□Bent, r vegetatio	natted, or missin n	ig	ne ⊠Litter ar debris	nd	□Abrupt plan community ch	it [nange	□Soil characteristic change
Width of Waterbody - To Bank to Top of Bank:	op of Width to Toe	of Waterbody - [·] of Slope:	Toe of Slope	Width of Waterbo Water Edge:	ody - Wa	ter Edge to	Depth o (Approx.)	of Water:
_ <u>8_</u> ft.	-	_1_ft.		N/A⊠	ft.		N/A⊠	ft.
Sinuosity: (^{check one)} ⊡Straight ⊠Meanderin	Water (Approx.) 9 N/A	velocity: fi	ps	Bank height Right: Left:	<u>1.5_</u> ft. 1.5_ft.		Bank sl	ope Right:
Qualitative Attribut	tes							
Water Appearance: (check one)	No water 🛛 🔾	Clear 🗆 Turb	oid □St or	neen ⊡Sur i surface scu	rface um	□Algal mats	□Other:	
Substrate: (check all that apply) % of Substrate:	Bedrock 🗆 Bo	oulder ⊠ Cobb % <u>15_</u> %	ole ⊠ Grav %	el ⊠ Sand [_ <u>10_</u> %	□ Silt/ cla	ay 🗆 Organic %%		ther: %
Width of Riparian Zone ft N/A⊠	: Vegetative (check all that Avg. DBH (approx.)	e Layers: apply) of Dominants:	[⊠] Trees _ <u>12_</u> in.	: 2	⊠ Sapling _2_in.	gs/Shrubs:		Herbs
Dominant Bank Vegeta Tulip-tree, Americar	tion <i>(list)</i> : beech, red oa	ak, red maple	, Japanese	e stiltgrass, Am	erican I	nog peanut		
Aquatic Habitats (ex: su Leaf Packs	bmerged or emerged	d aquatic vegetatio	n, overhanging	banks/roots, leaf pac	ks, large s	ubmerged wood	, riffles, d	leep pools):
Aquatic Organisms Obs None	served (list):							
T&E Species Observed None	(list):							
Disturbances (ex: livesto None	ck access, manure i	n waterbody, waste	e discharge pipe	es):				
Tributary is: (check one)	⊠ Natural		tificial, man-m	ade 🗆 Manipu	ulated			
Stream Quality ^a : (check one)	□ High	⊠ Mo	oderate	□ Low				

Waterbody ID:

saua430

High Quality: Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Channel may be weakly ephemeral. There are a few FACU plants growing in the bed of the channel, numerous fibrous roots, and leaf piles found throughout the stream

saua430 previously named sauc100

Waterbody Sketch (Include north arrow, centerline, distance from centerline, data point location, survey boundary, and IDs of associated features)





Waterbody SAUA430 facing east upstream



Waterbody SAUA430 facing west downstream



Waterbody SAUA430 facing north across