Sroh 010

	# CHARACTERISTICS		ECOREGION POINT RANGE			GGODE	
	<u>л</u>		Coastal	Piedmont	Mountain	SCORE	
	1	Presence of flow / persistent pools in stream (no flow or saturation = 0; strong flow = max points)	0-5	0-4	0 – 5	5	
	2	Evidence of past human alteration (extensive alteration = 0; no alteration = max points)	0-6	0-5	0-5	5	
	3	Riparian zone (no buffer = 0; contiguous, wide buffer = max points)	0 – 6	0-4	0-5	6	
	4	Evidence of nutrient or chemical discharges (extensive discharges = 0; no discharges = max points)	0-5	0-4	0-4	4	
CAL	5	Groundwater discharge (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0-3	0-4	0-4	3	
PHYSICAL	6	Presence of adjacent floodplain (no floodplain = 0; extensive floodplain = max points)	0-4	0-4	0-2	4	
H	7	Entrenchment / floodplain access (deeply entrenched = 0; frequent flooding = max points)	0-5	0-4	0-2	4	
	8	Presence of adjacent wetlands (no wetlands = 0; large adjacent wetlands = max points)	0-6	0-4	0-2	4	
	9	Channel sinuosity (extensive channelization = 0; natural meander = max points)	0 - 5	0-4	0-3	5	
1	10	Sediment input (extensive deposition= 0; little or no sediment = max points)	0-5	0-4	0-4	4	
1	1	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0-4	0 – 5	NA	
	12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0-5	0-4	0-5	\triangleleft	
STABILITY	13	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0-5	0-5	0-5	5	
TAB	14	Root depth and density on banks (no visible roots = 0; dense roots throughout = max points)	0-3	0-4	0-5	3	
	15	Impact by agriculture, livestock, or timber production (substantial impact =0; no evidence = max points)	0-5	0-4	0-5	3	
S22000	6	Presence of riffle-pool/ripple-pool complexes (no riffles/ripples or pools = 0; well-developed = max points)	0-3	0-5	0-6	S	
	17	Habitat complexity (little or no habitat = 0; frequent, varied habitats = max points)	0-6	0-6	0-6	6	
HABITAT	8	Canopy coverage over streambed (no shading vegetation = 0; continuous canopy = max points)	0-5	0-5	0-5	3	
	9	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0-4	0-4	AU	
2,000,000,000,000,000,000,000,000,000,0	20	Presence of stream invertebrates (see page 4) (no evidence = 0; common, numerous types = max points)	0-4	0-5	0-5	Q	
	21	Presence of amphibians (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	4	
	22	Presence of fish (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	4	
	23	Evidence of wildlife use (no evidence = 0; abundant evidence = max points)	0-6	0-5	0-5	6	
		Total Points Possible	100	100	100		
		TOTAL SCORE (also enter on fi	rst page)			89	

.

NC DWQ Stream Identification Form Version 4.11

Date: 5 September 2014	Project/Site:	ACP	Latitude: 34	45 39.527	
Evaluator: DD WEST	County: Rd	reson		9° 05'12936'	
Total Points:	Stream Determ	Stream Determination (circle one) Other 5000			
Stream is at least intermittent if ≥ 19 or perennial if ≥ 30* 36		ermittent Perennial	e.g. Quad Name	: Red Springs, Nr	
			I		
A. Geomorphology (Subtotal = <u>15,5</u>)	Absent	Weak	Moderate	Strong	
1 ^a Continuity of channel bed and bank	0	1	2	<u> </u>	
2. Sinuosity of channel along thalweg	0	1	2	- B	
3. In-channel structure: ex. riffle-pool, step-pool,	0	1	3		
ripple-pool sequence				3	
4. Particle size of stream substrate	0	<u> </u>	2	3	
5. Active/relict floodplain	0	1	2	Ø	
6. Depositional bars or benches	0	1	2	3	
7. Recent alluvial deposits	<u> </u>	1	2	3	
8. Headcuts 9. Grade control	\bigcirc	1	2	3	
	<u>@</u>	0.5	1	1.5	
10. Natural valley	0	0.5	1	1.5	
11. Second or greater order channel ^a artificial ditches are not rated; see discussions in manual	N	0 = 0	<u> </u>	= 3)	
B. Hydrology (Subtotal =)					
12. Presence of Baseflow	0	4			
			2		
13. Iron oxidizing bacteria 14. Leaf litter	0		2	3	
	1.5	O	0.5	0	
15. Sediment on plants or debris 16. Organic debris lines or piles	0	0.5	1	1.5	
17. Soil-based evidence of high water table?	0	0.5	1 Yes	1.5	
C. Biology (Subtotal = $1/5$)		0-0		= 3	
18. Fibrous roots in streambed	3	2	1	0	
19. Rooted upland plants in streambed	3	2	1	0	
20. Macrobenthos (note diversity and abundance)		<u> </u>	2	3	
21. Aquatic Mollusks	0	The last	2	3	
22. Fish	0	0.5	 Ţ	1.5	
23. Crayfish	0	0.5	<u>A</u>	1.5	
24. Amphibians	0	0.5	<u>(</u>)	1.5	
25. Algae	0	0.5	1	1.5	
26. Wetland plants in streambed		FACW = 0.75; OBL	= 1.5 Other = 1		
*perennial streams may also be identified using other methods	. See p. 35 of manu			······································	
Notes: Braided System	······				

Sketch: 4	wroho!	lf-upline	i		
	15 mj				
~ 054 mi ~ 0	· ~ m)				



sroh010 upstream, north



sroh010 downstream, south



sroh010 side, west

U	S/	40	Έ	A	D#_
~	01	10		1 1	ш <i>п</i> .

DWQ #_

	ASSESSMENT WORKSHEET
Provide the following information for the stream reach un	COOQ ider assessment:
1. Applicant's name: Dominion	2. Evaluator's name: Natural Resource Group
3. Date of evaluation: 2/19/2015	4. Time of evaluation: 11:00 AM
5. Name of stream: UT to Richland Soump	6. River basin: Lower Pee Dee
7. Approximate drainage area: ~ 25 acres	8. Stream order:
9. Length of reach evaluated: 100 Fee +	10. County: Robe Son
11. Site coordinates (if known): prefer in decimal degrees. Latitude (ex. 34.872312): 34° 44° 10. 45^{\prime} N	
Method location determined (circle): Topo Sheet Ortho 13. Location of reach under evaluation (note nearby roads and	(Aerial) Photo/GIS Other GIS Other
n/a	
14. Proposed channel work (if any): None	
15. Recent weather conditions: 1. ght Fain previo	ous day
16. Site conditions at time of visit: NOrmal, 1:944	
17. Identify any special waterway classifications known:	NA Section 10 NA Tidal Waters NA Essential Fisheries Habitat
	Nutrient Sensitive Waters \underline{NA} Water Supply Watershed \underline{NA} (I-IV)
18. Is there a pond or lake located upstream of the evaluation	
19. Does channel appear on USGS quad map? YES NO	20. Does channel appear on USDA Soil Survey? YES
21. Estimated watershed land use:% Residential	<u>%</u> Commercial <u>%</u> Industrial <u>50</u> % Agricultural
50_% Forested	% Cleared / Logged% Other ()
22. Bankfull width: 3, 5	Ľ
24. Channel slope down center of stream:Flat (0 to 2%)	Gentle (2 to 4%)Moderate (4 to 10%)Steep (>10%)
25. Channel sinuosity:StraightOccasional bends	Frequent meanderVery sinuousBraided channel
Instructions for completion of worksheet (located on pag location, terrain, vegetation, stream classification, etc. Every to each characteristic within the range shown for the eco characteristics identified in the worksheet. Scores should re characteristic cannot be evaluated due to site or weather con comment section. Where there are obvious changes in the ch into a forest), the stream may be divided into smaller reaches	(e 2): Begin by determining the most appropriate ecoregion based on characteristic must be scored using the same ecoregion. Assign points region. Page 3 provides a brief description of how to review the flect an overall assessment of the stream reach under evaluation. If a nditions, enter 0 in the scoring box and provide an explanation in the naracter of a stream under review (e.g., the stream flows from a pasture that display more continuity, and a separate form used to evaluate each e between 0 and 100, with a score of 100 representing a stream of the
Total Score (from reverse): 40 Comme HIROJA CULVERT ANG RECSEVES Agricultural Freiz	nts: Stream runs under road some inputs from the netroy
Evaluator's Signature Cole Reafer	Date 2-19-15

This channel evaluation form is intended to be used only as a guide to assist landowners and environmental professionals in gathering the data required by the United States Army Corps of Engineers to make a preliminary assessment of stream quality. The total score resulting from the completion of this form is subject to USACE approval and does not imply a particular mitigation ratio or requirement. Form subject to change – version 06/03. To Comment, please call 919-876-8441 x 26.

#.	CHARACTERISTICS	ECOREC Coastal	TON POINT Piedmont	RANGE Mountain	SCORE
1	Presence of flow / persistent pools in stream				2
1	(no flow or saturation = 0; strong flow = max points)	0-5	0-4	0 – 5	a
2	Evidence of past human alteration	0-6	0-5	0-5	2
	(extensive alteration = 0; no alteration = max points) Riparian zone				
3.	(no buffer = 0; contiguous, wide buffer = max points)	0-6	0-4	0-5	2
4	Evidence of nutrient or chemical discharges	0-5	0-4	0-4	3
	(extensive discharges = 0; no discharges = max points) Groundwater discharge			• ·	<u>ر</u>
5	(no discharge = 0; springs, seeps, wetlands, etc. = max points)	0-3	0-4	0-4	ŀ
6	Presence of adjacent floodplain	0-4	0-4	0-2	1
	(no floodplain = 0; extensive floodplain = max points) Entrenchment / floodplain access	1.00		<u> </u>	
7	(deeply entrenched = 0; frequent flooding = max points)	0-5	0-4	0-2	
8	Presence of adjacent wetlands	0-6	0-4	0-2	~
	(no wetlands = 0; large adjacent wetlands = max points) Channel sinuosity				
9	(extensive channelization = 0; natural meander = max points)	0 - 5	0-4	0 – 3	1
10	Sediment input	0-5	0-4	0-4	3
	(extensive deposition= 0; little or no sediment = max points) Size & diversity of channel bed substrate			0-4	<u> </u>
11	(fine, homogenous = 0; large, diverse sizes = max points)	NA*	0-4	0-5	NA
12	Evidence of channel incision or widening	0-5	0-4	0-5	4
<u> </u>	(deeply incised = 0; stable bed & banks = max points)	0-5	0-4	0-5	
13	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0-5	0 – 5	0-5	5
14	Root depth and density on banks	0-3	0-4	0-5	3
	(no visible roots = 0; dense roots throughout = max points)	0-3	0-4	<u> </u>	
15	Impact by agriculture, livestock, or timber production (substantial impact =0; no evidence = max points)	0-5	0-4	0 – 5	3
16	Presence of riffle-pool/ripple-pool complexes	0-3	0-5	0-6	1
<u> </u>	(no riffles/ripples or pools = 0; well-developed = max points)	0-5	0-5	0-0	
17	Habitat complexity (little or no habitat = 0; frequent, varied habitats = max points)	0-6	0-6	0-6	2
18	Canopy coverage over streambed	0-5	0-5	0-5	4
	(no shading vegetation = 0; continuous canopy = max points)	0-5	0-5	0-5	
19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0-4	0-4	NA
20	Presence of stream invertebrates (see page 4)	0-4	0 - 5	0-5	Õ
	(no evidence = 0; common, numerous types = max points)	0-4	. 0-5		
21	Presence of amphibians (no evidence = 0; common, numerous types = max points)	0 - 4	0-4	0-4	0
22	Presence of fish	0-4	0-4	0 4	\sim
	(no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	0
23	Evidence of wildlife use (no evidence = 0; abundant evidence = max points)	0-6	0-5	0-5	て
	Total Points Possible	100	100	100	
	TOTALE UNITS POSSIBLE	100	100	100	
	TOTAL SCORE (also enter on fi	rst nage)			3Ch

* These characteristics are not assessed in coastal streams.

NC Division of Water Quality –Methodology for Identification of Intermittent and Perennial Streams and Their Origins v. 4.11

Sr NC DWQ Stream Identification Form	Version 4.11			
Date: 2/19/2015		ACP	Latitude: 34° L	14' 10,45" N
Evaluator: Natural Resource Group	County: Ro	beson	Longitude: 79	14' 10,45" N 1°07 ' 17,71"h
Total Points: Stream is at least intermittent if \geq 19 or perennial if \geq 30*16.25		ination (circle one) ermittent Perennial	Other e.g. Quad Name:	
A. Geomorphology (Subtotal = $\frac{g.5}{2}$)	Absent	Weak	Moderate	Strong
1 ^a . Continuity of channel bed and bank	0	1	(2)	3
2. Sinuosity of channel along thalweg	0	1	(2) (2 ·	3
3. In-channel structure: ex. riffle-pool, step-pool,	0	(1)	2	3
ripple-pool sequence		X		
4. Particle size of stream substrate	0	<u>(</u>)	2	3
5. Active/relict floodplain	<u> </u>	1	2	3
6. Depositional bars or benches	, d	1	2	3
7. Recent alluvial deposits	\bigcirc	1	2	3
8. Headcuts	0		2	3
9. Grade control	\bigcirc	0.5	1	1.5
10. Natural valley	0	(0.5)	1	1.5
11. Second or greater order channel	(Ńo	b=0	Yes	= 3
^a artificial ditches are not rated; see discussions in manual				
B. Hydrology (Subtotal = <u>A</u>)		*		
12. Presence of Baseflow	0	\mathfrak{O}	2	3
13. Iron oxidizing bacteria	0	1	2	3
14. Leaf litter	1.5	1	(0.5)	0
15. Sediment on plants or debris	\odot	0.5	1	1.5
16. Organic debris lines or piles	0	0.5	1	1.5
17. Soil-based evidence of high water table?		$\vec{v} = 0$	Yes =	
C. Biology (Subtotal = 5.75)	<u>></u>	A Statement of the second s		
18. Fibrous roots in streambed	<u>(3</u>)	B	1	0
19. Rooted upland plants in streambed	(3)	- E	1	0
20. Macrobenthos (note diversity and abundance)	Ó	1	2	3
21. Aquatic Mollusks	B	1	2	3
22. Fish	Ô	0.5	1	1.5
23. Crayfish	B	0.5	1	1.5
24. Amphibians	$\overline{\mathbb{O}}$	0.5	1	1.5
25. Algae			(D)	1.5
26. Wetland plants in streambed		FACW = 0.75; OBL		
*perennial streams may also be identified using other methods.	See p. 35 of manua		-1.5 Other -0	
Notes:	occ p. 00 of manua	I		
Sketch: Agricultoral Field Sketch: Agricultoral Field Sore Xee Carel Nongerson Sore Xee Carel Nongerson N Criver	Forz	Photos & Flow 7976	Fore	sted

41



Waterbody SROC002 facing west upstream



Waterbody SROC002 facing north across



Waterbody SROC002 facing east downstream

USACE AID#	DWQ #		Site #	(indicate on attached map)
IIII STRI	CAM QUALITY A	SSESSMENT V	VORKSHI	EET
Provide the following information	for the stream reach un		0.1	
1. Applicant's name: Dom		2. Evaluator's name:	DDW	EST
3. Date of evaluation: 8-29.	-14	4. Time of evaluation	:12:05	
5. Name of stream: Unnamed for	to burnt sure	M. River basin:	infer	
7. Approximate drainage area:	750 acres	8. Stream order:	t	
9. Length of reach evaluated:	00 8	10. County: Rol	reson	
11. Site coordinates (if known): p	refer in decimal degrees.	12. Subdivision name	(if any):	
Latitude (ex. 34.872312): 3404	3' 40,697"	Longitude (ex77.5566	511): 790 (58'28.081"
Method location determined (circle): (13. Location of reach under evaluat	GPS Topo Sheet Ortho	(Aerial) Photo/GIS Other	GIS Other	
14. Proposed channel work (if any):	None	-		
15. Recent weather conditions:	L 0 0	- few sho	wers	
6. Site conditions at time of visit:)		
7. Identify any special waterway c		Section 10 NPT	idal Waters	NA Essential Fisheries Habit
Trout Waters A Outstandin	N	0		r Supply Watershed MA (I-IV
18. Is there a pond or lake located u	Comments of the second s			
9. Does channel appear on USGS				oil Survey? YES NO
1. Estimated watershed land use:				
1. Estimated watersned land use:	% Residential			strial 90% Agricultural
22. Bankfull width: \centering	[% Forested	% Cleared / Logged		7
	VEL	23. Bank height (from		
4. Channel slope down center of st	The second se			
5. Channel sinuosity: X Straigh				nuousBraided channe
instructions for completion of we ocation, terrain, vegetation, stream o each characteristic within the n characteristics identified in the wor characteristic cannot be evaluated of comment section. Where there are nto a forest), the stream may be div each. The total score assigned to inclust evaluate	classification, etc. Every ange shown for the econ ksheet. Scores should re- lue to site or weather con obvious changes in the ch rided into smaller reaches	characteristic must be so region. Page 3 provid flect an overall assessme iditions, enter 0 in the s aracter of a stream under that display more contin	cored using the es a brief des ent of the strea scoring box and r review (e.g., uity, and a sepa	same ecoregion. Assign point cription of how to review the m reach under evaluation. If d provide an explanation in the the stream flows from a pasture arate form used to evaluate each
ighest quality.		. 4.0	00	-1 \cap \cap -1 $-$
Total Score (from reverse):	Commer	its: Man-m	higher	tick between ag
				\sim
	\bigcirc			
	1 11			

This channel evaluation form is intended to be used only as a guide to assist landowners and environmental professionals in gathering the data required by the United States Army Corps of Engineers to make a preliminary assessment of stream quality. The total score resulting from the completion of this form is subject to USACE approval and does not imply a particular mitigation ratio or requirement. Form subject to change – version 06/03. To Comment, please call 919-876-8441 x 26.

