

Waterbody Data Sheet

Survey Description

Project Name: ACP		Waterbody Name: Unnamed Pond on UNT Little Marsh Swamp		Waterbody ID: 050h 003	Date: 12 Sept 2014
State: NC	County: Robeson	Company: DD West	Crew Member Initials: JG	Photo ID(s): 2: North and West	
Tract Number(s): 24-006		Milepost Entry: -	Milepost Exit: -	Associated Wetland ID(s): None	
Survey Type: <small>(check one)</small>					
<input checked="" type="checkbox"/> Centerline <input type="checkbox"/> Re-Route <input type="checkbox"/> Access Road <input type="checkbox"/> Other: _____					

Physical Attributes

Stream Classification: <small>(check one)</small>					
<input type="checkbox"/> Ephemeral <input type="checkbox"/> Intermittent <input type="checkbox"/> Perennial					
Waterbody Type: <small>(check one)</small>					
<input type="checkbox"/> Stream <input type="checkbox"/> River <input type="checkbox"/> Ditch <input checked="" type="checkbox"/> Pond <input type="checkbox"/> Lake <input type="checkbox"/> Connecting swale ^a <input type="checkbox"/> Other: _____					
OHWM		OHWM Indicator: <small>(check all that apply)</small>			
Width: 40 ft.		<input checked="" type="checkbox"/> Clear line on bank	<input type="checkbox"/> Shelving	<input type="checkbox"/> Wrested vegetation	<input type="checkbox"/> Scouring
Height: 6 ft.		<input type="checkbox"/> Bent, matted, or missing vegetation	<input type="checkbox"/> Wrack line	<input type="checkbox"/> Litter and debris	<input type="checkbox"/> Abrupt plant community change
				<input type="checkbox"/> Water staining	<input type="checkbox"/> Soil characteristic change
Width of Waterbody - Top of Bank to Top of Bank at Centerline: NA ft.		Width of Waterbody - Water Edge to Water Edge at Centerline: NA ft.		Depth of Water at Centerline: <small>(Approx.)</small> NA ft.	
Sinuosity: <small>(check one)</small>		Water velocity: <small>(Approx.)</small>		Bank height	
<input checked="" type="checkbox"/> Straight <input type="checkbox"/> Meandering		0 fps		Right: 10 ft.	
				Left: 10 ft.	
				Right: 30 degrees	
				Left: 30 degrees	

Qualitative Attributes

Water Appearance: <small>(check one)</small>					
<input type="checkbox"/> No water <input type="checkbox"/> Clear <input type="checkbox"/> Turbid <input type="checkbox"/> Sheen on surface <input type="checkbox"/> Surface scum <input checked="" type="checkbox"/> Algal mats <input type="checkbox"/> Other: _____					
Substrate: <small>(check all that apply)</small>					
<input type="checkbox"/> Bedrock <input type="checkbox"/> Gravel <input type="checkbox"/> Sand <input checked="" type="checkbox"/> Silt/clay <input type="checkbox"/> Organic <input type="checkbox"/> Other: _____					
% of Substrate: _____ % _____ % _____ % _____ % _____ %					
Width of Riparian Zone: 20 ft.		Vegetative Layers: <small>(check all that apply)</small>			
		<input checked="" type="checkbox"/> Trees: 8 in.		<input checked="" type="checkbox"/> Shrubs: 2 in.	
				<input type="checkbox"/> Herbs	

Dominant Bank Vegetation:
(list) **Salix nigra, Liquidambar styraciflua, Acer rubrum, Vitis rotundifolia, Smilax rotundifolia**

Aquatic Habitats (ex: submerged or emerged aquatic vegetation, overhanging banks/roots, leaf packs, large submerged wood, riffles, deep pools):
(list) **Submerged wood**

Aquatic Organisms Observed:
(list) **None**

Invasive and/or T&E Species Observed:
(list) **None**

Tributary is:
(check one)

Natural
 Artificial, man-made
 Manipulated

Disturbances:
(check all that apply)

Livestock access
 Manure in waterbody
 Waste discharge pipes
 Other: **accessed for crop irrigation**

Stream Quality^b:
(check one)

High
 Moderate
 Low

Waterbody ID:

000003

^a **Connecting swales** are water features that do not meet the definition of a waterbody (not an ephemeral waterbody) in that there is not a defined bed, bank, and ordinary high water mark, however, it is a water conveyance feature that is characterized by flow volume, frequency, and duration to make it more than just an erosional feature and connects two potential waters of the U.S. and thereby may be subject to Section 404 permitting.

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

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

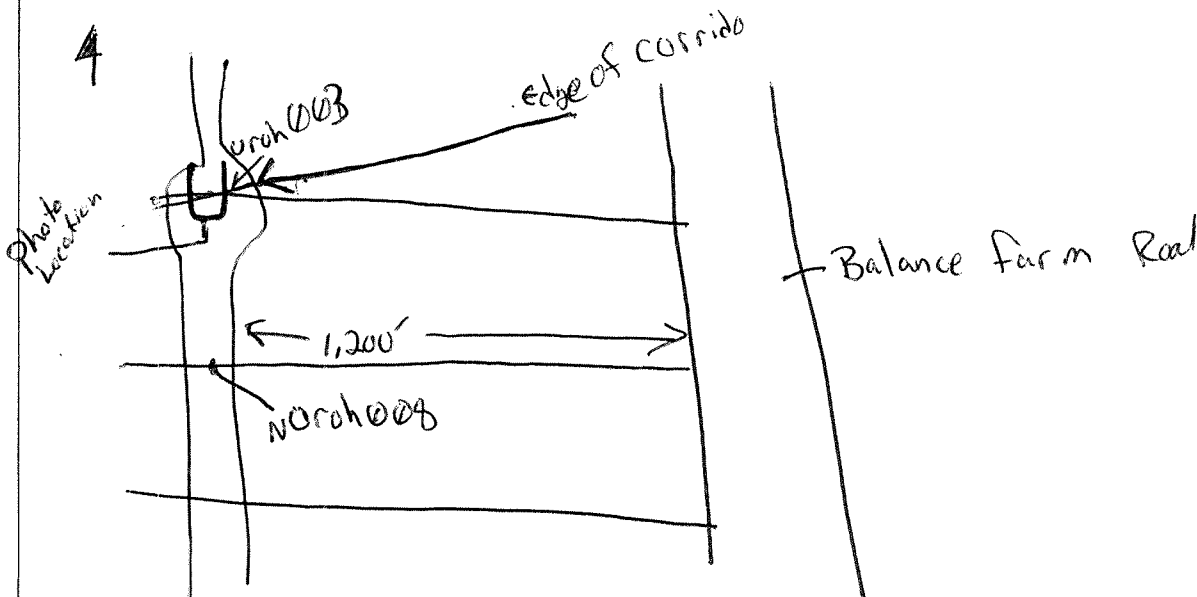
Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious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

Notes

excavated pond, shows on USGS as connected to Little Marsh Swamp

Waterbody Sketch

Include north arrow, centerline, distance from centerline, photo locations, survey boundary, and unique IDs of associated features.



oroh003



Open water data point oroh003 facing north



Open water data point oroh003 facing west

S R O H O 11

USACE AID# _____ DWQ # _____ Site # _____ (indicate on attached map)



STREAM QUALITY ASSESSMENT WORKSHEET



Provide the following information for the stream reach under assessment:

- 1. Applicant's name: ACP
- 2. Evaluator's name: D. WEST
- 3. Date of evaluation: 9-18-14
- 4. Time of evaluation: 10:15
- 5. Name of stream: UNT to Little Mach Summit
- 6. River basin: Lumber
- 7. Approximate drainage area: > 100 Acres
- 8. Stream order: 1st
- 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): 34° 52' 19.164"
- Longitude (ex. -77.556611): 78° 56' 03.967"
- 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 dry - few showers
- 16. Site conditions at time of visit: Rained day before
- 17. Identify any special waterway classifications known: NK Section 10 NA Tidal Waters NA Essential Fisheries Habitat NA Trout Waters NA Outstanding Resource Waters NA Nutrient Sensitive Waters NA Water Supply Watershed NA (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 80% Agricultural
20% Forested _____ % Cleared / Logged _____ % Other (_____)
- 22. Bankfull width: 8
- 23. Bank height (from bed to top of bank): 15
- 24. Channel slope down center of stream: X Flat (0 to 2%) _____ Gentle (2 to 4%) _____ Moderate (4 to 10%) _____ Steep (>10%)
- 25. Channel sinuosity: X Straight _____ 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): 21 Comments: Man-made ditch

Evaluator's Signature [Signature] Date 9-18-14

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.