1/CT	#	# CHARACTERISTICS		GION POINT	FRANGE	SCODE
	#	CHARACTERISTICS	Coastal	Piedmont	Mountain	SCORE
	1	Presence of flow / persistent pools in stream (no flow or saturation = 0; strong flow = max points)	0-5	0-4	0-5	1
14	2	Evidence of past human alteration (extensive alteration = 0; no alteration = max points)	0-6	0-5	0-5	1
1	3	Riparian zone (no buffer = 0; contiguous, wide buffer = max points)	0-6	0-4	0-5	0
	4	Evidence of nutrient or chemical discharges (extensive discharges = 0; no discharges = max points)	0-5	0-4	0-4	1
CAL	5	Groundwater discharge (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0-3	0-4	0-4	0
PHYSICAL	6	Presence of adjacent floodplain (no floodplain = 0; extensive floodplain = max points)	0-4	0-4	0-2	D
Hd	7	Entrenchment / floodplain access (deeply entrenched = 0; frequent flooding = max points)	0-5	0-4	0-2	Ĩ
A NUT	8	Presence of adjacent wetlands (no wetlands = 0; large adjacent wetlands = max points)	0-6	0-4	0-2	D
100	9	Channel sinuosity (extensive channelization = 0; natural meander = max points)	0-5	0-4	0-3	D
N-S-	10	Sediment input (extensive deposition= 0; little or no sediment = max points)	0-5	0-4	0-4	1
State of the	11	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0-4	0 - 5	NA
Y	12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0-5	0-4	0-5	1
STABILITY	13	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0-5	0-5	0-5	2
TAB	14	Root depth and density on banks (no visible roots = 0; dense roots throughout = max points)	0-3	0-4	0-5	1
S	15	Impact by agriculture, livestock, or timber production (substantial impact =0; no evidence = max points)	0-5	0-4	0-5	(
-	16	Presence of riffle-pool/ripple-pool complexes (no riffles/ripples or pools = 0; well-developed = max points)	0-3	0-5	0-6	D
TAT	17	Habitat complexity (little or no habitat = 0; frequent, varied habitats = max points)	0-6	0-6	0-6	1
HABITAT	18	Canopy coverage over streambed (no shading vegetation = 0; continuous canopy = max points)	0-5	0-5	0-5	2
I	19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0-4	0-4	NK
1	20	Presence of stream invertebrates (see page 4) (no evidence = 0; common, numerous types = max points)	0-4	0-5	0-5	D
00	21	Presence of amphibians (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	1
BIOLOGY	22	Presence of fish (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	0
H	23	Evidence of wildlife use (no evidence = 0; abundant evidence = max points)	0-6	0-5	0-5	1
1	0.51	Total Points Possible	100	100	100	
	· Mar	TOTAL SCORE (also enter on fir	st page)			15

NC DWQ Stream Identification For	m Version 4.11		SRO	4009	
Date: 8-29-14	Project/Site:	SERP	Latitude: 32/0	43' 40.697"	
Evaluator: DDWEST	County: Roh	reson	Longitude: 7	9°08'28.08	
Total Points: Stream is at least intermittent if ≥ 19 or perennial if ≥ 30* 20,75	Stream Determi Ephemeral Inte	Stream Determination (circle one) Ephemeral Intermittent Perennial		Burnt Swamp	
A. Geomorphology (Subtotal =)	Absent	Weak	Moderate	Strong	
1 ^a Continuity of channel bed and bank	0	1	(2)	3	
2. Sinuosity of channel along thalweg	(0)	1	2	3	
 In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence 	0	1	2	3	
4. Particle size of stream substrate	0	(1)	2	3	
5. Active/relict floodplain	6	1	2	3	
6. Depositional bars or benches	0	1	2	3	
7. Recent alluvial deposits	0		2	3	
8. Headcuts	0	(1)	2	3	
9. Grade control	0	(0.5)	1	1.5	
10. Natural valley	0	0.5	1	1.5	
11. Second or greater order channel	No	0 = 0	Yes = 3		
^a artificial ditches are not rated; see discussions in manual	C	9	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 St. 19 10	
B. Hydrology (Subtotal =()		-		1 A	
12. Presence of Baseflow	0	(1)	2	3	
13. Iron oxidizing bacteria	0	Ø	2	3	
14. Leaf litter	1.5	aa	(0.5)	0	
15. Sediment on plants or debris	0	(0.5)	1	1.5	
16. Organic debris lines or piles	0	0.5	12	1.5	
17. Soil-based evidence of high water table?	No	0 = 0	Yes =	3	
C. Biology (Subtotal = $1 \sqrt{5}$)	~		0		
18. Fibrous roots in streambed	(3)	2	4	0	
19. Rooted upland plants in streambed	(3)	2	1	0	
20. Macrobenthos (note diversity and abundance)	\bigcirc	1	2	3	
21. Aquatic Mollusks	\bigcirc	1	2	3	
22. Fish	(0)	0.5	1	1.5	
23. Crayfish	0	0.5	1	1.5	
24. Amphibians	0	(0.5)	1	1.5	
25. Algae	\bigcirc	0.5	1	1.5	
26. Wetland plants in streambed	(FACW = 0.75; OBL	_ = 1.5 Other = 0		
*perennial streams may also be identified using other metho	ds. See p. 35 of manua				
Notes:	11				
1					
Sketch:	HIGHWAY				
ELDL					
	1				



Waterbody sroh009 facing upstream



Waterbody sroh009 facing downstream



Waterbody sroh009 facing upline cross stream

1

Site #_____ (indicate on attached map) $S \cap P O O I$

STREAM QUALITY A	ASSESSMENT WORKSHEET
Provide the following information for the stream reach un	ider assessment:
1. Applicant's name: Dominion	2. Evaluator's name: ESI (W. Vaughan)
3. Date of evaluation: 7-11-16	4. Time of evaluation: 9:30 am
5. Name of stream: Burnt Swamp	6. River basin: Lumber River
7. Approximate drainage area: 4340 acres	8. Stream order:
9. Length of reach evaluated: 20 feet	10. County: Robeson
11. Site coordinates (if known): prefer in decimal degrees.	12. Subdivision name (if any): None
Latitude (ex. 34.872312): 34.72491	
Method location determined (circle): GPS) Topo Sheet Ortho 13. Location of reach under evaluation (note nearby roads and Stream passes under Ev	(Aerial) Photo/GIS Other GIS Other d landmarks and attach map identifying stream(s) location): Krgreen church Rd, north of Stafford Dr
14. Proposed channel work (if any): Proposed Pip	
15. Recent weather conditions: Rain within	24 hours
16. Site conditions at time of visit: bridge over	channelized swamp
	Section 10Tidal WatersEssential Fisheries Habitat
18. Is there a pond or lake located upstream of the evaluation	point? YES 1 If yes, estimate the water surface area: NA
	20. Does channel appear on USDA Soil Survey? (YES) NO
21. Estimated watershed land use: 15 % Residential	% Commercial% Industrial 50% Agricultural
20% Forested	 _% Commercial% Industrial 50% Agricultural 15% Cleared / Logged% Other (
22. Bankfull width: 25 ff.	23. Bank height (from bed to top of bank): 5 ft
24. Channel slope down center of stream:Flat (0 to 2%)	Gentle (2 to 4%)Moderate (4 to 10%)Steep (>10%)
25. Channel sinuosity: <u>Straight</u> Occasional bends	Frequent meanderVery sinuousBraided channel
location, terrain, vegetation, stream classification, etc. Every to each characteristic within the range shown for the ec characteristics identified in the worksheet. Scores should r characteristic cannot be evaluated due to site or weather co comment section. Where there are obvious changes in the c into a forest), the stream may be divided into smaller reacher	ge 2): Begin by determining the most appropriate ecoregion based on y characteristic must be scored using the same ecoregion. Assign points oregion. Page 3 provides a brief description of how to review the effect an overall assessment of the stream reach under evaluation. If a onditions, enter 0 in the scoring box and provide an explanation in the character of a stream under review (e.g., the stream flows from a pasture s that display more continuity, and a separate form used to evaluate each ge between 0 and 100, with a score of 100 representing a stream of the
Total Score (from reverse): <u>77</u> Comm	antes Floded Swamp Siction
Total Score (from reverse): Comm	enis: <u>read a comp agricu</u>
File Gal	Date7-13-16
gathering the data required by the United States Army quality. The total score resulting from the completion	y as a guide to assist landowners and environmental professionals in y Corps of Engineers to make a preliminary assessment of stream of this form is subject to USACE approval and does not imply a to change – version 06/03. To Comment, please call 919-876-8441 x 26.

		CULLD & CITEDICELOS	ECOREGION POINT RANGE			SCODE	
STATES -	#	CHARACTERISTICS	Coastal	Piedmont	Mountain	SCORE	
10×11×11	1	Presence of flow / persistent pools in stream (no flow or saturation = 0; strong flow = max points)	0 - 5	0-4	0-5	5	
	2	Evidence of past human alteration (extensive alteration = 0; no alteration = max points)	0-6	0-5	0-5	3	
	3	Riparian zone (no buffer = 0; contiguous, wide buffer = max points)	0-6	0-4	0-5	G	
	4	Evidence of nutrient or chemical discharges (extensive discharges = 0; no discharges = max points)	0-5	0-4	0-4	5	
Sec. Sec.	5	Groundwater discharge (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0-3	0-4	0-4	3	
	6	Presence of adjacent floodplain (no floodplain = 0; extensive floodplain = max points)	0-4	0-4	0-2	4	
a state of	7	Entrenchment / floodplain access (deeply entrenched = 0; frequent flooding = max points)	0 - 5	0-4	0-2	5	
A CALL NO.	8	Presence of adjacent wetlands (no wetlands = 0; large adjacent wetlands = max points)	0-6	0-4	0-2	6	
Sec.22	9	Channel sinuosity (extensive channelization = 0; natural meander = max points)	0-5	0-4	0-3	2	
	10	Sediment input (extensive deposition= 0; little or no sediment = max points)	0-5	0-4	0-4	3	
	11	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0-4	0 - 5	-	
Contraction of the	12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0-5	0-4	0-5	4	
Professional and a subset of the second	13	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0-5	0-5	0-5	5	
and the second s	14	Root depth and density on banks (no visible roots = 0; dense roots throughout = max points)	0-3	0-4	0-5	3	
C Distriction of the	15	Impact by agriculture, livestock, or timber production (substantial impact =0; no evidence = max points)	0-5	0-4	0-5	5	
	16	Presence of riffle-pool/ripple-pool complexes (no riffles/ripples or pools = 0; well-developed = max points)	0-3	0-5	0-6	0	
	17	Habitat complexity (little or no habitat = 0; frequent, varied habitats = max points)	0-6	0-6	0-6	4	
	18	Canopy coverage over streambed (no shading vegetation = 0; continuous canopy = max points)	0-5	0-5	0-5	2	
Contraction Contraction Contraction	19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0-4	0-4		
A STATISTICS	20	Presence of stream invertebrates (see page 4) (no evidence = 0; common, numerous types = max points)	0-4	0-5	0-5	3	
and a start	21	Presence of amphibians (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	2	
And a state of the	22	Presence of fish (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	4	
the state of the second state of the second	23	Evidence of wildlife use (no evidence = 0; abundant evidence = max points)	0-6	0-5	0-5	3	
のないの		Total Points Possible	100	100	100		
195.1		TOTAL SCORE (also enter on fi	irst page)	财富利 利		77	

SropOOI NC DWO Stream Identification Form Version 4.11 Latitude: 34.72491 Project/Site: ACP Date: 7-11-16 County: Robeson Evaluator: ESI (W. Vaughan Longitude: 79.1425520 **Total Points:** Pembecke Stream Determination (circle one) Other 32.5 Stream is at least intermittent Ephemeral Intermittent Perennial e.g. Quad Name: if \geq 19 or perennial if \geq 30* A. Geomorphology (Subtotal = 12.5 1^a Continuity of channel bed and bank Absent Weak Moderate Strong 2 0 (1)3 D 2 3 2. Sinuosity of channel along thalweg 0 3. In-channel structure: ex. riffle-pool, step-pool, 2) 3 0 1 ripple-pool sequence 0 2 3 4. Particle size of stream substrate 0 2 3 0 5. Active/relict floodplain 1 6. Depositional bars or benches (0)1 2 3 1 2 3 7. Recent alluvial deposits 0 2 3 8. Headcuts O 1 0 1.5 9. Grade control 0.5 1 0 0.5 1 1,5) 10. Natural valley 11. Second or greater order channel No = 0(Yes = 3 a artificial ditches are not rated; see discussions in manual B. Hydrology (Subtotal = 7.5 3) 0 2 12. Presence of Baseflow 1 D 2 3 13. Iron oxidizing bacteria 0 0 0.5 1.5 14. Leaf litter 1 1.5 15. Sediment on plants or debris $(\mathbf{0})$ 0.5 1 16. Organic debris lines or piles 0 0.5 1 1.5 17. Soil-based evidence of high water table? No = 0Yes = 3 C. Biology (Subtotal = 12.51 18. Fibrous roots in streambed 3 (2)1 0 3 0 2 1 19. Rooted upland plants in streambed (3) Ø 1 2 20. Macrobenthos (note diversity and abundance) 2 3 21. Aquatic Mollusks 0 1 0.5 1.5 22. Fish 0 1 23. Crayfish 0 0.5 1 1.5 0 1.5 0.5 1 24. Amphibians 1.5 0 0.5 1 25. Algae FACW = 0.75; OBL = 1.5 Other = 0 26. Wetland plants in streambed *perennial streams may also be identified using other methods. See p. 35 of manual. Notes: Evergreen Church Rd CL NT -wrop001 Sketch: T. F750EU Swamp +

OHUM width: 25' Bunk width: 25' ananange n

Environmental Field Surveys Waterbody Photo Page



Waterbody data point srop001 facing northwest upstream.



Waterbody data point srop001 facing southeast downstream.

Environmental Field Surveys Waterbody Photo Page



Waterbody data point srop001 facing south across bank.

USACE AID#	DWQ # Site # (indicate on attached map)
STREAM QUA	LITY ASSESSMENT WORKSHEET
Provide the following information for the stream	m reach under assessment:
1. Applicant's name: Dominion	2. Evaluator's name: EST (Vaughen)
3. Date of evaluation: 7-11-16	
5. Name of stream: UT to Burnt S	Wamp 6. River basin: Lumber River
7. Approximate drainage area: 24 acres	
9. Length of reach evaluated: 20 f+	
	degrees. 12. Subdivision name (if any): None
	Longitude (ex77.556611): -79.14 3703
13. Location of reach under evaluation (note nearb South of Stafford Rel and	beet Ortho (Aerial) Photo/GIS Other GIS Other by roads and landmarks and attach map identifying stream(s) location): d west of Evergree Church Rd
14. Proposed channel work (if any): Proposed	
	Lin 24 hours
16. Site conditions at time of visit: b	etween two fields
	nown:Section 10Tidal WatersEssential Fisheries Habitat
Trout WatersOutstanding Resource Wa	atersNutrient Sensitive WatersWater Supply Watershed(I-IV)
18. Is there a pond or lake located upstream of the	evaluation point? YES NO If yes, estimate the water surface area:
	ES NO 20. Does channel appear on USDA Soil Survey? YES NO
	dential% Commercial% Industrial <u>%</u> % Agricultural
% Fores	sted% Cleared / Logged% Other ()
22. Bankfull width: 10 ft	23. Bank height (from bed to top of bank): 44
	t (0 to 2%)Gentle (2 to 4%)Moderate (4 to 10%)Steep (>10%)
25. Channel sinuosity:StraightOccasio	nal bendsFrequent meanderVery sinuousBraided channel
location, terrain, vegetation, stream classification, to each characteristic within the range shown characteristics identified in the worksheet. Score characteristic cannot be evaluated due to site or comment section. Where there are obvious chang into a forest), the stream may be divided into sma	ted on page 2): Begin by determining the most appropriate ecoregion based on etc. Every characteristic must be scored using the same ecoregion. Assign points for the ecoregion. Page 3 provides a brief description of how to review the es should reflect an overall assessment of the stream reach under evaluation. If a weather conditions, enter 0 in the scoring box and provide an explanation in the ges in the character of a stream under review (e.g., the stream flows from a pasture iller reaches that display more continuity, and a separate form used to evaluate each in must range between 0 and 100, with a score of 100 representing a stream of the
Total Score (from reverse): 33	Comments:
R The second second second second	
Evaluator's Signature Tille E. Vaug	Date 7-13-16
This channel evaluation form is intended to be gathering the data required by the United St quality. The total score resulting from the c	e used only as a guide to assist landowners and environmental professionals in lates Army Corps of Engineers to make a preliminary assessment of stream ompletion of this form is subject to USACE approval and does not imply a rm subject to change – version 06/03. To Comment, please call 919-876-8441 x 26.