SROH001

STREAM QUALITY ASSESSMENT WORKSHEET

	#	CHARACTERISTICS	ECOREGION POINT RANGE			SCORE
			Coastal	Piedmont	Mountain	
PHYSICAL	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	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	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	0
	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	0
	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
STABILITY	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	1
	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
HABITAT	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	2
	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
BIOLOGY	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	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 first page)						21

* These characteristics are not assessed in coastal streams.



SROH011

NC DWQ Stream Identification Form Version 4.11

Date: 9-18-14	Project/Site: ACP	Latitude: 34°50'19.164"
Evaluator: DWEST	County: Robeson	Longitude: 78°56'03.967"
Total Points: Stream is at least intermittent if ≥ 19 or perennial if ≥ 30* 22.75	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other UNT TO e.g. Quad Name: LITTLE MARSA SWAMP

A. Geomorphology (Subtotal = 6)

	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	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 = 0			Yes = 3

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 7.5)

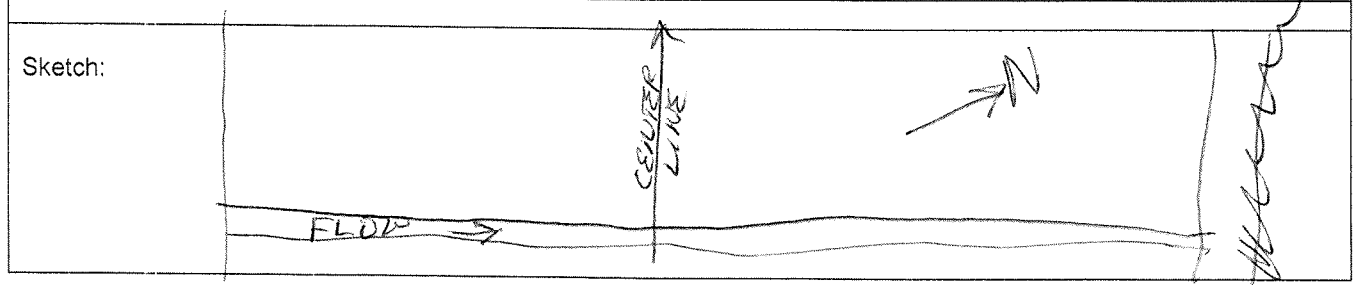
12. Presence of Baseflow	0	1	2	3
13. Iron oxidizing bacteria	0	1	2	3
14. Leaf litter	1.5	1	0.5	0
15. Sediment on plants or debris	0	0.5	1	1.5
16. Organic debris lines or piles	0	0.5	1	1.5
17. Soil-based evidence of high water table?	No = 0			Yes = 3

C. Biology (Subtotal = 9.25)

18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macroinvertebrates (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	1	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:



sroh011



Waterbody sroh011 facing upstream



Waterbody sroh011 facing downstream

sroh011



Waterbody sroh011 facing upline cross stream

5806006

USACE AID# _____ DWQ # _____ Site # _____ (indicate on attached map)



STREAM QUALITY ASSESSMENT WORKSHEET



Provide the following information for the stream reach under assessment:

- 1. Applicant's name: ACP
- 2. Evaluator's name: DAD
- 3. Date of evaluation: 9/11/14
- 4. Time of evaluation: 1200
- 5. Name of stream: CWT to Little Marsh Stream
- 6. River basin: Lumbell
- 7. Approximate drainage area: ~20 ac
- 8. Stream order: 1st
- 9. Length of reach evaluated: 200'
- 10. County: Robeson
- 11. Site coordinates (if known): prefer in decimal degrees.
- 12. Subdivision name (if any): _____

Latitude (ex. 34.872312): 34° 50' 58".611" Longitude (ex. -77.556611): -78° 56' 14.529"

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):
Meandering Rd + I-95 within ~200'

- 14. Proposed channel work (if any): 1
- 15. Recent weather conditions: Typical
- 16. Site conditions at time of visit: Typical

17. Identify any special waterway classifications known: Section 10 Tidal Waters Essential Fisheries Habitat Trout Waters Outstanding Resource Waters Nutrient Sensitive Waters Water 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: _____

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: 10% Residential 0% Commercial 0% Industrial 60% Agricultural 30% Forested 0% Cleared / Logged 0% Other (_____)

22. Bankfull width: 8' 10' 23. Bank height (from bed to top of bank): 1'

24. Channel slope down center of stream: X Flat (0 to 2%) Gentle (2 to 4%) Moderate (4 to 10%) Steep (>10%)

25. Channel sinuosity: X Straight 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): 62 Comments: previously been impacted

Evaluator's Signature _____ Date 9/11/14

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SR06006

STREAM QUALITY ASSESSMENT WORKSHEET

	#	CHARACTERISTICS	ECOREGION POINT RANGE			SCORE
			Coastal	Piedmont	Mountain	
PHYSICAL	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	4
	3	Riparian zone (no buffer = 0; contiguous, wide buffer = max points)	0-6	0-4	0-5	4
	4	Evidence of nutrient or chemical discharges (extensive discharges = 0; no discharges = max points)	0-5	0-4	0-4	4
	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	2
	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	3
	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	2
	11	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0-4	0-5	
STABILITY	12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0-5	0-4	0-5	3
	13	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0-5	0-5	0-5	3
	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
HABITAT	16	Presence of riffle-pool/ripple-pool complexes (no riffles/ripples or pools = 0; well-developed = max points)	0-3	0-5	0-6	2
	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	23
	19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0-4	0-4	
BIOLOGY	20	Presence of stream invertebrates (see page 4) (no evidence = 0; common, numerous types = max points)	0-4	0-5	0-5	2
	21	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	0
	23	Evidence of wildlife use (no evidence = 0; abundant evidence = max points)	0-6	0-5	0-5	4
Total Points Possible			100	100	100	
TOTAL SCORE (also enter on first page)						62

* These characteristics are not assessed in coastal streams.

SROG006

NC DWQ Stream Identification Form Version 4.11

Date: 9/11/14	Project/Site: SERP	Latitude: 34° 50' 58.611"
Evaluator: DFD	County: Robeson	Longitude: 78° 58' 14.529"
Total Points: Stream is at least intermittent if ≥ 19 or perennial if ≥ 30* 27.5	Stream Determination (circle one) Ephemeral <u>Intermittent</u> Perennial	Other UNT LITTLE MARSH e.g. Quad Name: SWAMP

A. Geomorphology (Subtotal = 10)

	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	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 = 0		Yes = 3	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 4)

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?	No = 0		Yes = 3	

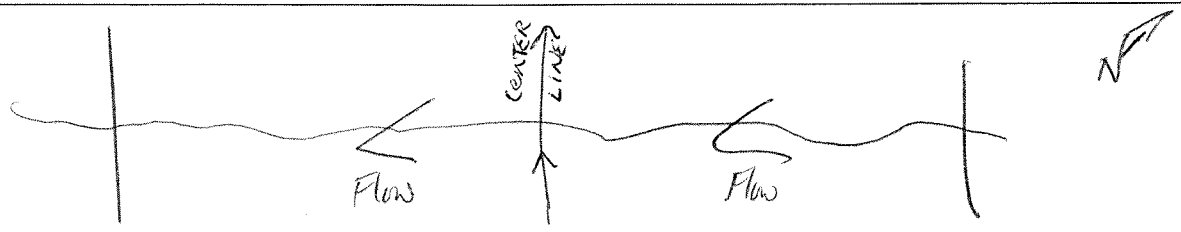
C. Biology (Subtotal = 9.5)