	"		ECOREGION POINT RANGE			SCORE	
	#	CHARACTERISTICS	Coastal	Piedmont	Mountain	SCORE	
	1	Presence of flow / persistent pools in stream (no flow or saturation = 0; strong flow = max points)	0-5	0-4	0-5	4	
	2	Evidence of past human alteration (extensive alteration = 0; no alteration = max points)	0-6	0-5	0-5	1	
	3	Riparian zone (no buffer = 0; contiguous, wide buffer = max points)	0-6	0-4	0-5	1	
	4	Evidence of nutrient or chemical discharges (extensive discharges = 0; no discharges = max points)	0-5	0-4	0-4	4	
L'IL COL	5	Groundwater discharge (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0-3	0-4	0-4	2	
Surger States States	6	Presence of adjacent floodplain (no floodplain = 0; extensive floodplain = max points)	0-4	0-4	0-2	0	
1000	7	Entrenchment / floodplain access (deeply entrenched = 0; frequent flooding = max points)	0-5	0-4	0-2	0	
	8	Presence of adjacent wetlands (no wetlands = 0; large adjacent wetlands = max points)	0-6	0-4	0-2	0	
10000	9	Channel sinuosity (extensive channelization = 0; natural meander = max points)	0-5	0-4	0-3		
Select of	10	Sediment input (extensive deposition= 0; little or no sediment = max points)	0-5	0-4	0-4	3	
10000	11	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0-4	0-5	_	
	12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0-5	0-4	0-5	L	
10000	13	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0-5	0-5	0-5	L	
	14	Root depth and density on banks (no visible roots = 0; dense roots throughout = max points)	0-3	0-4	0-5	3	
Same -	15	Impact by agriculture, livestock, or timber production (substantial impact =0; no evidence = max points)	0-5	0-4	0-5	2	
	16	Presence of riffle-pool/ripple-pool complexes (no riffles/ripples or pools = 0; well-developed = max points)	0-3	0-5	0-6	and p. 2	
	17	Habitat complexity (little or no habitat = 0; frequent, varied habitats = max points)	0-6	0-6	0-6		
	18	Canopy coverage over streambed (no shading vegetation = 0; continuous canopy = max points)	0-5	0-5	0-5	1	
	19	(deeply embedded = 0; loose structure = max)	NA*	0-4	0-4	-	
	20	Presence of stream invertebrates (see page 4) (no evidence = 0; common, numerous types = max points)	0-4	0-5	0-5	0	
	21	(no evidence = 0; common, numerous types = max points) Presence of amphibians (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	0	
Contraction of	22	Presence of fish (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	0	
-	23	Evidence = 0; common, numerous types = max points) Evidence of wildlife use (no evidence = 0; abundant evidence = max points)	0-6	0-5	0-5	1	
		Total Points Possible	100	100	100		
「北		TOTAL SCORE (also enter on fi	inst page)	No.		33	

Project/Site: A (CP	Latitude: 34.72320		
County: Robeson Longitude: -79.143703		Longitude: -79.143		
		Other Pembroke e.g. Quad Name:		
Absent	Weak	Moderate	Strong	
0	1	2	3	
0	1	2	3	
0	1	2	3	
Ō	1	2	3	
(0)	1	2	3	
٥	1	2	3	
(0)	1	2	3	
0	1	2	3	
0	0.5	1	1.5	
0	0.5	(1)	1.5	
No	= 0)	Yes	= 3	
0				
and the second	and the second		and an an and the second	
0	1	2	3	
0	1	2	3	
1.5	1	0.5	(0)	
0	0.5	1	1.5	
0	0.5	1	1.5	
No	0 = 0	Yes	= 3)	
the an information of a				
(3)	2	1	0	
3	(2)	1	0	
0	(1)	2	3	
Ô	1	2	3	
0	0.5	1	1.5	
0	0.5)	1	1.5	
1	0.5	1	1.5	
(0)	0.0	the second s	And and the local division of the local divi	
(0)	0.5	1	1.5	
	0.5 FACW = 0.75; OB			
	Stream Determine Absent 0	Stream Determination (circle one) Ephemeral Intermittent Perennial Absent Weak 0 1 0 0.5 0 0.5 0 0.5 0 0.5 0 1 0 1 0 1 0 1 0 1 0 1	Stream Determination (circle one) Ephemeral Intermittent Perennial Other e.g. Quad Name: Absent Weak Moderate 0 1 2 0 1 2 0 1 2 0 1 2 0 1 2 0 1 2 0 1 2 0 1 2 0 1 2 0 1 2 0 1 2 0 1 2 0 1 2 0 1 2 0 0.5 1 0 0.5 1 0 1 2 0 1 2 0 0.5 1 0 0.5 1 0 0.5 1 0 1 2 0 1 2 0 1	

OHWN width: 85+ Bank width: 105+ Environmental Field Surveys Waterbody Photo Page



Waterbody data point srop002 facing southwest upstream.



Waterbody data point srop002 facing northeast downstream.

Environmental Field Surveys Waterbody Photo Page



Waterbody data point srop002 facing southeast across bank.

USACE AID# D	SWQ # Site # (indicate on attached map)
STREAM QUAL	ITY ASSESSMENT WORKSHEET
Provide the following information for the stream r	
I. Applicant's name: Dominion	2. Evaluator's name: ESI (W. 11 Vaughan)
3. Date of evaluation: 7-11-16	4. Time of evaluation: 12.00
. Name of stream: UT to Burnt SW	anp 6. River basin: Lumber River
Approximate drainage area: 147 acres	8. Stream order: /s+
. Length of reach evaluated: 20 feet	10. County: Robeson
1. Site coordinates (if known): prefer in decimal deg	
atitude (ex. 34.872312): 34.723222	Longitude (ex77.556611): - 79. 151386
Method location determined (circle): GPS Topo Sheet 13. Location of reach under evaluation (note nearby re	Ortho (Aerial) Photo/GIS Other GIS Other oads and landmarks and attach map identifying stream(s) location): Chapel Rd and west of Stafford Dr
The second s	
	pipeline 211 bais
	24 hours
	ditch between fields
	wn:Section 10Tidal WatersEssential Fisheries Habitat
	Nutrient Sensitive WatersWater Supply Watershed(I-IV)
	aluation point? YES NO If yes, estimate the water surface area:
	NO 20. Does channel appear on USDA Soil Survey? YES NO
	tial% Commercial% Industrial 45% Agricultural
	4% Cleared / Logged% Other ()
2. Bankfull width: 12 f+	23. Bank height (from bed to top of bank): 15 ft
4. Channel slope down center of stream:Flat (0	to 2%)Gentle (2 to 4%)Moderate (4 to 10%)Steep (>10%)
5. Channel sinuosity:StraightOccasional	bendsFrequent meanderVery sinuousBraided channel
ocation, terrain, vegetation, stream classification, etc o each characteristic within the range shown for characteristics identified in the worksheet. Scores s characteristic cannot be evaluated due to site or we comment section. Where there are obvious changes nto a forest), the stream may be divided into smaller	1 on page 2): Begin by determining the most appropriate ecoregion based on c. Every characteristic must be scored using the same ecoregion. Assign points the ecoregion. Page 3 provides a brief description of how to review the should reflect an overall assessment of the stream reach under evaluation. If a eather conditions, enter 0 in the scoring box and provide an explanation in the in the character of a stream under review (e.g., the stream flows from a pasture reaches that display more continuity, and a separate form used to evaluate each nust range between 0 and 100, with a score of 100 representing a stream of the
Fotal Score (from reverse): 61	Comments:
Evaluator's Signature Lielle & Vaugh	Date_ 7-13-16
This channel evaluation form is intended to be us gathering the data required by the United State quality. The total score resulting from the com	sed only as a guide to assist landowners and environmental professionals in as Army Corps of Engineers to make a preliminary assessment of stream apletion of this form is subject to USACE approval and does not imply a subject to change – version 06/03. To Comment, please call 919-876-8441 x 26.

			ECOREGION POINT RANGE			SCODE	
and the	#	CHARACTERISTICS	Coastal	Piedmont	Mountain	SCORE	
	1	Presence of flow / persistent pools in stream (no flow or saturation = 0; strong flow = max points)	0-5	0-4	0-5	5	
	2	Evidence of past human alteration (extensive alteration = 0; no alteration = max points)	0 – 6	0-5	0-5	2	
The state	3	Riparian zone (no buffer = 0; contiguous, wide buffer = max points)	0-6	0-4	0-5	3	
	4	Evidence of nutrient or chemical discharges (extensive discharges = 0; no discharges = max points)	0-5	0-4	0-4	5	
AL	5	Groundwater discharge (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0-3	0-4	0-4	3	
PHYSICAL	6	Presence of adjacent floodplain (no floodplain = 0; extensive floodplain = max points)	0-4	0-4	0-2		
EE	7	Entrenchment / floodplain access (deeply entrenched = 0; frequent flooding = max points)	0-5	0-4	0-2	0	
	8	Presence of adjacent wetlands (no wetlands = 0; large adjacent wetlands = max points)	0-6	0-4	0-2	0	
STATE AND	9	Channel sinuosity (extensive channelization = 0; natural meander = max points)	0-5	0-4	0-3	1	
LANKE 2	10	Sediment input (extensive deposition= 0; little or no sediment = max points)	0-5	0-4	0-4	3	
	11	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0-4	0-5	North TC	
A STATE	12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0-5	0-4	0-5	5	
STABILLTY	13	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0-5	0-5	0-5	5	
ADI	14	Root depth and density on banks (no visible roots = 0; dense roots throughout = max points)	0-3	0-4	0-5	3	
10	15	Impact by agriculture, livestock, or timber production (substantial impact =0; no evidence = max points)	0-5	0-4	0-5	4	
1 march	16	Presence of riffle-pool/ripple-pool complexes (no riffles/ripples or pools = 0; well-developed = max points)	0-3	0-5	0-6	ages [2 . 2.5	
SLIAL	17	Habitat complexity (little or no habitat = 0; frequent, varied habitats = max points)	0-6	0-6	0-6	2	
HABI	18	Canopy coverage over streambed (no shading vegetation = 0; continuous canopy = max points)	0-5	0-5	0-5	4	
	19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0-4	0-4	-	
日本	20	Presence of stream invertebrates (see page 4) (no evidence = 0; common, numerous types = max points)	0-4	0-5	0-5	4	
BIOLOGY	21	(no evidence = 0; common, numerous types = max points) Presence of amphibians (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	4	
OTO	22	Presence of fish (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	3	
B	23	Evidence of wildlife use (no evidence = 0; abundant evidence = max points)	0-6	0-5	0-5	3	
		Total Points Possible	100	100	100		
		TOTAL SCORE (also enter on f	irst page)	教育教育		GI	

srop 003

Date: 7-11-16	Project/Site: A	-CP	Latitude: 3 4. 72 3222		
Evaluator: ESI (Matt Smith)	County: Rob	Eson	Longitude: - 79, 151 3		
Total Points: Stream is at least intermittent 27 if ≥ 19 or perennial if $\geq 30^*$	Stream Determin	nation (circle one) rmittent Perennial		tembeoke	
A. Geomorphology (Subtotal = 6.5)	Absent	Weak	Moderate	Strong	
1 ^a Continuity of channel bed and bank Ditch	0	1	2	3	
2. Sinuosity of channel along thalweg	0	1	2	3	
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3	
4. Particle size of stream substrate	0	1	2)	3	
5. Active/relict floodplain	0	1	2	3	
6. Depositional bars or benches	(0)	1	2	3	
7. Recent alluvial deposits	0	1	2	3	
8. Headcuts	0	1	2	3	
9. Grade control	0	0.5	1	(1.5)	
10. Natural valley	0	0.5	1	1.5	
11. Second or greater order channel	No	D€O	Yes	= 3	
^a artificial ditches are not rated; see discussions in manual B. Hydrology (Subtotal =/o.5)					
12. Presence of Baseflow	0	1	2	3	
13. Iron oxidizing bacteria	0	1	(2)	3	
14. Leaf litter	1.5		0.5	0	
15. Sediment on plants or debris	0	0.5	1	1.5	
16. Organic debris lines or piles	0	0.5	1 4.4	(1.5)	
17. Soil-based evidence of high water table?		o = 0	Yes	and the second se	
C. Biology (Subtotal = / D. O_)			- All	<u> </u>	
18. Fibrous roots in streambed	3	(2)	1	0	
19. Rooted upland plants in streambed	(3)	2	1	0	
20. Macrobenthos (note diversity and abundance)	0	(1)	2	3	
21. Aquatic Mollusks	0	1	2	3	
22. Fish	0	0.5	<u>(1)</u>	1.5	
23. Crayfish	0	0.5	1	(1.5)	
24. Amphibians	0	0.5	1	(1.5)	
25. Algae	0	0.5	1	1.5	
26. Wetland plants in streambed		FACW = 0.75; OB	L = 1.5 Other =		
*perennial streams may also be identified using other metho	ods. See p. 35 of manua				
Notes: Determined to be perennial in Bi					
	1		97		
Sketch:		sropo	03		
unsun	nun	~			

OHWM 10 FH Bankwidth 12 FH

Environmental Field Surveys Waterbody Photo Page



Waterbody data point srop003 facing southwest upstream.



Waterbody data point srop003 facing northeast downstream.

Environmental Field Surveys Waterbody Photo Page



Waterbody data point srop003 facing southeast across bank.

DWQ #_

Site #_____ (indicate on attached map)

SROHOOS

STREAM QUALITY A	SSESSMENT WORKSHEET
Provide the following information for the stream reach und	ler assessment:
1. Applicant's name: Dominion	2. Evaluator's name:
3. Date of evaluation: 8-28 - 14	4. Time of evaluation: $10:1/$
5. Name of stream: MOSS neck Swismo	6. River basin: Lumber
7. Approximate drainage area: OO ACRES	8. Stream order: 2 2
9. Length of reach evaluated: 100 ft	10. County: Robeson
11. Site coordinates (if known): prefer in decimal degrees.	12. Subdivision name (if any):
Latitude (ex. 34.872312): <u>34°43′39. 00</u> ユ"	_ Longitude (ex77.556611): 79° 11' 05 ()5, 987"
Method location determined (circle): GPS Topo Sheet Ortho (13. Location of reach under evaluation (note nearby roads and	Aerial) Photo/GIS Other GIS Other
14. Proposed channel work (if any): None	
15. Recent weather conditions: Mainly Dry -	few showers
16. Site conditions at time of visit: Normed	~
17. Identify any special waterway classifications known:	Section 10 NA Tidal Waters NAEssential Fisheries Habitat
ATTrout Waters Moutstanding Resource Waters	Nutrient Sensitive WatersWater Supply Watershed(I-IV)
18. Is there a pond or lake located upstream of the evaluation p	oint? YES NO If yes, estimate the water surface area:
19. Does channel appear on USGS quad map? YES NO	20. Does channel appear on USDA Soil Survey? YES NO
21. Estimated watershed land use: 6 % Residential	% Commercial% Industrial 🚺 % Agricultural
D % Forested	% Cleared / Logged% Other (
22. Bankfull width: 20	23. Bank height (from bed to top of bank):
	Gentle (2 to 4%)Moderate (4 to 10%)Steep (>10%)
25. Channel sinuosity:Straight \ge Occasional bends	Frequent meanderVery sinuousBraided channel
location, terrain, vegetation, stream classification, etc. Every of to each characteristic within the range shown for the ecor characteristics identified in the worksheet. Scores should ref characteristic cannot be evaluated due to site or weather con comment section. Where there are obvious changes in the cha into a forest), the stream may be divided into smaller reaches t	e 2): Begin by determining the most appropriate ecoregion based on characteristic must be scored using the same ecoregion. Assign points egion. Page 3 provides a brief description of how to review the lect an overall assessment of the stream reach under evaluation. If a ditions, enter 0 in the scoring box and provide an explanation in the aracter of a stream under review (e.g., the stream flows from a pasture that display more continuity, and a separate form used to evaluate each between 0 and 100, with a score of 100 representing a stream of the
Total Score (from reverse): Commen	ts: <u>Channelized</u> stream.
Evaluator's Signature	Date
	is a guide to assist landowners and environmental professionals in Corps of Engineers to make a preliminary assessment of stream

quality. The total score resulting from the completion of this form is subject to USACE approval and does not imply a particular mitigation ratio or requirement. Form subject to change – version 06/03. To Comment, please call 919-876-8441 x 26.

#	CHADACTEDICTICS	ECOREGION POINT RANGE			
#	CHARACTERISTICS	Coastal	Piedmont	Mountain	SCORE
1	Presence of flow / persistent pools in stream (no flow or saturation = 0; strong flow = max points)	0-5	0-4	0-5	3
2	Evidence of past human alteration (extensive alteration = 0; no alteration = max points)	0-6	0-5	0-5	2
3	Riparian zone (no buffer = 0; contiguous, wide buffer = max points)	0-6	0 - 4	0-5	2
4	Evidence of nutrient or chemical discharges (extensive discharges = 0; no discharges = max points)	0-5	0-4	0-4	2
5	Groundwater discharge (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0-3	0-4	0-4	Z
5 6 7	Presence of adjacent floodplain (no floodplain = 0; extensive floodplain = max points)	0-4	0-4	0-2	1
7	Entrenchment / floodplain access (deeply entrenched = 0; frequent flooding = max points)	0-5	0-4	0-2	1
8	Presence of adjacent wetlands (no wetlands = 0; large adjacent wetlands = max points)	0-6	0-4	0-2	D
9	Channel sinuosity (extensive channelization = 0; natural meander = max points)	0-5	0 – 4	0-3	
10	Sediment input (extensive deposition= 0; little or no sediment = max points)	0-5	0 – 4	0 – 4	2
11	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0-4	0 – 5	NA
12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0-5	0-4	0 – 5	2
13	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0-5	0-5	0-5	2
13 14	Root depth and density on banks (no visible roots = 0; dense roots throughout = max points)	0-3	0 – 4	0 – 5	ŀ
15	Impact by agriculture, livestock, or timber production (substantial impact =0; no evidence = max points)	0-5	0-4	0 – 5	2
16	Presence of riffle-pool/ripple-pool complexes (no riffles/ripples or pools = 0; well-developed = max points)	0-3	0-5	0-6	1
17	Habitat complexity (little or no habitat = 0; frequent, varied habitats = max points)	0-6	0-6	0-6	3
17 18	Canopy coverage over streambed (no shading vegetation = 0; continuous canopy = max points)	0-5	0-5	0-5	2
19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0-4	0-4	NA
20	Presence of stream invertebrates (see page 4) (no evidence = 0; common, numerous types = max points)	0-4	0-5	0 – 5	2
21 22	Presence of amphibians (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	3
22	Presence of fish (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	D
23	Evidence of wildlife use (no evidence = 0; abundant evidence = max points)	0-6	0-5	0-5	3
	Total Points Possible	100	100	100	
	TOTAL SCORE (also enter on fi	rst page)			37

SRDHODS

NC DWQ Stream Identification Form Version 4.11

Evaluator: DDWEST	County: Ro	beson	Longitude: 79° // '05, 1 Other Moss Neck Swam e.g. Quad Name:	
Total Points: 38.5 Stream is at least intermittent 38.5 if \geq 19 or perennial if \geq 30*	Stream Determi	nation (circle one) rmittent Rerennial		
A. Geomorphology (Subtotal =)	Absent	Weak	Moderate	Strong
1 ^a Continuity of channel bed and bank	0	1	(2)	3
2. Sinuosity of channel along thalweg	0	(1)	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3
4. Particle size of stream substrate	0	1	(2)	3
5. Active/relict floodplain	0	(1)	2	3
6. Depositional bars or benches	0	Ð	2	3
7. Recent alluvial deposits	0	1	2	3
8. Headcuts	0	(1)	2	3
9. Grade control	0	0.5	1	BBG
10. Natural valley	0	0.5	<u>(</u>)	1.5
11. Second or greater order channel	N	o = 0	(Yes :	= 3)
^a artificial ditches are not rated; see discussions in manual B. Hydrology (Subtotal =10)				
12. Presence of Baseflow	0	1	(2)	3
13. Iron oxidizing bacteria	0	1	<u>(2</u>)	3
14. Leaf litter	1.5	(D)	0.5	0
15. Sediment on plants or debris	0	0.5	<u> </u>	1.5
16. Organic debris lines or piles	0	0.5	(1)	1.5
17. Soil-based evidence of high water table?	N	p = 0	(Yes	TTO A
C. Biology (Subtotal = 11.5)				
18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macrobenthos (note diversity and abundance)	0	1	(2)	3
21. Aquatic Mollusks		1	2	3
22. Fish	\bigcirc	0.5	Ê	1.5
23. Crayfish	0	0.5	(1)	1.5
24. Amphibians	0	0.5	(1)	1.5
25. Algae	0	0.5	-(1)	1.5
26. Wetland plants in streambed		FACW = 0.75; (OBI	_ = 1.5)Other = 0)
*perennial streams may also be identified using other methods	s. See p. 35 of manua	ıl.		
Notes:	N			
	·^			
Sketch:				
FLOW ->				

No. 1

e.



Waterbody sroh008 facing upstream



Waterbody sroh008 facing downstream



Waterbody sroh008 facing upline cross stream

DWQ #_

Site #_____ (indicate on attached map)

 $^{\circ} \cap H$

STREAM QUALITY ASSESSMENT WORKSHEET
Provide the following information for the stream reach under assessment:
1. Applicant's name: Dominion 2. Evaluator's name: DDWEST
3. Date of evaluation: 8-928-14 Moss Neck 4. Time of evaluation: 9:70
5. Name of stream: Unnamed tob to Swamp6. River basin: Lumber
7. Approximate drainage area: 750 gccos 8. Stream order: 155
9. Length of reach evaluated: 100 ff 10. County: Robeson
11. Site coordinates (if known): prefer in decimal degrees. 12. Subdivision name (if any):
Latitude (ex. 34.872312): $\underline{34^{\circ} 43^{\prime} 37.102^{\prime\prime}}$ Longitude (ex77.556611): $\underline{79^{\circ}(1^{\prime} 12.184^{\prime\prime})}$
Method location determined (circle): GPS Topo Sheet Ortho (Aerial) Photo/GIS Other GIS Other
13. Location of reach under evaluation (note nearby roads and landmarks and attach map identifying stream(s) location):
14. Proposed channel work (if any): None
15. Recent weather conditions: Mainly Ary - Lew Showers
16. Site conditions at time of visit: Normal
17. Identify any special waterway classifications known: <u>MA</u> Section 10 <u>Mutidal Waters</u> <u>Messential Fisheries Habitat</u>
<u>MA</u> Trout Waters <u>MA</u> Outstanding Resource Waters <u>MA</u> Nutrient Sensitive Waters <u>MA</u> Water Supply Watershed <u>MA</u> (I-IV)
18. Is there a pond or lake located upstream of the evaluation point? YES (NO) If yes, estimate the water surface area:
19. Does channel appear on USGS quad map? YES NO 20. Does channel appear on USDA Soil Survey? YES NO
21. Estimated watershed land use:% Residential% Commercial% Industrial $\pounds 0$ % Agricultural
ZO_% Forested% Cleared / Logged% Other (
22. Bankfull width: 23. Bank height (from bed to top of bank):
24. Channel slope down center of stream: K_Flat (0 to 2%)Gentle (2 to 4%)Moderate (4 to 10%)Steep (>10%)
25. Channel sinuosity: <u>Straight</u> Occasional bends Frequent meander Very sinuous Braided channel
Instructions for completion of worksheet (located on page 2): Begin by determining the most appropriate ecoregion based on location, terrain, vegetation, stream classification, etc. Every characteristic must be scored using the same ecoregion. Assign points to each characteristic within the range shown for the ecoregion. Page 3 provides a brief description of how to review the characteristics identified in the worksheet. Scores should reflect an overall assessment of the stream reach under evaluation. If a characteristic cannot be evaluated due to site or weather conditions, enter 0 in the scoring box and provide an explanation in the comment section. Where there are obvious changes in the character of a stream under review (e.g., the stream flows from a pasture into a forest), the stream may be divided into smaller reaches that display more continuity, and a separate form used to evaluate each reach. The total score assigned to a stream reach must range between 0 and 100, with a score of 100 representing a stream of the highest quality.
Total Score (from reverse): Comments: Man-macle Sitch on elle S rondand agriculture dieta
Evaluator's Signature Apre Aven Date 8-28-14
This channel evaluation form is intended to be used only as a guide to assist landowners and environmental professionals in gathering the data required by the United States Army Corps of Engineers to make a preliminary assessment of stream

gathering the data required by the United States Army Corps of Engineers to make a preliminary assessment of stream quality. The total score resulting from the completion of this form is subject to USACE approval and does not imply a particular mitigation ratio or requirement. Form subject to change – version 06/03. To Comment, please call 919-876-8441 x 26.

		ECOREGION POINT RANGE				
#	CHARACTERISTICS	Coastal	Piedmont	Mountain	SCORE	
1	Presence of flow / persistent pools in stream (no flow or saturation = 0; strong flow = max points)	0-5	0-4	0-5	1	
2	Evidence of past human alteration (extensive alteration = 0; no alteration = max points)	0-6	0-5	0-5		
3	Riparian zone (no buffer = 0; contiguous, wide buffer = max points)	0-6	0-4	0-5	$\hat{\mathcal{D}}$	
4	Evidence of nutrient or chemical discharges (extensive discharges = 0; no discharges = max points)	0-5	0-4	0-4		
5	Groundwater discharge (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0-3	0-4	0-4		
5 6 7	Presence of adjacent floodplain (no floodplain = 0; extensive floodplain = max points)	0-4	0-4	0-2	$\widehat{\mathcal{D}}$	
7	Entrenchment / floodplain access (deeply entrenched = 0; frequent flooding = max points)	0-5	0-4	0-2	1.	
8	Presence of adjacent wetlands (no wetlands = 0; large adjacent wetlands = max points)	0-6	0-4	0-2	0	
9	Channel sinuosity (extensive channelization = 0; natural meander = max points)	0-5	0-4	0-3	ð	
10	Sediment input (extensive deposition= 0; little or no sediment = max points)	0 – 5	0-4	0-4	1	
11	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0-4	0-5	NA	
12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0 – 5	0-4	0-5	1	
13	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0-5	0-5	0-5	L	
13 14	Root depth and density on banks (no visible roots = 0; dense roots throughout = max points)	0 – 3	0-4	0-5	Į	
15	Impact by agriculture, livestock, or timber production (substantial impact =0; no evidence = max points)	0 – 5	0-4	0 – 5		
16	Presence of riffle-pool/ripple-pool complexes (no riffles/ripples or pools = 0; well-developed = max points)	0-3	0-5	0-6	D	
17	Habitat complexity (little or no habitat = 0; frequent, varied habitats = max points)	0-6	0-6	0-6	(
17 18	Canopy coverage over streambed (no shading vegetation = 0; continuous canopy = max points)	0-5	0-5	0-5	\mathcal{D}	
19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0-4	0-4	MA	
20	Presence of stream invertebrates (see page 4) (no evidence = 0; common, numerous types = max points)	0-4	0-5	0-5	D	
21	Presence of amphibians (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	l	
21 22	Presence of fish (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	0	
23	Evidence of wildlife use (no evidence = 0; abundant evidence = max points)	0-6	0-5	0-5	l	
	Total Points Possible	100	100	100		
alone and	TOTAL SCORE (also enter on fi	rst page)]]] [

Evaluator: DDWEST County: Ropeson Longitude: 79	<u>43'37.102</u> ' <u>10'12.184</u> '' to Moss Neck Swamp <u>Strong</u> 3
Total Points: Stream is at least intermittent if ≥ 19 or perennial if $\geq 30^{\circ}$ 21, 2.5Stream Determination (circle one) Ephemeral Intermittent PerennialOther UNT t e.g. Quad Name:A. Geomorphology (Subtotal =)AbsentWeakModerate1ª Continuity of channel bed and bank0122. Sinuosity of channel along thalweg0123. In-channel structure: ex. riffle-pool, step-pool,012	to Moss Neck Swamp Strong
Stream is at least intermittent if ≥ 19 or perennial if ≥ 30* 21, 2.5 Stream Determination (circle one) Ephemeral Intermittent Perennial Other OINT (e.g. Quad Name: A. Geomorphology (Subtotal =) Absent Weak Moderate 1ª Continuity of channel bed and bank 0 1 2 2. Sinuosity of channel along thalweg 0 1 2 3. In-channel structure: ex. riffle-pool, step-pool, 0 1 2	Strong
1a. Continuity of channel bed and bank0122. Sinuosity of channel along thalweg0123. In-channel structure: ex. riffle-pool, step-pool,012	
1a. Continuity of channel bed and bank0122. Sinuosity of channel along thalweg0123. In-channel structure: ex. riffle-pool, step-pool,012	
2. Sinuosity of channel along thalweg 0 1 2 3. In-channel structure: ex. riffle-pool, step-pool, 0 1 2	
3. In-channel structure: ex. riffle-pool, step-pool,	3
	3
4. Particle size of stream substrate 0 (1) 2	3
5. Active/relict floodplain 0 1 2	3
6. Depositional bars or benches 0 (1) 2	3
7. Recent alluvial deposits 0 1 2	3
8. Headcuts 0 1 2	3
9. Grade control 0 (0.5) 7	1.5
10. Natural valley 0 (0.5) 1	1.5
11. Second or greater order channel No =(0) Yes =	= 3
^a artificial ditches are not rated; see discussions in manual	<u>anna air an bha an ann an ann ann ann ann ann ann ann</u>
B. Hydrology (Subtotal = 1.5)	
12. Presence of Baseflow 0 1 2	3
13. Iron oxidizing bacteria 0 2	3
14. Leaf litter 1.5 ① 0.5	0
15. Sediment on plants or debris 0 (0.5) 1	1.5
16. Organic debris lines or piles 0 0.5 1	1.5
17. Soil-based evidence of high water table? No = 0 Yes =	= 3)
C. Biology (Subtotal = (0.75))	
18. Fibrous roots in streambed 3 2 1	0
19. Rooted upland plants in streambed 3 2 1	0
20. Macrobenthos (note diversity and abundance) 0 1 2	3
21. Aquatic Mollusks 0 1 2	3
22. Fish (0) 0.5 1	1.5
23. Crayfish 0 0.5 1	1.5
24. Amphibians 0 0.5 1	1.5
25. Algae 0 0.5 0	1.5
26. Wetland plants in streambed (FACW = 0.75;) OBL = 1.5 Other = 0)
*perennial streams may also be identified using other methods. See p. 35 of manual.	
Notes:	
Sketch:	
FLOW	



Waterbody sroh007 facing upstream



Waterbody sroh007 facing downstream



Waterbody sroh007 facing upline cross stream

DWQ #_

S

STREAM QUALITY ASS	SESSMENT WORKSHEET
Provide the following information for the stream reach under	assessment:
· · ·	e. Evaluator's name: DDUEST
0 07 11	I. Time of evaluation: 2 3 46
5. Name of stream: (In name of this to bear same	i. River basin: Lumber
· ·	B. Stream order: 5^{\pm}
	0. County:_ Robe son
11. Site coordinates (if known): prefer in decimal degrees.	2. Subdivision name (if any):
Latitude (ex. 34.872312): <u>3416 4/36 27.538''</u>	
Method location determined (circle): GPS Topo Sheet Ortho (Aer 13. Location of reach under evaluation (note nearby roads and lan	ial) Photo/GIS Other GIS Other
14. Proposed channel work (if any): Nove	
15. Recent weather conditions: Mining day -	tew showers
16. Site conditions at time of visit: Dormal	
17. Identify any special waterway classifications known:	Section 10 NA Tidal Waters MAEssential Fisheries Habitat
	atrient Sensitive Waters NA Water Supply Watershed NA (I-IV)
18. Is there a pond or lake located upstream of the evaluation point	
	20. Does channel appear on USDA Soil Survey? YES (NO)
21. Estimated watershed land use:% Residential	_% Commercial% Industrial $\overset{\smile}{\underbrace{\bigotimes}}$ % Agricultural
ZD% Forested	_% Cleared / Logged% Other ()
22. Bankfull width: 2	3. Bank height (from bed to top of bank):
24. Channel slope down center of stream: Klat (0 to 2%)	_Gentle (2 to 4%)Moderate (4 to 10%)Steep (>10%)
25. Channel sinuosity:StraightOccasional bends	_Frequent meanderVery sinuousBraided channel
location, terrain, vegetation, stream classification, etc. Every cha to each characteristic within the range shown for the ecoregi characteristics identified in the worksheet. Scores should reflec characteristic cannot be evaluated due to site or weather condit comment section. Where there are obvious changes in the chara into a forest), the stream may be divided into smaller reaches that): Begin by determining the most appropriate ecoregion based on aracteristic must be scored using the same ecoregion. Assign points ion. Page 3 provides a brief description of how to review the t an overall assessment of the stream reach under evaluation. If a ions, enter 0 in the scoring box and provide an explanation in the cter of a stream under review (e.g., the stream flows from a pasture t display more continuity, and a separate form used to evaluate each etween 0 and 100, with a score of 100 representing a stream of the
Total Score (from reverse): Comments:	Alan-made ditek on edge &
Evaluator's Signature	Date $8 - 27 - 14$

This channel evaluation form is intended to be used only as a guide to assist landowners and environmental professionals in gathering the data required by the United States Army Corps of Engineers to make a preliminary assessment of stream quality. The total score resulting from the completion of this form is subject to USACE approval and does not imply a particular mitigation ratio or requirement. Form subject to change – version 06/03. To Comment, please call 919-876-8441 x 26.