18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macroinvertebrates (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	1	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:



srog006



Waterbody srog006 facing upstream



Waterbody srog006 facing downstream

srog006



Waterbody srog006 facing upline cross stream



STREAM QUALITY ASSESSMENT WORKSHEET



Provide the following information for the stream reach under assessment:

1. Applicant's name: ACP
2. Evaluator's name: Stephen Hoffmann
3. Date of evaluation: 12/14/15
4. Time of evaluation: 0900
5. Name of stream: Mecser Branch
6. River basin: Lower Pee Dee
7. Approximate drainage area: _____
8. Stream order: 2nd
9. Length of reach evaluated: 300'
10. County: Robeson
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any): _____
- Latitude (ex. 34.872312): 34.8333
- Longitude (ex. -77.556611): -78.9969
- 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): Veterans Rd.
14. Proposed channel work (if any): Pipeline
15. Recent weather conditions: Normal
16. Site conditions at time of visit: Sunny 50°F
17. Identify any special waterway classifications known: Section 10 Tidal Waters Essential Fisheries Habitat Trout Waters Outstanding Resource Waters Nutrient Sensitive Waters Water 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: _____
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 (_____)
22. Bankfull width: 20'
23. Bank height (from bed to top of bank): 4'
24. Channel slope down center of stream: Flat (0 to 2%) Gentle (2 to 4%) Moderate (4 to 10%) Steep (>10%)
25. Channel sinuosity: Straight 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): 50 Comments: _____

Evaluator's Signature: [Signature] Date: 12/14/15

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STREAM QUALITY ASSESSMENT WORKSHEET

	#	CHARACTERISTICS	ECOREGION POINT RANGE			SCORE
			Coastal	Piedmont	Mountain	
PHYSICAL	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	2
	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
	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	2
	7	Entrenchment / floodplain access (deeply entrenched = 0; frequent flooding = max points)	0-5	0-4	0-2	3
	8	Presence of adjacent wetlands (no wetlands = 0; large adjacent wetlands = max points)	0-6	0-4	0-2	5
	9	Channel sinuosity (extensive channelization = 0; natural meander = max points)	0-5	0-4	0-3	1
	10	Sediment input (extensive deposition = 0; little or no sediment = max points)	0-5	0-4	0-4	5
	11	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0-4	0-5	-
STABILITY	12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0-5	0-4	0-5	4
	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 (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
HABITAT	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	2
	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	1
BIOLOGY	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	0
	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 first page)						50

* 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

Date: 12/14/15	Project/Site: ACP	Latitude: 34.8333
Evaluator: SAH	County: Robeson	Longitude: -78.9969
Total Points: <i>Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*</i>	Stream Determination (circle one) Ephemeral () Intermittent <u>()</u> Perennial ()	Other <u>Stofool</u> e.g. Quad Name: <u>Meyer Brook</u>

A. Geomorphology (Subtotal = 9)

	Absent	Weak	Moderate	Strong
1 ^a Continuity of channel bed and bank	0	1	<u>2</u>	3
2. Sinuosity of channel along thalweg	0	<u>1</u>	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	<u>0</u>	1	2	3
4. Particle size of stream substrate	0	<u>1</u>	2	3
5. Active/relict floodplain	0	<u>1</u>	2	3
6. Depositional bars or benches	<u>0</u>	1	2	3
7. Recent alluvial deposits	<u>0</u>	1	2	3
8. Headcuts	<u>0</u>	1	2	3
9. Grade control	0	<u>0.5</u>	1	1.5
10. Natural valley	0	<u>0.5</u>	1	1.5
11. Second or greater order channel	No = 0		Yes = <u>3</u>	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 6.5)

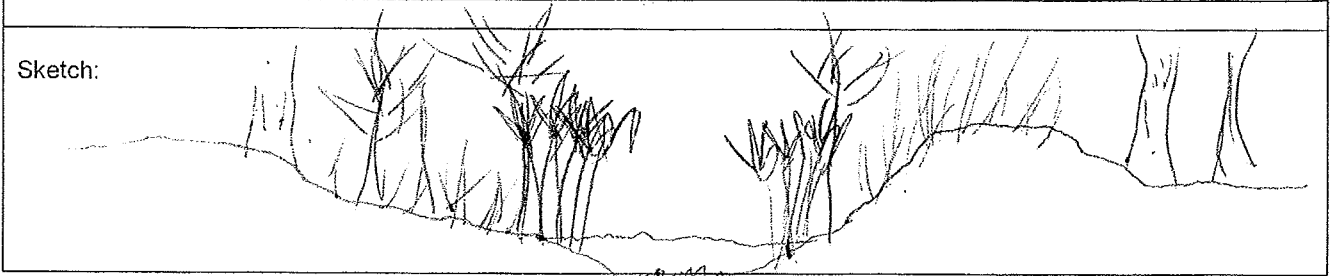
12. Presence of Baseflow	0	1	<u>2</u>	3
13. Iron oxidizing bacteria	<u>0</u>	1	2	3
14. Leaf litter	1.5	1	<u>0.5</u>	0
15. Sediment on plants or debris	<u>0</u>	0.5	1	1.5
16. Organic debris lines or piles	<u>0</u>	0.5	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = <u>3</u>	

C. Biology (Subtotal = 3.75)

18. Fibrous roots in streambed	3	2	<u>1</u>	0
19. Rooted upland plants in streambed	3	<u>2</u>	1	0
20. Macroinvertebrates (note diversity and abundance)	<u>0</u>	1	2	3
21. Aquatic Mollusks	<u>0</u>	1	2	3
22. Fish	<u>0</u>	0.5	1	1.5
23. Crayfish	<u>0</u>	0.5	1	1.5
24. Amphibians	<u>0</u>	0.5	1	1.5
25. Algae	<u>0</u>	0.5	1	1.5
26. Wetland plants in streambed	FACW = <u>0.75</u> ; OBL = 1.5 Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes: Stofool





Waterbody srof001 facing northwest upstream



Waterbody srof001 facing southeast downstream



Waterbody srof001 facing east across

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: 12/15/15	Project/Site: ACP	Latitude: 34.8283
Evaluator: SA	County: Robeson	Longitude: -79.0052
Total Points: Stream is at least intermittent if ≥ 19 or perennial if $\geq 30^*$ 7.5	Stream Determination (circle one) <u>Ephemeral</u> Intermittent Perennial	Other 504002 e.g. Quad Name:

A. Geomorphology (Subtotal = 0)

	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	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 = 0		Yes = 3	

^aartificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 4)

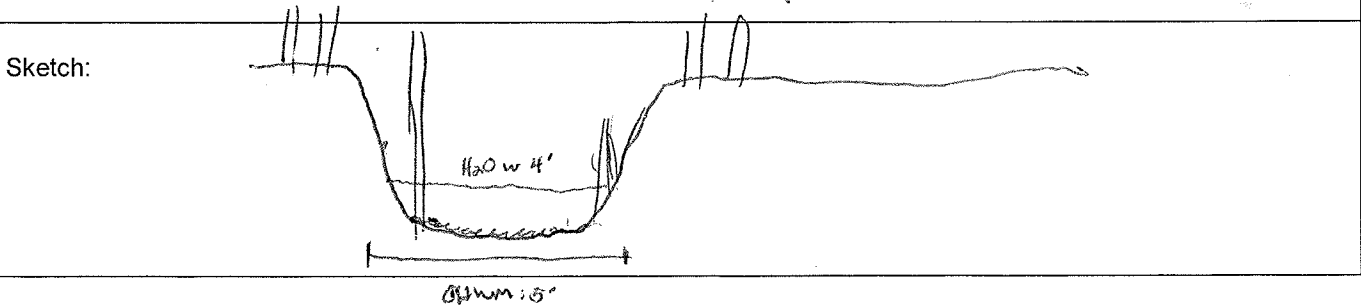
12. Presence of Baseflow	0	1	2	3
13. Iron oxidizing bacteria	0	1	2	3
14. Leaf litter	1.5	1	0.5	0
15. Sediment on plants or debris	0	0.5	1	1.5
16. Organic debris lines or piles	0	0.5	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3	

C. Biology (Subtotal = 3.5)

18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macroinvertebrates (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	1	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: 504002, unnamed trib to "Black Branch", tadpole's present, Ditch, No flow





STREAM QUALITY ASSESSMENT WORKSHEET



Provide the following information for the stream reach under assessment:

1. Applicant's name: Dominion
 2. Evaluator's name: Stephen Hoffman
 3. Date of evaluation: 12/15/15
 4. Time of evaluation: 1100
 5. Name of stream: Unnamed trib to Black Branch
 6. River basin: Lower Pee Dee
 7. Approximate drainage area: _____
 8. Stream order: 1st
 9. Length of reach evaluated: 200'
 10. County: Robeson
 11. Site coordinates (if known): prefer in decimal degrees.
 12. Subdivision name (if any): _____
 - Latitude (ex. 34.872312): 34.8283
 - Longitude (ex. -77.556611): -79.0052
- 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): Pipeline
15. Recent weather conditions: Normal
16. Site conditions at time of visit: Sunny 50°F
17. Identify any special waterway classifications known: Section 10 Tidal Waters Essential Fisheries Habitat Trout Waters Outstanding Resource Waters Nutrient Sensitive Waters Water 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: _____
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: 5% Residential 25% Forested 20% Cleared / Logged 50% Agricultural _____ % Commercial _____ % Industrial _____ % Other (_____)
22. Bankfull width: 12'
23. Bank height (from bed to top of bank): 5'
24. Channel slope down center of stream: Flat (0 to 2%) Gentle (2 to 4%) Moderate (4 to 10%) Steep (>10%)
25. Channel sinuosity: Straight 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): 30 Comments: _____

Evaluator's Signature *Stephen Hoffman* Date 12/15/15

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.

STREAM QUALITY ASSESSMENT WORKSHEET

	#	CHARACTERISTICS	ECOREGION POINT RANGE			SCORE
			Coastal	Piedmont	Mountain	
PHYSICAL	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	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	2
	5	Groundwater discharge (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0-3	0-4	0-4	2
	6	Presence of adjacent floodplain (no floodplain = 0; extensive floodplain = max points)	0-4	0-4	0-2	0
	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	1
	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	3
	11	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0-4	0-5	-
STABILITY	12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0-5	0-4	0-5	3
	13	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0-5	0-5	0-5	3
	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	2
HABITAT	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	4
	19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0-4	0-4	-
BIOLOGY	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	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 first page)						30

* These characteristics are not assessed in coastal streams.



Waterbody srof002 facing east upstream



Waterbody srof002 facing west downstream



Waterbody srof002 facing north across



STREAM QUALITY ASSESSMENT WORKSHEET



Provide the following information for the stream reach under assessment:

1. Applicant's name: Dominion
2. Evaluator's name: Stephen Hoffman
3. Date of evaluation: 12/15/15
4. Time of evaluation: 1530
5. Name of stream: Black Branch
6. River basin: Lower Pee Dee
7. Approximate drainage area: _____
8. Stream order: 2nd
9. Length of reach evaluated: 300'
10. County: Robeson
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any): _____
- Latitude (ex. 34.872312): 34.8256 Longitude (ex. -77.556611): -79.0078
- 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):
Rte 20
14. Proposed channel work (if any): Pipeline
15. Recent weather conditions: Normal
16. Site conditions at time of visit: Sunny 50°s
17. Identify any special waterway classifications known: Section 10 Tidal Waters Essential Fisheries Habitat
 Trout Waters Outstanding Resource Waters Nutrient Sensitive Waters Water 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: _____
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: 5 % Residential 10 % Commercial % Industrial 3 % Agricultural
40 % Forested 10 % Cleared / Logged % Other (_____)
22. Bankfull width: 12'
23. Bank height (from bed to top of bank): 15'
24. Channel slope down center of stream: Flat (0 to 2%) Gentle (2 to 4%) Moderate (4 to 10%) Steep (>10%)
25. Channel sinuosity: Straight 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): 53 Comments: _____

Evaluator's Signature: *Stephen Hoffman* Date: 12/15/15

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.

STREAM QUALITY ASSESSMENT WORKSHEET

	#	CHARACTERISTICS	ECOREGION POINT RANGE			SCORE
			Coastal	Piedmont	Mountain	
PHYSICAL	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	1
	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	4
	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	2
	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	4
	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	-
STABILITY	12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0-5	0-4	0-5	4
	13	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0-5	0-5	0-5	4
	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	3
HABITAT	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	2
	18	Canopy coverage over streambed (no shading vegetation = 0; continuous canopy = max points)	0-5	0-5	0-5	3
	19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0-4	0-4	-
BIOLOGY	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	0
	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	3
Total Points Possible			100	100	100	
TOTAL SCORE (also enter on first page)						53

* 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

Date: 12/15/15	Project/Site: ACP	Latitude: 34.8256
Evaluator: SH	County: Robeson	Longitude: -79.0078
Total Points: Stream is at least intermittent if ≥ 19 or perennial if $\geq 30^*$ 26.25	Stream Determination (circle one) Ephemeral <input type="checkbox"/> Intermittent <input checked="" type="checkbox"/> Perennial <input type="checkbox"/>	Other S106003 e.g. Quad Name: Black Branch

A. Geomorphology (Subtotal = 10.5)

	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	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 = 0		Yes = 3	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 6)

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?	No = 0		Yes = 3	

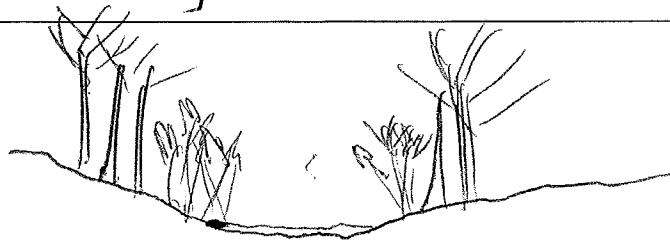
C. Biology (Subtotal = 4.75)

18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macroinvertebrates (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	1	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: Channel was disturbed by access road construction, silt fence, floded area upstream

Sketch:





Waterbody srof003 facing northwest upstream



Waterbody srof003 facing southeast downstream



Waterbody srof003 facing southwest across

Open Waterbody Data Sheet

Survey Description			
Project Name: ACP	Waterbody Name: UNNAMED POND	Waterbody ID: 0000001	Date: 10/18/16
State: NC	County: Robeson	Company: ESI	Crew Member Initials: LR, LJ
Tract Number(s): 24-029, 24-027		Nearest Milepost: 167.2	Photos: Facing S, W
Associated Wetland ID(s): NA			
Survey Type: (check one) <input checked="" type="checkbox"/> Centerline <input type="checkbox"/> Re-Route <input type="checkbox"/> Access Road <input type="checkbox"/> Other:			
Physical Attributes			
Waterbody Type: (check one) <input checked="" type="checkbox"/> Stock Pond <input type="checkbox"/> Natural Pond <input type="checkbox"/> Lake <input type="checkbox"/> Reservoir <input type="checkbox"/> Impoundment <input type="checkbox"/> Oxbow <input type="checkbox"/> Other:			
Hydrologic Regime: <input checked="" type="checkbox"/> Permanently Flooded <input type="checkbox"/> Semipermanently Flooded <input type="checkbox"/> Seasonally Flooded <input type="checkbox"/> Temporarily Flooded			
OHWM Height: <u>>3</u> ft.	OHWM Indicator: (check all that apply) <input checked="" type="checkbox"/> Clear line on bank <input type="checkbox"/> Shelving <input type="checkbox"/> Wrested vegetation <input type="checkbox"/> Scouring <input type="checkbox"/> Water staining <input type="checkbox"/> Bent, matted, or missing vegetation <input type="checkbox"/> Wrack line <input type="checkbox"/> Litter and debris <input type="checkbox"/> Abrupt plant community change <input type="checkbox"/> Soil characteristic change		
Depth of Water: N/A <input type="checkbox"/> <u>>3</u> ft.	Bank height (average): <u>2</u> ft. above surface	Bank slope (average): <u>90</u> degrees	
Qualitative Attributes			
Water Appearance: (check one) <input type="checkbox"/> No water <input checked="" type="checkbox"/> Clear <input type="checkbox"/> Turbid <input type="checkbox"/> Sheen on surface <input type="checkbox"/> Surface scum <input type="checkbox"/> Algal mats <input type="checkbox"/> Other:			
Substrate: (check all that apply) <input type="checkbox"/> Bedrock <input type="checkbox"/> Boulder <input type="checkbox"/> Cobble <input type="checkbox"/> Gravel <input checked="" type="checkbox"/> Sand <input checked="" type="checkbox"/> Silt/ clay <input type="checkbox"/> Organic <input type="checkbox"/> Other:			
% of Substrate: _____% _____% _____% _____% <u>80</u> % <u>20</u> % _____% _____%			
Width of Riparian Zone: _____ ft.	Vegetative Layers: (check all that apply) <input checked="" type="checkbox"/> Trees: <input checked="" type="checkbox"/> Saplings/Shrubs: <input checked="" type="checkbox"/> Herbs		
N/A <input checked="" type="checkbox"/>	Avg. DBH of Dominants: (approx.) <u>6</u> in. <u>1</u> in. <u>NA</u> in.		
Dominant Bank Vegetation (list): <u>Scirpus Lyperinus, Betula nigra</u>			
Aquatic Habitats (ex: submerged or emerged aquatic vegetation, overhanging banks/roots, leaf packs, large submerged wood, riffles, deep pools, etc.): <u>none</u>			
Aquatic Organisms Observed (list): <u>none</u>			
T&E Species Observed (list): <u>none</u>			
Disturbances (ex: livestock access, manure in waterbody, waste discharge pipes): <u>stormwater pond, mowed/maintained</u>			
Waterbody is: (check one) <input type="checkbox"/> Natural <input checked="" type="checkbox"/> Artificial, man-made <input type="checkbox"/> Manipulated			
Waterbody Quality*: (check one) <input type="checkbox"/> High <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Low			

Waterbody ID:

0r00001

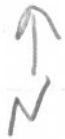
▪ **High Quality:** Natural, natural bank vegetation around entire waterbody; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

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

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

Notes:

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



0r00001

Environmental Field Surveys
Open Water Point Photo Page



Open Waterbody oroo001 facing south.



Open Waterbody oroo001 facing southwest.

Open Waterbody Data Sheet

Survey Description				
Project Name: Southeastern Reliability ACP		Waterbody Name: UNNAMED	Waterbody ID: OROH002	Date: 9-10-14
State: NC	County: Robeson	Company: DDWEST	Crew Member Initials: JD, JG	Photos: 2
Tract Number(s): 24-038		Nearest Milepost: 460	Associated Wetland ID(s): NONE	
Survey Type: <small>(check one)</small> <input checked="" type="checkbox"/> Centerline <input type="checkbox"/> Re-Route <input type="checkbox"/> Access Road <input type="checkbox"/> Other:				
Physical Attributes				
Waterbody Type: <small>(check one)</small> <input checked="" type="checkbox"/> Stock Pond <input type="checkbox"/> Natural Pond <input type="checkbox"/> Lake <input type="checkbox"/> Reservoir <input type="checkbox"/> Impoundment <input type="checkbox"/> Oxbow <input type="checkbox"/> Other:				
Hydrologic Regime: <input checked="" type="checkbox"/> Permanently Flooded <input type="checkbox"/> Semipermanently Flooded <input type="checkbox"/> Seasonally Flooded <input type="checkbox"/> Temporarily Flooded				
OHWM Height: 4 ft.	OHWM Indicator: <small>(check all that apply)</small> <input checked="" type="checkbox"/> Clear line on bank <input type="checkbox"/> Shelving <input type="checkbox"/> Wrested vegetation <input type="checkbox"/> Scouring <input type="checkbox"/> Water staining <input type="checkbox"/> Bent, matted, or missing vegetation <input type="checkbox"/> Wrack line <input type="checkbox"/> Litter and debris <input type="checkbox"/> Abrupt plant community change <input type="checkbox"/> Soil characteristic change			
Depth of Water: N/A <input type="checkbox"/> 3 ft.		Bank height (average): 6 ft.	Bank slope (average): 30 degrees	
Qualitative Attributes				
Water Appearance: <small>(check one)</small> <input type="checkbox"/> No water <input type="checkbox"/> Clear <input checked="" type="checkbox"/> Turbid <input type="checkbox"/> Sheen on surface <input type="checkbox"/> Surface scum <input type="checkbox"/> Algal mats <input type="checkbox"/> Other:				
Substrate: <small>(check all that apply)</small> <input type="checkbox"/> Bedrock <input type="checkbox"/> Boulder <input type="checkbox"/> Cobble <input type="checkbox"/> Gravel <input checked="" type="checkbox"/> Sand <input checked="" type="checkbox"/> Silt/ clay <input type="checkbox"/> Organic <input type="checkbox"/> Other:				
% of Substrate: _____% _____% _____% _____% 50% 50% _____% _____%				
Width of Riparian Zone: 10 ft.	Vegetative Layers: <small>(check all that apply)</small> <input checked="" type="checkbox"/> Trees: <input checked="" type="checkbox"/> Saplings/Shrubs: <input type="checkbox"/> Herbs			
N/A <input type="checkbox"/>	Avg. DBH of Dominants: <small>(approx.)</small> 14 in. 1-3 in. _____ in.			
Dominant Bank Vegetation <small>(list)</small> : Liquidambar styraciflua, Acer rubrum, Pinus taeda, Sassafras albidum				
Aquatic Habitats <small>(ex: submerged or emerged aquatic vegetation, overhanging banks/roots, leaf packs, large submerged wood, riffles, deep pools, etc.)</small> : open water				
Aquatic Organisms Observed <small>(list)</small> : leopard frogs, water skates				
T&E Species Observed <small>(list)</small> : NONE				
Disturbances <small>(ex: livestock access, manure in waterbody, waste discharge pipes)</small> : USED AS IRRIGATION POND				
Waterbody is: <small>(check one)</small> <input type="checkbox"/> Natural <input checked="" type="checkbox"/> Artificial, man-made <input type="checkbox"/> Manipulated				
Waterbody Quality ^a : <small>(check one)</small> <input type="checkbox"/> High <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Low				

Waterbody ID:

OROH002

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

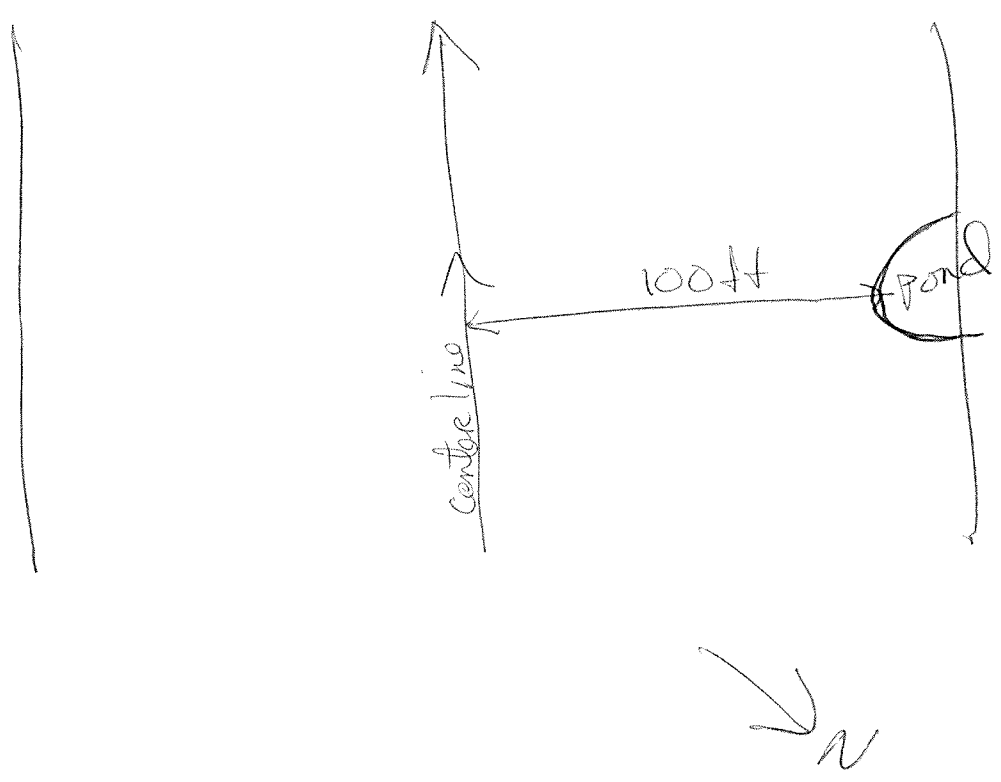
Moderate Quality: Altered by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or bank vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers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

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

Notes:

Man-made excavated, out of upland, irrigation pond. 45' x 120'

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



oroh002



Open water data point *oroh002* facing northwest



Open water data point *oroh002* facing southwest

USACE AID# _____

DWQ # _____

Site # _____ (indicate on attached map)



STREAM QUALITY ASSESSMENT WORKSHEET



Provide the following information for the stream reach under assessment: *Sreg005*

- 1. Applicant's name: Dominion
- 2. Evaluator's name: DDWest
- 3. Date of evaluation: 9/10/2014
- 4. Time of evaluation: 12:30
- 5. Name of stream: UNT to Tenmile Swamp
- 6. River basin: Lumber
- 7. Approximate drainage area: < 50 Acres
- 8. Stream order: 1st
- 9. Length of reach evaluated: 300 Feet
- 10. County: Robeson
- 11. Site coordinates (if known): prefer in decimal degrees.
- 12. Subdivision name (if any): _____
- Latitude (ex. 34.872312): 34°47'17.781" N Longitude (ex. -77.556611): 79°02'20.191" W
- 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: Normal
- 16. Site conditions at time of visit: Normal
- 17. Identify any special waterway classifications known: Section 10 Tidal Waters Essential Fisheries Habitat Trout Waters Outstanding Resource Waters Nutrient Sensitive Waters Water 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: _____
- 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 50 % Agricultural 50 % Forested % Cleared / Logged % Other (_____)
- 22. Bankfull width: 3
- 23. Bank height (from bed to top of bank): 4
- 24. Channel slope down center of stream: Flat (0 to 2%) Gentle (2 to 4%) Moderate (4 to 10%) Steep (>10%)
- 25. Channel sinuosity: Straight 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): 19 Comments: Likely JT by Corps - OHM observed
Snake observed in channel

Evaluator's Signature Michael J. Bean Date 09/10/2014

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.

Srog 005

STREAM QUALITY ASSESSMENT WORKSHEET

	#	CHARACTERISTICS	ECOREGION POINT RANGE			SCORE
			Coastal	Piedmont	Mountain	
PHYSICAL	1	Presence of flow / persistent pools in stream (no flow or saturation = 0; strong flow = max points)	0-5	0-4	0-5	0
	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	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	1
	6	Presence of adjacent floodplain (no floodplain = 0; extensive floodplain = max points)	0-4	0-4	0-2	0
	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	0
	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	
STABILITY	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	1
	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	2
HABITAT	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	2
	19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0-4	0-4	
BIOLOGY	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	
TOTAL SCORE (also enter on first page)						19

* These characteristics are not assessed in coastal streams.

Srag 005

NC DWQ Stream Identification Form Version 4.11

Date: 09/10/2014	Project/Site: ACP	Latitude: 34°47'17.78"N
Evaluator: DP West	County: Robeson	Longitude: 79°02'20.191"W
Total Points: 13 <i>Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*</i>	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other UNT to Tenmile Swamp e.g. Quad Name:

A. Geomorphology (Subtotal = 3.5)

	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	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 = 0		Yes = 3	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 4.5)

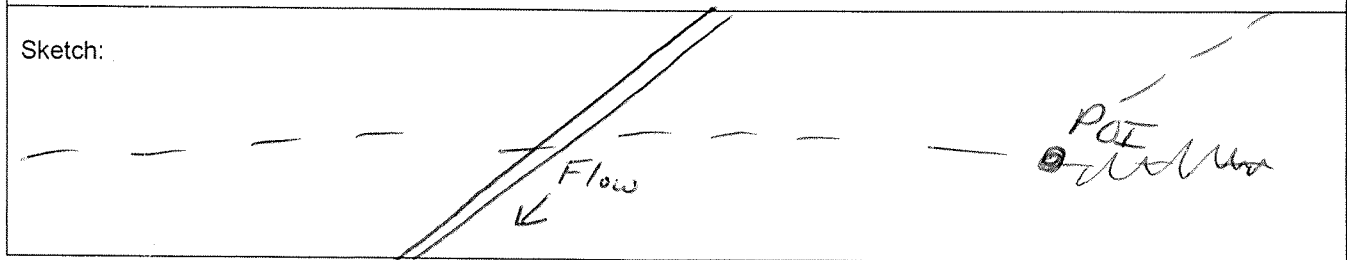
12. Presence of Baseflow	0	1	2	3
13. Iron oxidizing bacteria	0	1	2	3
14. Leaf litter	1.5	1	0.5	0
15. Sediment on plants or debris	0	0.5	1	1.5
16. Organic debris lines or piles	0	0.5	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3	

C. Biology (Subtotal = 5)

18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macroinvertebrates (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	1	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: Rates ephemeral = ditch w/ OHWM



NW

Srag 005

srog005



Waterbody srog005 facing upstream



Waterbody srog005 facing downstream

srog005



Waterbody srog005 facing upline cross stream

SROG004

USACE AID# _____ DWQ # _____ Site # _____ (indicate on attached map)



STREAM QUALITY ASSESSMENT WORKSHEET



Provide the following information for the stream reach under assessment:

- 1. Applicant's name: Dismun
- 2. Evaluator's name: DD WEST
- 3. Date of evaluation: 9
- 4. Time of evaluation: 4:06
- 5. Name of stream: unnamed trib little Ten mile
- 6. River basin: Lumber
- 7. Approximate drainage area: 750 acres swamp
- 8. Stream order: 1st
- 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): 34° 46' 28.655
- Longitude (ex. -77.556611): 79° 02' 57.032"
- 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 dry - few showers
- 16. Site conditions at time of visit: _____
- 17. Identify any special waterway classifications known: N/A Section 10 N/A Tidal Waters N/A Essential Fisheries Habitat N/A Trout Waters N/A Outstanding Resource Waters N/A Nutrient Sensitive Waters N/A Water Supply Watershed N/A (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 80% Agricultural _____ % Cleared / Logged _____ % Other (_____)
- 22. Bankfull width: 4 _____
- 23. Bank height (from bed to top of bank): 8 _____
- 24. Channel slope down center of stream: 0 Flat (0 to 2%) _____ Gentle (2 to 4%) _____ Moderate (4 to 10%) _____ Steep (>10%)
- 25. Channel sinuosity: X Straight _____ 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): 74 Comments: Man-made ditch

Evaluator's Signature [Signature] Date 9-9-14

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.