SROHOOL STREAM QUALITY ASSESSMENT WORKSHEET

#	CHARACTERISTICS	ECOREC	GION POIN	FRANGE	CODE
"		Coastal	Piedmont	Mountain	SCORE
1	Presence of flow / persistent pools in stream (no flow or saturation = 0; strong flow = max points)	0-5	0-4	0-5	1
2	Evidence of past human alteration (extensive alteration = 0; no alteration = max points)	0-6	0-5	0-5	Ph-1
3	Riparian zone (no buffer = 0; contiguous, wide buffer = max points)	0-6	0-4	0 – 5	2
4	Evidence of nutrient or chemical discharges (extensive discharges = 0; no discharges = max points)	0-5	0-4	0-4	1
5	Groundwater discharge (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0 – 3	0-4	0-4	1
5 6 7	Presence of adjacent floodplain (no floodplain = 0; extensive floodplain = max points)	0-4	0-4	0-2	1 ale
7	Entrenchment / floodplain access (deeply entrenched = 0; frequent flooding = max points)	0-5	0-4	0-2	
8	Presence of adjacent wetlands (no wetlands = 0; large adjacent wetlands = max points)	0-6	0-4	0-2	
9	Channel sinuosity (extensive channelization = 0; natural meander = max points)	0 – 5	0-4	0 – 3	D
10	Sediment input (extensive deposition= 0; little or no sediment = max points)	0 – 5	0-4	0-4	-
11	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0-4	0-5	NA
12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0 – 5	0-4	0-5	l
13 14	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0 – 5	0-5	0 – 5	2
14	Root depth and density on banks (no visible roots = 0; dense roots throughout = max points)	0-3	0-4	0 – 5	[.
15	Impact by agriculture, livestock, or timber production (substantial impact =0; no evidence = max points)	0 – 5	0-4	0-5	-
16	Presence of riffle-pool/ripple-pool complexes (no riffles/ripples or pools = 0; well-developed = max points)	0-3	0-5	0-6	D
17 18	Habitat complexity (little or no habitat = 0; frequent, varied habitats = max points)	0-6	0-6	0-6)
18	Canopy coverage over streambed (no shading vegetation = 0; continuous canopy = max points)	0-5	0-5	0-5	2
19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0-4	0-4	MR
20	Presence of stream invertebrates (see page 4) (no evidence = 0; common, numerous types = max points)	0-4	0-5	0-5	D
21	Presence of amphibians (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	
22	Presence of fish (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	Q
23	Evidence of wildlife use (no evidence = 0; abundant evidence = max points)	0-6	0-5	0-5	1
	Total Points Possible	100	100	100	
	TOTAL SCORE (also enter on fi	rst page)			10

* These characteristics are not assessed in coastal streams.

NC Division of Water Quality –Methodology for Identification of Intermittent and Perennial Streams and Their Origins v. 4.11

NC DWQ Stream Identification Form	Version 4.11		SKUT	,000	
Date: 8-27-14	Project/Site:	SERP	Latitude 24	43'27.53	
Evaluator: DOWEST	County: Rub	20.	Longitude: 70	ili 27.42	
Total Points:					
Stream is at least intermittent if ≥ 19 or perennial if ≥ 30* 23,75	Ephemeral Inte	nation (circle one) rmittent Perennial	Other UNT to Bear Swam e.g. Quad Name:		
A Geomorphology (Subset)					
A. Geomorphology (Subtotal =) 1 ^{a.} Continuity of channel bed and bank	Absent	Weak	Moderate	Strong	
 Sinuosity of channel along thalweg 	0	1	(2)	3	
3. In-channel structure: ex. riffle-pool, step-pool,		1	2	3	
ripple-pool sequence	0	$\overline{1}$	2		
4. Particle size of stream substrate	0			3	
5. Active/relict floodplain			2	3	
6. Depositional bars or benches			2	3	
7. Recent alluvial deposits			2	3	
8. Headcuts	0		2	3	
9. Grade control	0	<u>A</u>	2	3	
10. Natural valley	0	0.5	1	1.5	
11. Second or greater order channel	0	(0.5)	1	1.5	
^a artificial ditches are not rated; see discussions in manual	(No	= 0	Yes =	= 3	
B. Hydrology (Subtotal = 7, 5)					
12. Presence of Baseflow					
	0	(1)	2	3	
13. Iron oxidizing bacteria	0	(1)	2		
14. Leaf litter	1.5	1	(0.5)	3	
15. Sediment on plants or debris	0	0.5	(0.5)	0	
16. Organic debris lines or piles	0	0.5		1.5	
17. Soil-based evidence of high water table?	No			1.5	
C. Biology (Subtotal = $\Re(25)$)		<u> </u>	(Yes =	3	
18. Fibrous roots in streambed	3				
19. Rooted upland plants in streambed		(2)	1	0	
20. Macrobenthos (note diversity and abundance)	3	2	1	0	
21. Aquatic Mollusks		1	2	3	
22. Fish		1	2	3	
23. Crayfish	\bigcirc	0.5		1.5	
24. Amphibians	0	0.5	(1)	1.5	
25. Algae	0	0.5		1.5	
26. Wetland plants in streambed	0	0.5	1	1.5	
*Derennial streams may also be identified		FACW = 0.75; OBL	= 1.5 Other = 0		
*perennial streams may also be identified using other methods. Notes:	See p. 35 of manual.				
10103.					
Sketch:	X				



Waterbody sroh006 facing upstream



Waterbody sroh006 facing downstream



Waterbody sroh006 facing upline cross stream

NC Division of Water Quality –Methodology for Identification of Intermittent and Perennial Streams and Their Origins v. 4.11

NC DWQ Stream Identification Form Version 4.11				
Date: 1 18 2016	Project/Site:	ACP	Latitude: 34	.726011
Evaluator: Colin Genty	County:	obeson		9,190402
Total Points:Stream is at least intermittentif \geq 19 or perennial if \geq 30*	Stream Determ Ephemeral (Int	ination (circle one) ermittent) Perennial	Other e.g. Quad Name:	
96		T		
A. Geomorphology (Subtotal = $(, 5)$)	Absent	Weak	Moderate	Strong
1 ^a Continuity of channel bed and bank	0	1	2	3
2. Sinuosity of channel along thalweg	- O	1	2	3
 In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence 	0		2	3
4. Particle size of stream substrate	0	$\left \begin{array}{c} 1 \end{array} \right $	2	3
5. Active/relict floodplain	(0)	1	2	3
6. Depositional bars or benches		1	2	3
7. Recent alluvial deposits		1	2	3
8. Headcuts	0		2	3
9. Grade control	0	(0.5)	1	1.5
10. Natural valley	(0)	0.5	 1	1.5
11. Second or greater order channel		0 = 0	Yes :	
^a artificial ditches are not rated; see discussions in manual		<u> </u>		a garan a far an
B. Hydrology (Subtotal =)				
12. Presence of Baseflow	0	1	2	3
13. Iron oxidizing bacteria	0	(1)	2	3
14. Leaf litter	(1.5)	1	0.5	0
15. Sediment on plants or debris	0	(0.5)	1	1.5
16. Organic debris lines or piles	0	0.5	1	1.5
17. Soil-based evidence of high water table?	N	0 = 0	Yes -	= 3)
C. Biology (Subtotal = <u>6</u>)				
18. Fibrous roots in streambed	3	(2)	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macrobenthos (note diversity and abundance)	Q	1	2	3
21. Aquatic Mollusks	(C)	1	2	3
22. Fish	0	0.5	1	1.5
23. Crayfish	0	0.5	1	1.5
24. Amphibians	0	0.5	1	1.5
25. Algae	0	0.5	1	1.5
26. Wetland plants in streambed		FACW = 0.75; OBL	= 1.5 Qther = 0)
*perennial streams may also be identified using other methods.				
Notes: Survey turing 13 not conductive	to fondling	aquatte one	jarisma	

Sketch:

STREAM QUALITY	ASSESSMENT	WORKSHEET
----------------	------------	-----------

# CHARACTERISTICS -		ECOREGION POINT RANGE			SCODE	
	#			Piedmont	Mountain	SCORE
	1	Presence of flow / persistent pools in stream (no flow or saturation = 0; strong flow = max points)	0 – 5	0-4	0 – 5	3
	2	Evidence of past human alteration (extensive alteration = 0; no alteration = max points)	0 - 6	0-5	0 – 5	\bigcirc
	3	Riparian zone (no buffer = 0; contiguous, wide buffer = max points)	0-6	0-4	0-5	1
	4	Evidence of nutrient or chemical discharges (extensive discharges = 0; no discharges = max points)	0-5	0-4	0-4	1
AL	5	Groundwater discharge (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0-3	0-4	0-4	1
PHYSICAL	6	Presence of adjacent floodplain (no floodplain = 0; extensive floodplain = max points)	0-4	0-4	0-2	0
PH	7	Entrenchment / floodplain access (deeply entrenched = 0; frequent flooding = max points)	0-5	0-4	0-2	0
	8	Presence of adjacent wetlands (no wetlands = 0; large adjacent wetlands = max points)	0-6	0-4	0-2	
	9	Channel sinuosity (extensive channelization = 0; natural meander = max points)	0-5	0-4	0-3	0
	10	Sediment input (extensive deposition= 0; little or no sediment = max points)	0-5	0-4	0-4	2
	11	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0-4	0-5	NA
Y	12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0-5	0-4	0-5	4
ILII	13	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0-5	0-5	0-5	3
STABILITY	14	Root depth and density on banks (no visible roots = 0; dense roots throughout = max points)	0-3	0-4	0 – 5	1
S	15	Impact by agriculture, livestock, or timber production (substantial impact =0; no evidence = max points)	0-5	0-4	0-5	0
	16	Presence of riffle-pool/ripple-pool complexes (no riffles/ripples or pools = 0; well-developed = max points)	0-3	0-5	0-6	\bigcirc
ITA	17	Habitat complexity (little or no habitat = 0; frequent, varied habitats = max points)	0 - 6	0-6	0-6	
HABITAT	18	Canopy coverage over streambed (no shading vegetation = 0; continuous canopy = max points)	0-5	0-5	0 – 5	\bigcirc
	19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0-4	0 – 4	NA
Å	20	Presence of stream invertebrates (see page 4) (no evidence = 0; common, numerous types = max points)	0-4	0 – 5	0 – 5	0
BIOLOGY	21	Presence of amphibians (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	\bigcirc
BIOI	22	Presence of fish (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	\bigcirc
	23	Evidence of wildlife use (no evidence = 0; abundant evidence = max points)	0 - 6	0-5	0 – 5	2
		Total Points Possible	100	100	100	
		TOTAL SCORE (also enter on fi	rst page)			20

* These characteristics are not assessed in coastal streams.

Site #_____ (indicate on attached map)

STREAM QUALITY AS	SESSMENT WORKSHEET
Provide the following information for the stream reach under	er assessment:
1. Applicant's name: <u>ACP</u>	2. Evaluator's name: (Olin Gent)
3. Date of evaluation: $1 8 20 4$	4. Time of evaluation: 1200
5. Name of stream: UNT (TO MOSS Neck Swamp?)	6. River basin: Lower Pee Dee 030402
7. Approximate drainage area:	8. Stream order:
9. Length of reach evaluated:	10. County: Robessia
11. Site coordinates (if known): prefer in decimal degrees.	12. Subdivision name (if any):
Latitude (ex. 34.872312): <u>34.726011</u>	Longitude (ex77.556611): -79,190402
	erial) Photo/GIS Other GIS Other
14. Proposed channel work (if any): N/A	
15. Recent weather conditions: <u>normal</u>	<u>h</u>
16. Site conditions at time of visit: Clean and col	2
17. Identify any special waterway classifications known:	_Section 10Tidal WatersEssential Fisheries Habitat
Trout WatersOutstanding Resource Waters I	Nutrient Sensitive WatersWater Supply Watershed(I-IV)
18. Is there a pond or lake located upstream of the evaluation po	int? YES NO If yes, estimate the water surface area:
19. Does channel appear on USGS quad map? YES NO	20. Does channel appear on USDA Soil Survey? YES NO
21. Estimated watershed land use:% Residential%	% Commercial% Industrial% Agricultural
% Forested	% Cleared / Logged% Other () 23. Bank height (from bed to top of bank):
_	Gentle (2 to 4%)Moderate (4 to 10%)Steep (>10%)
25. Channel sinuosity:StraightOccasional bends	Frequent meanderVery sinuousBraided channel
location, terrain, vegetation, stream classification, etc. Every c to each characteristic within the range shown for the ecore characteristics identified in the worksheet. Scores should refl characteristic cannot be evaluated due to site or weather cond comment section. Where there are obvious changes in the cha into a forest), the stream may be divided into smaller reaches th reach. The total score assigned to a stream reach must range highest quality.	2): Begin by determining the most appropriate ecoregion based on haracteristic must be scored using the same ecoregion. Assign points egion. Page 3 provides a brief description of how to review the ect an overall assessment of the stream reach under evaluation. If a litions, enter 0 in the scoring box and provide an explanation in the racter of a stream under review (e.g., the stream flows from a pasture hat display more continuity, and a separate form used to evaluate each between 0 and 100, with a score of 100 representing a stream of the
Total Score (from reverse): 20 Comment	is: Watherbody Bay arthlicially
gathering the data required by the United States Army C quality. The total score resulting from the completion of	Date 18 2016 s a guide to assist landowners and environmental professionals in Corps of Engineers to make a preliminary assessment of stream this form is subject to USACE approval and does not imply a change – version 06/03. To Comment, please call 919-876-8441 x 26.



Waterbody SROE001 facing north upstream



Waterbody SROE001 facing south downstream



Waterbody SROE001 facing west across

NC Division of Water Quality –Methodology for Identification of Intermittent and Perennial Streams and Their Origins v. 4.11

Date: 1 18 20(6	Project/Site: AC		Sroe a	Druce
Evaluator: Colin Genty	County: Robeson		Longitude: -79, 19111 8	
Total Points: Stream is at least intermittent 23 if ≥ 19 or perennial if $\geq 30^*$	Stream Determin	nation (circle one) mittent Perennial	Other e.g. Quad Name	
A. Geomorphology (Subtotal =)	Absent	Weak	Moderate	Strong
1 ^a Continuity of channel bed and bank	0	1	2	
2. Sinuosity of channel along thalweg	10	1	2	(3)
3. In-channel structure: ex. riffle-pool, step-pool,				3
ripple-pool sequence	0	\bigcirc	2	3
4. Particle size of stream substrate	0	(1)	2	3
5. Active/relict floodplain		1	2	3
6. Depositional bars or benches	$\overline{(0)}$	1	2	3
7. Recent alluvial deposits	(0)	1	2	3
8. Headcuts	0	(1)	2	3
9. Grade control	0	0.5	1	1.5
10. Natural valley	$\left(\circ \right)$	0.5	1	1.5
11. Second or greater order channel	No = 0		(Yes = 3)	
artificial ditches are not rated; see discussions in manual	······································	I		
B. Hydrology (Subtotal = <u> </u>				
12. Presence of Baseflow	0	1	2	3
13. Iron oxidizing bacteria	0	0	2	3
14. Leaf litter	(1.5)	1	0.5	0
15. Sediment on plants or debris	0	(0.5)	1	1.5
16. Organic debris lines or piles	0	(0.5	1	1.5
17. Soil-based evidence of high water table?	No	= 0	(Yes	= 3.)
C. Biology (Subtotal =)				and the second se
18. Fibrous roots in streambed	3	\odot	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macrobenthos (note diversity and abundance)	(0)	1	2	3
21. Aquatic Mollusks	\bigcirc	1	2	3
22. Fish	(7)	0.5	1	1.5
23. Crayfish	<u> </u>	0.5	1	1.5
24. Amphibians	(0)	0.5	1	1.5
25. Algae	0	0.5	1	1.5
		FACW = 0.75; OBL	_ = 1.5 Other = 0	
26. Wetland plants in streambed *perennial streams may also be identified using other meth	nods. See p. 35 of manual.			

Sketch:

STREAM QUALIT	Y ASSESSMENT	WORKSHEET
---------------	--------------	-----------

	ш	# CHARACTERISTICS -		ECOREGION POINT RANGE		
	#	CHARACTERISTICS	Coastal	Piedmont	Mountain	SCORE
	1	Presence of flow / persistent pools in stream (no flow or saturation = 0; strong flow = max points)	0-5	0-4	0-5	3
	2	Evidence of past human alteration (extensive alteration = 0; no alteration = max points)	0 - 6	0-5	0 – 5	0
	3	Riparian zone (no buffer = 0; contiguous, wide buffer = max points)	0-6	0-4	0 – 5	/
	4	Evidence of nutrient or chemical discharges (extensive discharges = 0; no discharges = max points)	0 – 5	0-4	0-4	/
AL	5	Groundwater discharge (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0 – 3	0-4	0-4	/
PHYSICAL	6	Presence of adjacent floodplain (no floodplain = 0; extensive floodplain = max points)	0 – 4	0-4	0-2	\square
Hd	7	Entrenchment / floodplain access (deeply entrenched = 0; frequent flooding = max points)	0 – 5	0-4	0-2	Õ
	8	Presence of adjacent wetlands (no wetlands = 0; large adjacent wetlands = max points)	0 – 6	0-4	0-2	1
	9	Channel sinuosity (extensive channelization = 0; natural meander = max points)	0 – 5	0-4	0-3	Ô
	10	Sediment input (extensive deposition= 0; little or no sediment = max points)	0 – 5	0-4	0-4	2
	11	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0-4	0-5	NA
7	12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0 – 5	0-4	0-5	24
STABILITY	13	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0-5	0-5	0-5	3
TAB	14	Root depth and density on banks (no visible roots = 0; dense roots throughout = max points)	0-3	0-4	0-5	1
io I	15	Impact by agriculture, livestock, or timber production (substantial impact =0; no evidence = max points)	0-5	0-4	0-5	0
	16	Presence of riffle-pool/ripple-pool complexes (no riffles/ripples or pools = 0; well-developed = max points)	0-3	0-5	0-6	\bigcirc
ITA	17	Habitat complexity (little or no habitat = 0; frequent, varied habitats = max points)	0 – 6	0-6	0-6	1
HABITAT	18	Canopy coverage over streambed (no shading vegetation = 0; continuous canopy = max points)	0-5	0 – 5	0-5	\bigcirc
	19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0-4	0 – 4	NA
1000	20	Presence of stream invertebrates (see page 4) (no evidence = 0; common, numerous types = max points)	0-4	0-5	0-5	0
BIOLOGY	21	Presence of amphibians (no evidence = 0; common, numerous types = max points)	0-4	0-4	0 – 4	0
BIOI	22	Presence of fish (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	0
	23	Evidence of wildlife use (no evidence = 0; abundant evidence = max points)	0-6	0 – 5	0-5	2
		Total Points Possible	100	100	100	
		TOTAL SCORE (also enter on fi	rst page)			20

* These characteristics are not assessed in coastal streams.

DWQ #___

Site #_____ (indicate on attached map)

STREAM QUALITY A	SSESSMENT WORKSHEET
Provide the following information for the stream reach und	ler assessment:
1. Applicant's name: <u>AC P</u>	2. Evaluator's name: Colin Coeitan
3. Date of evaluation: 1 18 2014	4. Time of evaluation: 1230
5. Name of stream: UNT	6. River basin: Lower Pee Dee 030402
7. Approximate drainage area:	8. Stream order:
9. Length of reach evaluated:	10. County: Robeson
11. Site coordinates (if known): prefer in decimal degrees.	12. Subdivision name (if any):
Latitude (ex. 34.872312): <u>34.725659</u>	Longitude (ex77.556611): - 79.191118
Method location determined (circle): GPS Topo Sheet Ortho (. 13. Location of reach under evaluation (note nearby roads and	Aerial) Photo/GIS Other GIS Other landmarks and attach map identifying stream(s) location):
14. Proposed channel work (if any): N/A	
15. Recent weather conditions: <u>NOr Mail</u>	
16. Site conditions at time of visit: <u>Clean and</u>	Cole
17. Identify any special waterway classifications known:	Section 10Tidal WatersEssential Fisheries Habitat
Trout WatersOutstanding Resource Waters	Nutrient Sensitive WatersWater Supply Watershed(I-IV)
18. Is there a pond or lake located upstream of the evaluation p	oint? YES NO If yes, estimate the water surface area:
19. Does channel appear on USGS quad map? YES NO	20. Does channel appear on USDA Soil Survey? YES NO
	% Commercial% Industrial% Agricultural
$\frac{-\%}{\%}$ Forested	% Cleared / Logged% Other () 23. Bank height (from bed to top of bank):
25. Channel singesitur V. Studicht — Occessional hands	Gentle (2 to 4%)Moderate (4 to 10%)Steep (>10%)
/	Frequent meanderVery sinuousBraided channel
location, terrain, vegetation, stream classification, etc. Every to each characteristic within the range shown for the econ characteristics identified in the worksheet. Scores should ref characteristic cannot be evaluated due to site or weather con comment section. Where there are obvious changes in the ch into a forest), the stream may be divided into smaller reaches reach. The total score assigned to a stream reach must range highest quality.	e 2): Begin by determining the most appropriate ecoregion based on characteristic must be scored using the same ecoregion. Assign points region. Page 3 provides a brief description of how to review the flect an overall assessment of the stream reach under evaluation. If a additions, enter 0 in the scoring box and provide an explanation in the aracter of a stream under review (e.g., the stream flows from a pasture that display more continuity, and a separate form used to evaluate each a between 0 and 100, with a score of 100 representing a stream of the
Total Score (from reverse): Commer	nts: Artificial agriculture difer
gathering the data required by the United States Army quality. The total score resulting from the completion of	Date <u>1/18/2016</u> as a guide to assist landowners and environmental professionals in Corps of Engineers to make a preliminary assessment of stream of this form is subject to USACE approval and does not imply a change – version 06/03. To Comment, please call 919-876-8441 x 26.



Waterbody SROE002 facing west upstream



Waterbody SROE002 facing east downstream



Waterbody SROE002 facing north across

D	W	0	#
~		~	···

Site #_____ (indicate on attached map)

STREAM QUALITY A	ASSESSMENT WORKSHEET
Provide the following information for the stream reach un	der assessment:
1. Applicant's name: Dominion	2. Evaluator's name: DDWEST
3. Date of evaluation: $8 - 27 - 14$	4. Time of evaluation: 2:21
5. Name of stream: Unnamed to b Bear Sur	enpRiver basin: Jumber
7. Approximate drainage area: 7 100 acres	8. Stream order:
9. Length of reach evaluated: $(50 ff)$	10. County: Robeson
11. Site coordinates (if known): prefer in decimal degrees.	12. Subdivision name (if any):
Latitude (ex. 34.872312):	Longitude (ex77.556611):79°11' 127.569'
Method location determined (circle): GPS Topo Sheet Ortho ((Aerial) Photo/GIS Other GIS Other
13. Location of reach under evaluation (note nearby roads and	randmarks and attach map identifying stream(s) location):
14. Proposed channel work (if any):	
15. Recent weather conditions: Mounday Dove	1 - few showers
16. Site conditions at time of visit: Normal	
17. Identify any special waterway classifications known: 🍋	Section 10 APTidal Waters Presential Fisheries Habitat
	Nutrient Sensitive Waters Mater Supply Watershed MA(I-IV)
18. Is there a pond or lake located upstream of the evaluation p	point? YES (NO) If yes, estimate the water surface area:
19. Does channel appear on USGS quad map? YES NO	20. Does channel appear on USDA Soil Survey? YES (NO)
21. Estimated watershed land use:% Residential	% Commercial% Industrial 🕢% Agricultural
LO% Forested	% Cleared / Logged% Other (
22. Bankfull width:7	23. Bank height (from bed to top of bank):
24. Channel slope down center of stream: Flat (0 to 2%)	Gentle (2 to 4%)Moderate (4 to 10%)Steep (>10%)
25. Channel sinuosity:StraightOccasional bends	Frequent meanderVery sinuousBraided channel
location, terrain, vegetation, stream classification, etc. Every to each characteristic within the range shown for the eco characteristics identified in the worksheet. Scores should re characteristic cannot be evaluated due to site or weather cor comment section. Where there are obvious changes in the ch into a forest), the stream may be divided into smaller reaches	(e 2): Begin by determining the most appropriate ecoregion based on characteristic must be scored using the same ecoregion. Assign points region. Page 3 provides a brief description of how to review the flect an overall assessment of the stream reach under evaluation. If a nditions, enter 0 in the scoring box and provide an explanation in the paracter of a stream under review (e.g., the stream flows from a pasture that display more continuity, and a separate form used to evaluate each e between 0 and 100, with a score of 100 representing a stream of the
Total Score (from reverse): <u>24</u> Commen	nts: Man made ditch on educ. tieldaned Dyenr 20 clonrant forest
Evaluator's Signature	
	as a guide to assist landowners and environmental professionals in

This channel evaluation form is intended to be used only as a guide to assist landowners and environmental professionals in gathering the data required by the United States Army Corps of Engineers to make a preliminary assessment of stream quality. The total score resulting from the completion of this form is subject to USACE approval and does not imply a particular mitigation ratio or requirement. Form subject to change – version 06/03. To Comment, please call 919-876-8441 x 26.

STREAM QUALITY ASSESSMENT WORKSHEET

SRDHODS

		ECOREGION POINT RANGE			
	# CHARACTERISTICS	Coastal	Piedmont	Mountain	SCORE
	1 Presence of flow / persistent pools in stream	0-5	0-4	0 – 5	7
	Image: mail (no flow or saturation = 0; strong flow = max points) 2 Evidence of past human alteration	0-6	0-5	0-5	7
	(extensive alteration = 0; no alteration = max points) Riparian zone	0-6	0-4	0-5	
-	Image: matrix of the second system	0-5	0-4	0-4	
н	Groundwater discharge 5	0-3	0-4	0-4	
	(no discharge = 0; springs, seeps, wetlands, etc. = max points) Presence of adjacent floodplain	0-4	0-4	0-2	1
PHY	Image: Constraint of the second se	0-5	0-4	0-2	7
	' (deeply entrenched = 0; frequent flooding = max points) 8 Presence of adjacent wetlands (no wetlands = 0; large adjacent wetlands = max points)	0-6	0-4	0-2	1
	9 Channel sinuosity (extensive channelization = 0; natural meander = max points)	0 – 5	0-4	0-3	$\overline{\mathcal{O}}$
1	0 Sediment input (extensive deposition= 0; little or no sediment = max points)	0-5	0-4	0-4	l
]	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0-4	0 – 5	NA
	2 Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0-5	0-4	0-5	l
	3 Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0-5	0-5	0-5	2
STABILITY	4 Root depth and density on banks (no visible roots = 0; dense roots throughout = max points)	0-3	0-4	0-5	t.
	5 Impact by agriculture, livestock, or timber production (substantial impact =0; no evidence = max points)	0 – 5	0-4	0-5	2
235//3520	6 Presence of riffle-pool/ripple-pool complexes (no riffles/ripples or pools = 0; well-developed = max points)	0-3	0-5	0-6	1
HABITAT	7 Habitat complexity (little or no habitat = 0; frequent, varied habitats = max points)	0-6	0-6	0-6	2
HAF	8 Canopy coverage over streambed (no shading vegetation = 0; continuous canopy = max points)	0 – 5	0-5	0-5	2
1	9 Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0-4	0-4	NK
	0 Presence of stream invertebrates (see page 4) (no evidence = 0; common, numerous types = max points)	0-4	0-5	0-5	(
BIOLOGY	Presence of amphibians 1 (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	2
BIO	2 Presence of fish (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	0
2	3 Evidence of wildlife use (no evidence = 0; abundant evidence = max points)	0-6	0-5	0-5	3
	Total Points Possible	100	100	100	2.4
	TOTAL SCORE (also enter on fi	rst page)			24

* These characteristics are not assessed in coastal streams.

NC Division of Water Quality –Methodology for Identification of Intermittent and Perennial Streams and Their Origins v. 4.11

NC DW	Q Stream Identification Form	Version 4.11		51	KOH-	
Date: 8-	27-12	Project/Site:	SERP	Latitude: 22/0	43'26.098	
Evaluator:	DWEST	County: Rd		Longitude: 79°/1'27,50		
Total Points: Stream is at least i if ≥ 19 or perennia	intermittent 30.ª 50	Stream Detern Ephemeral Int	nination (cir cle one) ermittent (Perennial)	Other UNT to Bear Swam		
A. Geomorph	ology (Subtotal =)	Absent	Weak	Moderate	04	
1 ^{a.} Continuity of a	channel bed and bank	0	1		Strong	
Sinuosity of ch	nannel along thalweg	(0)	1		3	
3. In-channel stru	ucture: ex. riffle-pool, step-pool,			2	3	
ripple-pool sec	quence f stream substrate	0		2	3	
5. Active/relict flo	stream substrate	0	(1)	2	3	
6. Depositional b		0		2	3	
7. Recent alluvia		0	L (1)	2	3	
8. Headcuts	l'deposits	0		2	3	
9. Grade control		0	(1)	2	3	
10. Natural valley	/	0	0.5	1	1.5	
	eater order channel	0	(0.5)	1	1.5	
^a artificial ditches ar	e not rated; see discussions in manual	(N	0=0	Yes		
B. Hydrology	(Subtotal = ()			······································		
12. Presence of E	Baseflow	0	(MIR)	6		
13. Iron oxidizing	bacteria			(2)	3	
14. Leaf litter		0	- Mare -	(2)	3	
15. Sediment on	plants or debris	1.5	()	0.5	0	
16. Organic debri	s lines or piles	0	0.5	(1)	1.5	
17. Soil-based ev	idence of high water table?	0	0.5	(1)	1.5	
C. Biology (Su	ibtotal =	I IN	o = 0	(Yes =	23)	
18. Fibrous roots	in streambed		- AR			
	d plants in streambed	3	4 PP	1	0	
20. Macrobenthos	(note diversity and abundance)		2	1	0	
21. Aquatic Mollus	sks	0		2	3	
22. Fish		Q	1	2	3	
23. Crayfish			0.5	1	1.5	
4. Amphibians		0	0.5	(1)	1.5	
25. Algae		0	0.5	71)	1.5	
26. Wetland plants	s in streambed	0	17.51	-(1)	1.5	
*perennial streams	may also be identified using other methods.		TFACW= 1.75, OBL	$= 1.5$ \oplus ther $= 0$		
Votes:	y using other methods.	See p. 35 of manua				
		\forall				
Sketch:		\wedge				
	FLOW >					

41



Waterbody sroh005 facing upstream



Waterbody sroh005 facing downstream



Waterbody sroh005 facing upline cross stream

USACE AID# DW	Q #	Site #	(indicate on attached map)
STREAM QUALIT	Y ASSESSMENT WO	ORKSHI	SROHOOL
Provide the following information for the stream read	ch under assessment:		
1. Applicant's name: Dominion	2. Evaluator's name:	PDW	EST
3. Date of evaluation: 8 - 27	4. Time of evaluation:	1:2	7
5. Name of stream: unnamed to be been	Swart River basin:	maler	
7. Approximate drainage area: 750 arrow	\triangle 8. Stream order: 1.54	** <u>**</u>	
9. Length of reach evaluated: (00 ff	10. County:	~1m	
11. Site coordinates (if known): prefer in decimal degree			· · · · · · · · · · · · · · · · · · ·
Latitude (ex. 34.872312): <u>34(° 1/3' 25, 154</u> "		r: 79° 11	" 31.291"
Method location determined (circle): GPS Topo Sheet G 13. Location of reach under evaluation (note nearby road	Ortho (Aerial) Photo/GIS Other GI	IS Other	
14. Proposed channel work (if any): Nore			
15. Recent weather conditions: Mainle J	MI - Pero Shope	Pro	
16. Site conditions at time of visit: Norma	J Jaco More	<u> </u>	
17. Identify any special waterway classifications known: <u>MA</u> Trout Waters <u>MA</u> Outstanding Resource Waters	MA Nutrient Sensitive Waters	MAWate	r Supply Watershed
18. Is there a pond or lake located upstream of the evalua	tion point? YES NO If yes, e	estimate the	water surface area:
19. Does channel appear on USGS quad map? YES		on USDA S	Soil Survey? YES NO
21. Estimated watershed land use: % Residential		% Indu	strial ZO% Agricultural
K V Forested	% Cleared / Logged	% Othe	r (
22. Bankfull width:	23. Bank height (from be	ed to top of l	bank):
24. Channel slope down center of stream: \square Flat (0 to	2%)Gentle (2 to 4%)	Moderate	(4 to 10%)Steep (>10%)
25. Channel sinuosity:StraightOccasional ber	ndsFrequent meander	Very sin	nuousBraided channel
Instructions for completion of worksheet (located or location, terrain, vegetation, stream classification, etc. E to each characteristic within the range shown for the characteristics identified in the worksheet. Scores show characteristic cannot be evaluated due to site or weather comment section. Where there are obvious changes in t into a forest), the stream may be divided into smaller rear reach. The total score assigned to a stream reach must highest quality.	a page 2): Begin by determining Every characteristic must be score e ecoregion. Page 3 provides and reflect an overall assessment er conditions, enter 0 in the sco- the character of a stream under re- aches that display more continuit	ng the most ed using the a brief des of the strea ring box an eview (e.g., y and a sep	appropriate ecoregion based on e same ecoregion. Assign points scription of how to review the am reach under evaluation. If a d provide an explanation in the the stream flows from a pasture arate form used to evaluate each
Total Score (from reverse): Con	mments: Man mae	le dit	el ; n

Evaluator's Signature_

C

08/27/2014 Date__

This channel evaluation form is intended to be used only as a guide to assist landowners and environmental professionals in gathering the data required by the United States Army Corps of Engineers to make a preliminary assessment of stream quality. The total score resulting from the completion of this form is subject to USACE approval and does not imply a particular mitigation ratio or requirement. Form subject to change - version 06/03. To Comment, please call 919-876-8441 x 26.