SROG004

STREAM QUALITY ASSESSMENT WORKSHEET

	#	CHARACTERISTICS	ECOREGION POINT RANGE			SCORE
			Coastal	Piedmont	Mountain	
PHYSICAL	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	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
	6	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	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	1
	11	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0-4	0-5	NA
STABILITY	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
	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
HABITAT	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	2
	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
BIOLOGY	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	2
Total Points Possible			100	100	100	
TOTAL SCORE (also enter on first page)						24

* These characteristics are not assessed in coastal streams.

NC DWQ Stream Identification Form Version 4.11

5R06004

Date: 9-9-14	Project/Site: ACP	Latitude: 34° 46' 28.655"
Evaluator: DDWEST	County: Robeson	Longitude: 79° 02' 57.032"
Total Points: Stream is at least intermittent if ≥ 19 or perennial if ≥ 30* 22.25	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other e.g. Quad Name:

A. Geomorphology (Subtotal = 8)

	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	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 = 0		Yes = 3	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 7)

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?	No = 0		Yes = 3	

C. Biology (Subtotal = 7.25)

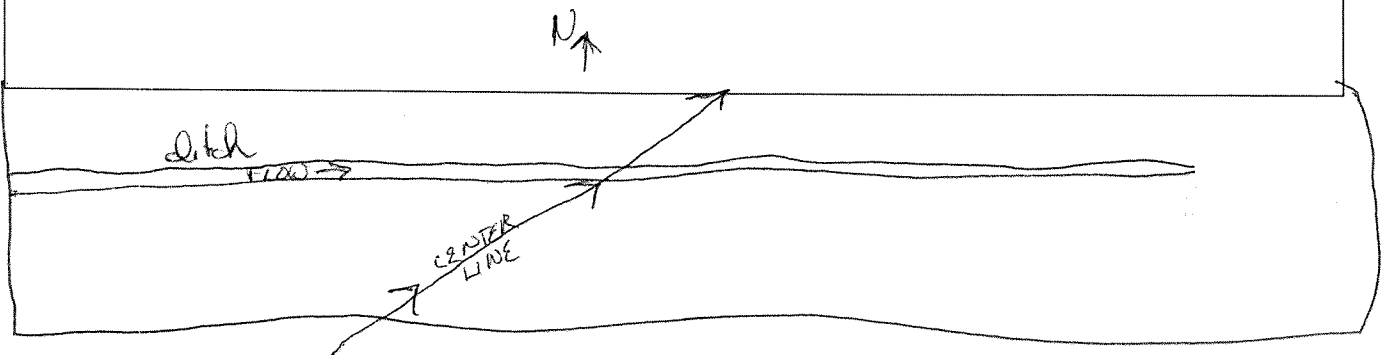
18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macroinvertebrates (note diversity and abundance)	0	1	2	3
21. Aquatic Mollusks	0	1	2	3
22. Fish	0	0.5	1	1.5
23. Crayfish	0	0.5	1	1.5
24. Amphibians	0	0.5	1	1.5
25. Algae	0	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75; OBL = 1.5 Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

Man-made ditch on edge of field + forested wetlands



srog004



Waterbody srog004 facing upstream



Waterbody srog004 facing downstream

srog004



Waterbody srog004 facing upline cross stream

USACE AID# _____

DWQ # _____

Site # _____ (indicate on attached map)



STREAM QUALITY ASSESSMENT WORKSHEET



SROTHOIS

Provide the following information for the stream reach under assessment:

- 1. Applicant's name: Dominion
- 2. Evaluator's name: DDWEST
- 3. Date of evaluation: 9-23-14
- 4. Time of evaluation: _____
- 5. Name of stream: UNT to SADDLETREE SWAMP
- 6. River basin: Lumber
- 7. Approximate drainage area: > 100 ACRES
- 8. Stream order: 1st
- 9. Length of reach evaluated: 100 ft
- 10. County: Robeson
- 11. Site coordinates (if known): prefer in decimal degrees.
- 12. Subdivision name (if any): None
- Latitude (ex. 34.872312): 36° 46' 12.964" Longitude (ex. -77.556611): 79° 03' 15.874"
- 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 dry - few showers
- 16. Site conditions at time of visit: Normal

17. Identify any special waterway classifications known: NA Section 10 NA Tidal Waters NA Essential Fisheries Habitat
NA Trout Waters NA Outstanding Resource Waters NA Nutrient Sensitive Waters NA Water Supply Watershed NA (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 10 % Agricultural
90 % Forested _____ % Cleared / Logged _____ % Other (_____)
- 22. Bankfull width: 4
- 23. Bank height (from bed to top of bank): 10
- 24. Channel slope down center of stream: X Flat (0 to 2%) _____ Gentle (2 to 4%) _____ Moderate (4 to 10%) _____ Steep (>10%)
- 25. Channel sinuosity: X Straight _____ 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): 31 Comments: man-made ditch

Evaluator's Signature [Signature] Date 9-23-14

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STREAM QUALITY ASSESSMENT WORKSHEET

SROHO15

	#	CHARACTERISTICS	ECOREGION POINT RANGE			SCORE
			Coastal	Piedmont	Mountain	
PHYSICAL	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	0
	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	4
	5	Groundwater discharge (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0-3	0-4	0-4	2
	6	Presence of adjacent floodplain (no floodplain = 0; extensive floodplain = max points)	0-4	0-4	0-2	0
	7	Entrenchment / floodplain access (deeply entrenched = 0; frequent flooding = max points)	0-5	0-4	0-2	NA
	8	Presence of adjacent wetlands (no wetlands = 0; large adjacent wetlands = max points)	0-6	0-4	0-2	5
	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	4
	11	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0-4	0-5	NA
STABILITY	12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0-5	0-4	0-5	3
	13	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0-5	0-5	0-5	3
	14	Root depth and density on banks (no visible roots = 0; dense roots throughout = max points)	0-3	0-4	0-5	0
	15	Impact by agriculture, livestock, or timber production (substantial impact = 0; no evidence = max points)	0-5	0-4	0-5	2
HABITAT	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	1
	19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0-4	0-4	NA
BIOLOGY	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	
TOTAL SCORE (also enter on first page)						31

* These characteristics are not assessed in coastal streams.

SROHOIS

NC DWQ Stream Identification Form Version 4.11

Date: 9-23-14	Project/Site: ACP	Latitude: 36°46'12.964"
Evaluator: DDWEST	County: Robeson	Longitude: 79°03'15.874"
Total Points: 19.5 <i>Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*</i>	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other: UNT TO SADDLE TREE e.g. Quad Name: SWAMP

A. Geomorphology (Subtotal = 6)

	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	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 = 0		Yes = 3	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 7.5)