STREAM QUALITY ASSESSMENT WORKSHEET

SROHODY

#		ECOREGION POINT RANGE			
#	CHARACTERISTICS	Coastal	Piedmont	Mountain	SCORE
1	Presence of flow / persistent pools in stream (no flow or saturation = 0; strong flow = max points)	0-5	0-4	0-5	(
2	Evidence of past human alteration (extensive alteration = 0; no alteration = max points)	0-6	0-5	0-5	
3	Riparian zone (no buffer = 0; contiguous, wide buffer = max points)	0-6	0-4	0-5	3
4	Evidence of nutrient or chemical discharges (extensive discharges = 0; no discharges = max points)	0-5	0-4	0-4]
TV 5	Groundwater discharge (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0-3	0-4	0-4	l
5 6 7	Presence of adjacent floodplain (no floodplain = 0; extensive floodplain = max points)	0-4	0-4	0-2	1
Hd 7	Entrenchment / floodplain access (deeply entrenched = 0; frequent flooding = max points)	0-5	0-4	0-2	1
8	Presence of adjacent wetlands (no wetlands = 0; large adjacent wetlands = max points)	0-6	0-4	0-2	2
9	Channel sinuosity (extensive channelization = 0; natural meander = max points)	0-5	0-4	0-3	0
10	Sediment input (extensive deposition= 0; little or no sediment = max points)	0-5	0-4	0-4	l
11	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0-4	0 – 5	MA
2 12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0-5	0-4	0-5	l
ALI'IIBAT	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0-5	0-5	0-5	Į
BAT	Root depth and density on banks (no visible roots = 0; dense roots throughout = max points)	0-3	0-4	0-5	
2 15	Impact by agriculture, livestock, or timber production (substantial impact =0; no evidence = max points)	0-5	0-4	0-5	1
16	Presence of riffle-pool/ripple-pool complexes (no riffles/ripples or pools = 0; well-developed = max points)	0-3	0-5	0-6	٥
Y 17	Habitat complexity (little or no habitat = 0; frequent, varied habitats = max points)	0-6	0-6	0-6	
IV 17 18 18	Canopy coverage over streambed (no shading vegetation = 0; continuous canopy = max points)	0-5	0-5	0-5	1
19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0-4	0-4	NA
> 20	Presence of stream invertebrates (see page 4) (no evidence = 0; common, numerous types = max points)	0-4	0-5	0-5	\mathcal{D}
21 22 22	Presence of amphibians (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	1
OB 22	Presence of fish (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	0
23	Evidence of wildlife use (no evidence = 0; abundant evidence = max points)	0 – 6	0-5	0-5	AL.
	Total Points Possible	100	100	100	
	TOTAL SCORE (also enter on fin	rst page)			19

* These characteristics are not assessed in coastal streams.

NC Division of Water Quality –Methodology for Identification of Intermittent and Perennial Streams and Their Origins v. 4.11

NC DWQ Stream Identification Form Version 4.11ate: $\mathfrak{B} - 2\mathfrak{I} - (\mathcal{L})$ Project/Site: \mathcal{SPP}		SROHDOL		
	Project/Site: 🤇	ERP	Latitude 39°43'25.15	
Evaluator: DDWEST	County: R	herro	Longitude: 7	2°11'31.2
Total Points: Stream is at least intermittent 22.75 `	Stream Determi	mation (circle one)		
if \geq 19 or perennial if \geq 30*	Ephemeral Inte	rmittent Perennial	e.g. Quad Name:	to Bear Swam
A. Geomorphology (Subtotal = $\frac{7}{3}$)				
1 ^{a.} Continuity of channel bed and bank	Absent	Weak	Moderate	Strong
2. Sinuosity of channel along thalweg	0	1	2	3
3. In-channel structure: ex. riffle-pool, step-pool,	\sim	1	2	3
hppie-pool sequence	$(\hat{0})$	1	2	3
4. Particle size of stream substrate				
5. Active/relict floodplain	0	(1)	2	3
5. Depositional bars or benches	\bigcirc		2	3
7. Recent alluvial deposits		$\overline{(1)}$	2	3
3. Headcuts	0	$-\frac{1}{1}$	2	3
9. Grade control	0		2	3
0. Natural valley	0	(0.5)	1	1.5
1. Second or greater order channel		= 0)	1	1.5
artificial ditches are not rated; see discussions in manual		-0)	Yes =	: 3
3. Hydrology (Subtotal = 7.5)				
2. Presence of Baseflow				
3. Iron oxidizing bacteria	0		2	3
4. Leaf litter	0		2	3
5. Sediment on plants or debris	1.5		0.5	0
6. Organic debris lines or piles	0	0.5	Ð	1.5
7. Soil-based evidence of high water table?	0	(0.5)	1	1.5
2. Biology (Subtotal = $B, 25$)	No	= 0	(Yes =	
8. Fibrous roots in streambed				/
	3	(2)	1	0
9. Rooted upland plants in streambed	3	2	1	0
0. Macrobenthos (note diversity and abundance)	(0)	1	2	3
1. Aquatic Mollusks 2. Fish		1	2	3
	\bigcirc	0.5	(AP)	1.5
3. Crayfish	0	0.5		1.5
4. Amphibians	0	0.5	- China -	1.5
5. Algae	0	(0.5)		1.5
5. Wetland plants in streambed			= 1.5 Other = 0	1.0
perennial streams may also be identified using other methods	. See p. 35 of manual.			
otes:	ł			·····
	\mathcal{N}	······································		
ketch:	Λ		/	
	//		/	
/	<i>, , , , , , , , , ,</i>		/	
FLOW	/		/	
/	7		/	1
	1		/	
			/	

41



Waterbody sroh004 facing upstream



Waterbody sroh004 facing downstream



Waterbody sroh004 facing upline cross stream

DWQ	#
-----	---

Site #_____ (indicate on attached map)

SROHOO
Provide the following information for the stream reach under assessment:
1. Applicant's name: Dominion 2. Evaluator's name: DDWEST
3. Date of evaluation: $8 - 27 - 14$ 4. Time of evaluation: 12.20
5. Name of stream: Unnamed the to Boar Swamp River basin: Lumber
7. Approximate drainage area: 750 acres 8. Stream order: 12th
9. Length of reach evaluated: 100 ft 10. County: Robe son
11. Site coordinates (if known): prefer in decimal degrees. 10. County
Latitude (ex. 34.872312): $34^{\circ} 43' 24' 262''$ Longitude (ex77.556611): $79^{\circ} 11' 36' 130''$
Method location determined (circle): GPS Topo Sheet Ortho (Aerial) Photo/GIS Other GIS Other 13. Location of reach under evaluation (note nearby roads and landmarks and attach map identifying stream(s) location):
14. Proposed channel work (if any): Nonl
15. Recent weather conditions: Mainly agg - Sew showers
16. Site conditions at time of visit: Normal
17. Identify any special waterway classifications known: <u>Market Section 10</u> Market Control Waters Market Section 10 Market Section 10 Market Supply Watershed Market Supply Watershed Market Section 10 Market Supply Watershed Market Section 10 Market Section 10 Market Supply Watershed Market Section 10 Market Section
18. Is there a pond or lake located upstream of the evaluation point? YES NO If yes, estimate the water surface area:
19. Does channel appear on USGS quad map? YES NO 20. Does channel appear on USDA Soil Survey? YES NO
21. Estimated watershed land use:% Residential% Commercial% Industrial 70 3% Agricultural
30_% Forested% Cleared / Logged% Other ()
22. Bankfull width:
24. Channel slope down center of stream: Flat (0 to 2%)Gentle (2 to 4%)Moderate (4 to 10%)Steep (>10%)
25. Channel sinuosity:StraightOccasional bendsFrequent meanderVery sinuousBraided channel
Instructions for completion of worksheet (located on page 2): Begin by determining the most appropriate ecoregion based on location, terrain, vegetation, stream classification, etc. Every characteristic must be scored using the same ecoregion. Assign points to each characteristic within the range shown for the ecoregion. Page 3 provides a brief description of how to review the characteristic identified in the worksheet. Scores should reflect an overall assessment of the stream reach under evaluation. If a characteristic cannot be evaluated due to site or weather conditions, enter 0 in the scoring box and provide an explanation in the comment section. Where there are obvious changes in the character of a stream under review (e.g., the stream flows from a pasture into a forest), the stream may be divided into smaller reaches that display more continuity, and a separate form used to evaluate each reach. The total score assigned to a stream reach must range between 0 and 100, with a score of 100 representing a stream of the highest quality.
Comments: <u>Illan - Macle ægritultaure elikk</u>
Evaluator's Signature $3-27-14$ This channel evaluation form is intended to be used only as a guide to assist landowners and environmental professionals in
gathering the data required by the United States Army Corps of Engineers to make a multi-in-

gathering the data required by the United States Army Corps of Engineers to make a preliminary assessment of stream quality. The total score resulting from the completion of this form is subject to USACE approval and does not imply a particular mitigation ratio or requirement. Form subject to change – version 06/03. To Comment, please call 919-876-8441 x 26.

Stream quality assessment worksheet SROH003

	CHARACTERISTICS	ECOREGION POINT RANGE			
		Coastal	Piedmont	Mountain	SCORE
1	Presence of flow / persistent pools in stream (no flow or saturation = 0; strong flow = max points)	0-5	0-4	0-5	1
2	Evidence of past human alteration (extensive alteration = 0; no alteration = max points)	0-6	0-5	0-5	21
3	Riparian zone (no buffer = 0; contiguous, wide buffer = max points)	0-6	0-4	0 - 5	-
4	Evidence of nutrient or chemical discharges (extensive discharges = 0; no discharges = max points)	0-5	0-4	0-4	1
5	Groundwater discharge (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0-3	0-4	0-4	/
5 6 7	Presence of adjacent floodplain (no floodplain = 0; extensive floodplain = max points)	0-4	0-4	0-2	\wedge
7	Entrenchment / floodplain access (deeply entrenched = 0; frequent flooding = max points)	0-5	0-4	0-2	/
8	Presence of adjacent wetlands (no wetlands = 0; large adjacent wetlands = max points)	0-6	0-4	0-2	/
9	Channel sinuosity (extensive channelization = 0; natural meander = max points)	0-5	0-4	0-3	\mathcal{D}
10	Sediment input (extensive deposition= 0; little or no sediment = max points)	0-5	0-4	0-4	
11	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0-4	0-5	NA
12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0 – 5	0-4	0-5	1.
13	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0-5	0-5	0-5	2
13 14	Root depth and density on banks (no visible roots = 0; dense roots throughout = max points)	0-3	0-4	0-5	1.
15	Impact by agriculture, livestock, or timber production (substantial impact =0; no evidence = max points)	0 – 5	0-4	0-5	0
16	Presence of riffle-pool/ripple-pool complexes (no riffles/ripples or pools = 0; well-developed = max points)	0 – 3	0 – 5	0-6	0
17	Habitat complexity (little or no habitat = 0; frequent, varied habitats = max points)	0-6	0-6	0-6	1
18	Canopy coverage over streambed (no shading vegetation = 0; continuous canopy = max points)	0 – 5	0-5	0-5	/
19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0-4	0-4	NA
20	Presence of stream invertebrates (see page 4) (no evidence = 0; common, numerous types = max points)	0-4	0 – 5	0-5	0
21	Presence of amphibians (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	1
22	Presence of fish (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	0
23	Evidence of wildlife use (no evidence = 0; abundant evidence = max points)	0-6	0-5	0 – 5	1
	Total Points Possible	100	100	100	

Date: 8-27-14	Project/Site: <	SERP	Latitudeろい。	42'74 71
Evaluator: DDWEST	County: Rol	20500	Longitude? 7C	12/1/2/ 1
Total Points:			Longitude? 79°/1* 36.	
Stream is at least intermittent $12 \cdot 5^{-19}$ or perennial if $\geq 30^{*}$	Ephemeral Inte	n ation (circle one) rmittent Perennial	Other UNT e.g. Quad Name:	to Bear Swar
A Geomorphology (Subject)				
A. Geomorphology (Subtotal =)	Absent	Weak	Moderate	Strong
^{a.} Continuity of channel bed and bank		1	(2)	3
2. Sinuosity of channel along thalweg 3. In-channel structure: ex. riffle-pool, step-pool,		1	2	3
ripple-pool sequence	0		2	
. Particle size of stream substrate				3
. Active/relict floodplain	0	(1)	2	3
. Depositional bars or benches			2	3
. Recent alluvial deposits	U		2	3
. Headcuts	0		2	3
. Grade control	0		2	3
0. Natural valley	0	(0.5)	1	1.5
1. Second or greater order channel	0	0.5	1	1.5
artificial ditches are not rated; see discussions in manual	No	=0	Yes =	= 3
3. Hydrology (Subtotal =)				
2. Presence of Baseflow				
	0	1	(2)	3
3. Iron oxidizing bacteria	0	(1)	2	3
4. Leaf litter	1.5	(1)	0.5	0
5. Sediment on plants or debris	0	0.5	1	1.5
6. Organic debris lines or piles	0	(0.5)	1	
7. Soil-based evidence of high water-table?	No	= 0	(Yés =	1.5
Biology (Subtotal =)			(165 -	<u> </u>
3. Fibrous roots in streambed	3	(2)	4	-
9. Rooted upland plants in streambed	3	2	1	0
 Macrobenthos (note diversity and abundance) 			1	0
1. Aquatic Mollusks		1	2	3
2. Fish		1	2	3
3. Crayfish		0.5	1	1.5
I. Amphibians	0	0.5	1	1.5
5. Algae	0	0.5	(1)	1.5
. Wetland plants in streambed		0.5	1	1.5
perennial streams may also be identified using other metho		FACW = 0.75; OBL	= 1.5(Other = 0))
otes:	ods. See p. 35 of manual.			
ſ	//			
ketch:	A			1
/	-/			/
1=1 AL	/		/	,
			/	
			/	
/	/			
/	/		/	

41



Waterbody sroh003 facing upstream



Waterbody sroh003 facing downstream



Waterbody sroh003 facing upline cross stream

DWQ #

Site #_____ (indicate on attached map)

STREAM QUALITY ASS	ESSMENT WORKSHEET
Provide the following information for the stream reach under	assessment.
	. Evaluator's name: $DDUE > T$
20, 0, 1, 0, 27 /11	Time of evaluation: $\frac{29.55}{25}$
5. Name of stream unnance trib to Benr Swamp.	River hasin: $1 \cos 50$
	Stream order: 1 St
	0. County:
11 01 11 10 100	2. Subdivision name (if any):
	Longitude (ex. -77.556611): $7726''$
Method location determined (circle): GPS Topo Sheet Ortho (Aeri	al) Photo/GIS Other GIS Other
13. Location of reach under evaluation (note nearby roads and land	Imarks and attach map identifying stream(s) location):
14 Proposed abarral work (Company) N/ 2	
14. Proposed channel work (if any): None 15. Recent weather conditions: Mainly Dry - Low	showers
16. Site conditions at time of visit: Norman V	Showers
17. Identify any special waterway classifications known: NAS	ection 10 NA Tidal Waters MA Essential Fisheries Habitat
N Frout Waters Notoutstanding Resource Waters NA Num	trient Sensitive Waters \underline{MW} ater Supply Watershed \underline{M} (I-IV)
18. Is there a pond or lake located upstream of the evaluation point	$\frac{1}{1-1}$ When sensitive waters $\frac{1}{1-1}$ water supply watershed $\frac{1}{1-1}$
	D. Does channel appear on USDA Soil Survey? YES NO
	% Commercial% Industrial // % Agricultural
	% Cleared / Logged% Other ()
22. Bankfull width: 2	Bank height (from hed to top of hank):
24. Channel slope down center of stream: KFlat (0 to 2%)	Gentle (2 to 4%) Moderate (4 to 10%) Steen (>10%)
25. Channel sinuosity: StraightOccasional bends	Frequent meanderVery sinuousBraided channel
Instructions for completion of worksheet (located on page 2) location, terrain, vegetation, stream classification, etc. Every char to each characteristic within the range shown for the ecoregic characteristics identified in the worksheet. Scores should reflect characteristic cannot be evaluated due to site or weather condition comment section. Where there are obvious changes in the characteristic a forest), the stream may be divided into smaller reaches that reach. The total score assigned to a stream reach must range bet highest quality.	Begin by determining the most appropriate ecoregion based on racteristic must be scored using the same ecoregion. Assign points on. Page 3 provides a brief description of how to review the an overall assessment of the stream reach under evaluation. If a ons, enter 0 in the scoring box and provide an explanation in the ter of a stream under review (e.g., the stream flows from a pasture display more continuity, and a separate form used to evaluate each ween 0 and 100, with a score of 100 representing a stream of the
Comments:Comments:	Man ; made Degriculture Ditch
Evaluator's Signature	Date 8-27-14
gathering the data required by the United States Army Gau	guide to assist landowners and environmental professionals in

gathering the data required by the United States Army Corps of Engineers to make a preliminary assessment of stream quality. The total score resulting from the completion of this form is subject to USACE approval and does not imply a particular mitigation ratio or requirement. Form subject to change – version 06/03. To Comment, please call 919-876-8441 x 26.

STREAM QUALITY ASSESSMENT WORKSHEET SROHDOZ

	#	CHARACTERISTICS -		ECOREGION POINT RANGE		
			Coastal	Piedmont	Mountain	SCORE
	1	Presence of flow / persistent pools in stream (no flow or saturation = 0; strong flow = max points)	0 5	0-4	0-5	2
	2	Evidence of past human alteration (extensive alteration = 0; no alteration = max points)	0-6	0-5	0-5	
	3	Riparian zone (no buffer = 0; contiguous, wide buffer = max points)	0-6	0-4	0-5	$\overline{\mathcal{O}}$
	4	Evidence of nutrient or chemical discharges (extensive discharges = 0; no discharges = max points)	0-5	0-4	0-4	1
	5	Groundwater discharge (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0 - 3	0-4	0-4	1
	6	Presence of adjacent floodplain (no floodplain = 0; extensive floodplain = max points)	0-4	0-4	0-2	$\tilde{\mathcal{D}}$
핀	7	Entrenchment / floodplain access (deeply entrenched = 0; frequent flooding = max points)	0-5	0-4	0-2	1
	8	Presence of adjacent wetlands (no wetlands = 0; large adjacent wetlands = max points)	0-6	0-4	0-2	\bigcirc
	9	Channel sinuosity (extensive channelization = 0; natural meander = max points)	0-5	0-4	0-3	\bigcirc
	10	Sediment input (extensive deposition= 0; little or no sediment = max points)	0-5	0-4	0-4	
	11	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0-4	0 – 5	NA
<u>.</u>	12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0-5	0-4	0-5	1
	13	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0-5	0-5	0 – 5	Z
	14	Root depth and density on banks (no visible roots = 0; dense roots throughout = max points)	0-3	0-4	0-5	1.
	15	Impact by agriculture, livestock, or timber production (substantial impact =0; no evidence = max points)	0-5	0-4	0-5	1
1998 - 1998 - 1998 - 1998 - 1998 - 1998 - 1998 - 1998 - 1998 - 1998 - 1998 - 1998 - 1998 - 1998 - 1998 - 1998 -	16	Presence of riffle-pool/ripple-pool complexes (no riffles/ripples or pools = 0; well-developed = max points)	0-3	0-5	0-6	/
	17	Habitat complexity (little or no habitat = 0; frequent, varied habitats = max points)	0-6	0-6	0-6	2
	18	Canopy coverage over streambed (no shading vegetation = 0; continuous canopy = max points)	0-5	0-5	0-5	\mathcal{O}
	19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0-4	0-4	NA
100	20	Presence of stream invertebrates (see page 4) (no evidence = 0; common, numerous types = max points)	0-4	0-5	0-5	1
	21	Presence of amphibians (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	1
	22	Presence of fish (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	D
	23	Evidence of wildlife use (no evidence = 0; abundant evidence = max points)	0 - 6	0-5	0-5	2
		Total Points Possible	100	100	100	<u>_</u>

* These characteristics are not assessed in coastal streams.

NC Division of Water Quality –Methodology for Identification of Intermittent and Perennial Streams and Their Origins v. 4.11

NC DWQ Stream Identification Form			SROHO	02	
Date: 8-27-14	Project/Site:	ERP	Latitude: 321 ⁹ 213'19, 804' Longitude: 79 ⁹ 12'10. 72 Other UNT to Bear Swamp e.g. Quad Name:		
Evaluator: DDWEST	County: Rol	esen			
Total Points:Stream is at least intermittentif \geq 19 or perennial if \geq 30*	Stream Determ	ination (circle one) ermittent Perennial			
A. Geomorphology (Subtotal =	Absent	Weak	Moderate	Strong	
1 ^{a.} Continuity of channel bed and bank	0	1	(2)		
2. Sinuosity of channel along thalweg	(0)	1	2	3	
3. In-channel structure: ex. riffle-pool, step-pool,			ــــــــــــــــــــــــــــــــــــــ	3	
ripple-pool sequence	0	$\begin{pmatrix} 1 \end{pmatrix}$	2	3	
4. Particle size of stream substrate	0	(1)	2	3	
5. Active/relict floodplain	(\bigcirc)	1	2	3	
6. Depositional bars or benches	(0)	1	2	3	
7. Recent alluvial deposits	$\overline{0}$	1	2	3	
8. Headcuts	0	(1)	2		
9. Grade control	0	0.5	1	3	
10. Natural valley	0	(0.5)		1.5	
11. Second or greater order channel		p = 0	1	1.5	
artificial ditches are not rated; see diserssions in manual	1		Yes	= 3	
3. Hydrology (Subtotal =					
2. Presence of Baseflow	0	TAR	(A)		
3. Iron oxidizing bacteria		- K	(D)	3	
4. Leaf litter	0		IA SI	3	
5. Sediment on plants or debris	1.5		0.5	0	
6. Organic debris lines or piles	0	(0.5)	1	1.5	
7. Soil-based evidence of high-water table?	0	C0.5	1	1.5	
C. Biology (Subtotal = 2000) 8.25	No	0 = 0	Yes =	= 3)	
8. Fibrous roots in streambed					
	3	2	(1)	0	
9. Rooted upland plants in streambed	(3)	2	1	0	
0. Macrobenthos (note diversity and abundance)		$\overline{(1)}$	2	3	
1. Aquatic Mollusks	(3)	1	2	3	
2. Fish	0	0.5	1	1.5	
3. Crayfish	0	0.5	(1)	1.5	
4. Amphibians	0	0.5	71	1.5	
5. Algae	0	(0.5)		1.5	
6. Wetland plants in streambed		FACIN - 0 75. ODI	= 1.5 Other = 0	1.0	
perennial streams may also be identified using other methods.	See p. 35 of manual				
lotes:	. /				
/	1/ N		······	1	
			/		
Conner			/		

41



Waterbody sroh002 facing upstream



Waterbody sroh002 facing downstream



Waterbody sroh002 facing upline cross stream

USACE AID#	DWQ #		Site #	(indicate on attached map)
STREA	M QUALITY AS	SSESSMENT WO	ORKSHEI	SROH OO I
Provide the following information for	or the stream reach und	er assessment:		
			DDW	EST
3. Date of evaluation: $8 - 27 - $			9:45	
5. Name of stream: Unnamed to	SIREAM QUALITY ASSESSMENT WORKSHEET Information for the stream reach under assessment: Dom (n 10) 2. Evaluator's name: PAMEST 8 - 27 - 14 4. Time of evaluation: 9 : 415 namelfoh to Bent Summer River basin: LUmber area: 7 50 acres 8. Stream order: 10. County: Robe Som nown): prefer in decimal degrees. 12. Subdivision name (if any): 41° 43 ' 19 662" Longitude (ex77.556611): 19. G62" Longitude (ex77.556611): 19. G62" Longitude (ex77.556611): 10. County: Robe Som are evaluation (note nearby roads and landmarks and attach map identifying stream(s) location): are evaluation (note nearby roads and landmarks and attach map identifying stream(s) location): are evaluation shown: Acrescence e of visit: Dummal waterway classifications known: Acrescencencencencencencencencencencencencenc			
7. Approximate drainage area: 7	50 acres	1	T.	
9. Length of reach evaluated: DD	\cap		้อรา	· · · · · · · · · · · · · · · · · · ·
11. Site coordinates (if known): prefe	er in decimal degrees.	• • •		
Latitude (ex. 34.872312): <u>34° 43' 10</u>	662"	Longitude (ex77,556611)	: 79°12'	11.433"
Method location determined (circle): (GP	S) Topo Sheet Ortho (A	verial) Photo/GIS Other G	IS Other	
14. Proposed channel work (if any):	None			
15. Recent weather conditions: Mi	inly for - De	N showers		ana ana amin'ny fisiana amin'ny fisiana amin'ny fisiana amin'ny fisiana amin'ny fisiana amin'ny fisiana amin'ny
16. Site conditions at time of visit:	1. 61 *			
17. Identify any special waterway class	ifications known: NB	Section 10 NA_Tida	l Waters	JA Essential Fisheries Habitat
NB Trout Waters NB Outstanding R	esource Waters NR	Nutrient Sensitive Waters	NR Water	Supply Watershed NB (I-IV)
18. Is there a pond or lake located upst	ream of the evaluation po	oint? YES NO If yes, e	estimate the wa	ater surface area:
19. Does channel appear on USGS qua	d map? YES NO			
21. Estimated watershed land use:	% Residential	% Commercial	% Industi	ial 100% Agricultural
- v~	% Forested	% Cleared / Logged	% Other (
22. Bankfull width:		23. Bank height (from be	ed to top of ba	nk):
24. Channel slope down center of strea	m:	Gentle (2 to 4%)	Moderate (4	to 10%)Steep (>10%)
25. Channel sinuosity:Straight	Occasional bends	Frequent meander	Very sinu	ousBraided channel
Instructions for completion of work location, terrain, vegetation, stream cla to each characteristic within the ran characteristics identified in the worksl characteristic cannot be evaluated due comment section. Where there are ob- into a forest), the stream may be divide	sheet (located on page assification, etc. Every cl ge shown for the ecore neet. Scores should refle to site or weather cond vious changes in the chan ed into smaller reaches th	2): Begin by determining haracteristic must be scor- egion. Page 3 provides ect an overall assessment litions, enter 0 in the sco- racter of a stream under r nat display more continuit	ng the most and ed using the s a brief descr of the stream ring box and eview (e.g., the y and a senar	ppropriate ecoregion based on ame ecoregion. Assign points iption of how to review the reach under evaluation. If a provide an explanation in the te stream flows from a pasture ate form used to evaluate each
Total Score (from reverse):	Comment	s: <u>Man-ma</u>	uck A	grizulture
		······································		
\frown	Tell		~	
Evaluator's Signature	nded to be used only as	a guide to essist los d-	Date <u>8-</u>	27-14

gathering the data required by the United States Army Corps of Engineers to make a preliminary assessment of stream quality. The total score resulting from the completion of this form is subject to USACE approval and does not imply a particular mitigation ratio or requirement. Form subject to change - version 06/03. To Comment, please call 919-876-8441 x 26.

STREAM QUALITY ASSESSMENT WORKSHEET

	#	# CHARACTERISTICS -		ECOREGION POINT RANGE			
		Processos of Occur (Coastal	Piedmont	Mountain	SCORE	
	1	Presence of flow / persistent pools in stream (no flow or saturation = 0; strong flow = max points)	0-5	0-4	0-5	3	
PHYSICAL	2	Evidence of past human alteration (extensive alteration = 0; no alteration = max points)	0-6	0-5	0-5		
	3	Riparian zone (no buffer = 0; contiguous, wide buffer = max points)	0-6	0-4	0-5	\mathcal{D}	
	4	Evidence of nutrient or chemical discharges (extensive discharges = 0; no discharges = max points)	0-5	0-4	0-4		
	5	Groundwater discharge (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0-3	0-4	0-4	Pa 1	
	6	Presence of adjacent floodplain (no floodplain = 0; extensive floodplain = max points)	0-4	0-4	0-2	0	
2	7	Entrenchment / floodplain access (deeply entrenched = 0; frequent flooding = max points)	0-5	0-4	0-2	1	
	8	Presence of adjacent wetlands (no wetlands = 0; large adjacent wetlands = max points)	0-6	0-4	0-2	D	
-	9	Channel sinuosity (extensive channelization = 0; natural meander = max points)	0-5	0-4	0-3	\mathcal{D}	
-	10	Sediment input (extensive deposition= 0; little or no sediment = max points)	0-5	0-4	0-4	1.	
	11	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0-4	0-5	NA	
	12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0-5	0-4	0-5	1.	
STABILITY	13	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0 - 5	0-5	0-5	.3	
PIAI	14	Root depth and density on banks (no visible roots = 0; dense roots throughout = max points)	0-3	0-4	0-5	2	
	15	Impact by agriculture, livestock, or timber production (substantial impact =0; no evidence = max points)	0-5	0-4	0-5	1	
┛	16	Presence of riffle-pool/ripple-pool complexes (no riffles/ripples or pools = 0; well-developed = max points)	0-3	0-5	0-6	1	
TADIAL	17	Habitat complexity (little or no habitat = 0; frequent, varied habitats = max points)	0 - 6	0-6	0-6	2	
IVU	18	Canopy coverage over streambed (no shading vegetation = 0; continuous canopy = max points)	0 – 5	0-5	0-5	0	
	19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0-4	0-4	NA	
╸┝	20	Presence of stream invertebrates (see page 4) (no evidence = 0; common, numerous types = max points)	0-4	0-5	0-5	1	
	21	Presence of amphibians (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	2	
	22	Presence of fish (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	1	
	23	Evidence of wildlife use (no evidence = 0; abundant evidence = max points)	0-6	0-5	0-5	2	
		Total Points Possible	100	100	100	(
		TOTAL SCORE (also enter on fir maracteristics are not assessed in coastal streams.	st page)			24	

NC Division of Water Quality –Methodology for Identification of Intermittent and Perennial Streams and Their Origins v. 4.11

NC DWQ Stream Identification Form	Version 4.11		SROH	007	
Date: 8-27-14	Project/Site: 5	ERP	Latitude921° 43' 19,66		
Evaluator: DDWEST	County: Rob	esen		7°12'11,4	
Total Points: 33.25 Stream is at least intermittentif \geq 19 or perennial if \geq 30*	Stream Determ Ephemeral Inte	nation (circle one) rmittent Perennial	Other UNT to Bear Swam e.g. Quad Name:		
A. Geomorphology (Subtotal =)	Absent	Weak	Moderate	Strong	
1 ^a Continuity of channel bed and bank	0	1	(2)	3	
2. Sinuosity of channel along thalweg	$\left(0 \right)$	1	2	3	
3. In-channel structure: ex. riffle-pool, step-pool,			·····	3	
ripple-pool sequence	0		2	3	
4. Particle size of stream substrate	0	(1)	2	3	
5. Active/relict floodplain	$\left(\right)$	1	2	3	
6. Depositional bars or benches	0	(1)	2	3	
7. Recent alluvial deposits	(0)	1	2	3	
3. Headcuts	0	(1)	2	3	
9. Grade control	0	(0.5)	1	1.5	
10. Natural valley	0	(0.5)	1	1.5	
1. Second or greater order channel	(No		Yes		
artificial ditches are not rated; see discussions in manual 3. Hydrology (Subtotal =)			103	- 3	
2. Presence of Baseflow	0	1	2	\square	
3. Iron oxidizing bacteria	0				
4. Leaf litter	1.5	1	2	(3)	
5. Sediment on plants or debris		\bigcirc	0.5	0	
6. Organic debris lines or piles	0	0.5		1.5	
7. Soil-based evidence of high water table?	0	0.5	1	1.5	
		= 0	Yes	= 3 ')	
 Biology (Subtotal =) 14.75 8. Fibrous roots in streambed 					
9. Rooted upland plants in streambed	3	2	1	0	
0. Macrobenthos (note diversity and abundance)	(3)	2	1	0	
1. Aquatic Mollusks	0	1	(2)	3	
2. Fish	0	<u> </u>	2	3	
3. Crayfish	0	0.5	(1)	1.5	
4. Amphibians	0	0.5	(1)	1.5	
	0	0.5	1	(1.5)	
5. Algae	0	0.5	1	(1.5)	
6. Wetland plants in streambed		FACW = 0.75; OBL	= 1.5 Other = 0		
perennial streams may also be identified using other methods	. See p. 35 of manual				
otes:	.)				
<u> </u>	<i>P</i>		······································	1	
ketch:	X				
		< flow		/	
1				7	
	Λ			/	

41



Waterbody sroh001 facing upstream



Waterbody sroh001 facing downstream



Waterbody sroh001 facing upline cross stream