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?	No = 0		Yes = 3	

C. Biology (Subtotal = 6)

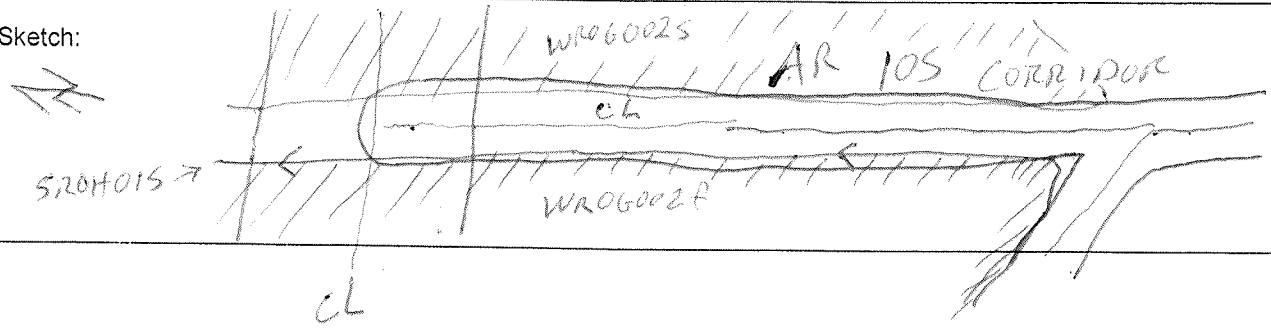
18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macroinvertebrates (note diversity and abundance)	0	1	2	3
21. Aquatic Mollusks	0	1	2	3
22. Fish	0	0.5	1	1.5
23. Crayfish	0	0.5	1	1.5
24. Amphibians	0	0.5	1	1.5
25. Algae	0	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75; OBL = 1.5 Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

PIPELINE CORRIDOR

Sketch:



sroh015



Waterbody sroh015 facing upstream



Waterbody sroh015 facing downstream

sroh014



Waterbody sroh015 facing downline cross stream



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: 9-22-14
 - 4. Time of evaluation: 2:35
 - 5. Name of stream: UNT TO SADDLE TREE SWAMP
 - 6. River basin: Lumber
 - 7. Approximate drainage area: > 100 acres
 - 8. Stream order: 1st
 - 9. Length of reach evaluated: 100 ft
 - 10. County: Robeson
 - 11. Site coordinates (if known): prefer in decimal degrees.
 - 12. Subdivision name (if any): None
- Latitude (ex. 34.872312): 34°46'08.226" Longitude (ex. -77.556611): 79°03'27.977"
- 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 dry - few showers
- 16. Site conditions at time of visit: Normal

17. Identify any special waterway classifications known: NA Section 10 NA Tidal Waters NA Essential Fisheries Habitat NA Trout Waters NA Outstanding Resource Waters NA Nutrient Sensitive Waters NA Water Supply Watershed NA (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 80% Agricultural 20% Forested _____ % Cleared / Logged _____ % Other (_____)

22. Bankfull width: 41 23. Bank height (from bed to top of bank): 8

24. Channel slope down center of stream: X Flat (0 to 2%) _____ Gentle (2 to 4%) _____ Moderate (4 to 10%) _____ Steep (>10%)

25. Channel sinuosity: X Straight _____ 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): 28 Comments: _____

_____ man-made ditch _____

Evaluator's Signature [Signature] Date 9-22-14

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STREAM QUALITY ASSESSMENT WORKSHEET 5R0H013

	#	CHARACTERISTICS	ECOREGION POINT RANGE			SCORE
			Coastal	Piedmont	Mountain	
PHYSICAL	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	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	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	1
	7	Entrenchment / floodplain access (deeply entrenched = 0; frequent flooding = max points)	0-5	0-4	0-2	2
	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	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
STABILITY	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	1
	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
HABITAT	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	2
	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
BIOLOGY	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	3
	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 first page)						28

* These characteristics are not assessed in coastal streams.

NC DWQ Stream Identification Form Version 4.11

SR0H013

Date: 9-22-14	Project/Site: ACP	Latitude: 34° 46' 08.226"
Evaluator: DDWEST	County: Robeson	Longitude: 79° 03' 27.977"
Total Points: Stream is at least intermittent if ≥ 19 or perennial if ≥ 30* 22.75	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other: UNT TO SADDLE TREE e.g. Quad Name: SWAMP

A. Geomorphology (Subtotal = 7)

	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	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 = 0		Yes = 3	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 7.5)

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?	No = 0		Yes = 3	

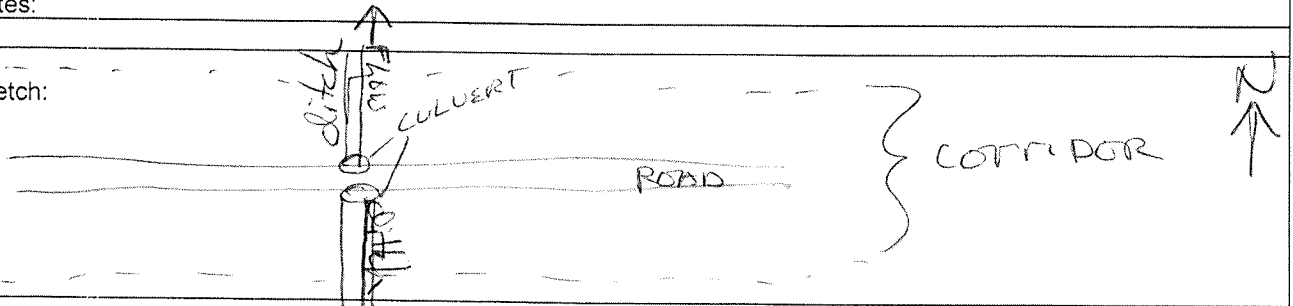
C. Biology (Subtotal = 0.25)

18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macroinvertebrates (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	1	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:



sroh013



Waterbody sroh013 facing upstream



Waterbody sroh013 facing downstream

sroh013



Waterbody sroh013 facing upline cross stream

5709003

USACE AID# _____ DWQ # _____ Site # _____ (indicate on attached map)



STREAM QUALITY ASSESSMENT WORKSHEET



Provide the following information for the stream reach under assessment:

- 1. Applicant's name: Dominion
- 2. Evaluator's name: DD West
- 3. Date of evaluation: 9/9/14
- 4. Time of evaluation: 12:30
- 5. Name of stream: UNT to Little Ten Mile Swamp
- 6. River basin: Lumber
- 7. Approximate drainage area: < 50 ac
- 8. Stream order: 1st order
- 9. Length of reach evaluated: 300'
- 10. County: Roderson
- 11. Site coordinates (if known): prefer in decimal degrees.
- 12. Subdivision name (if any): _____
- Latitude (ex. 34.872312): 34°46'01.492" N Longitude (ex. -77.556611): 79°03'19.473" W
- 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): see map
- 14. Proposed channel work (if any): NONE
- 15. Recent weather conditions: Heavy rain yesterday
- 16. Site conditions at time of visit: Overcast + Swoozy. Low 80s (°F)
- 17. Identify any special waterway classifications known: _____ Section 10 _____ Tidal Waters _____ Essential Fisheries Habitat _____ Trout Waters _____ Outstanding Resource Waters _____ Nutrient Sensitive Waters _____ Water 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: _____
- 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 50% Agricultural
_____ % Forested _____ % Cleared / Logged 50% Other (scrub/shrub)
- 22. Bankfull width: 8'
- 23. Bank height (from bed to top of bank): 4'
- 24. Channel slope down center of stream: X Flat (0 to 2%) _____ Gentle (2 to 4%) _____ Moderate (4 to 10%) _____ Steep (>10%)
- 25. Channel sinuosity: _____ Straight X 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): 30 Comments: _____

Evaluator's Signature [Signature] Date 9/9/14

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STREAM QUALITY ASSESSMENT WORKSHEET

	#	CHARACTERISTICS	ECOREGION POINT RANGE			SCORE
			Coastal	Piedmont	Mountain	
PHYSICAL	1	Presence of flow / persistent pools in stream (no flow or saturation = 0; strong flow = max points)	0-5	0-4	0-5	0
	2	Evidence of past human alteration (extensive alteration = 0; no alteration = max points)	0-6	0-5	0-5	4
	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	2
	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	0
	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	4
	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	N/A
STABILITY	12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0-5	0-4	0-5	0
	13	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0-5	0-5	0-5	4
	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
	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
HABITAT	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	3
	19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0-4	0-4	N/A
	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
	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
TOTAL SCORE (also enter on first page)					30	

* These characteristics are not assessed in coastal streams.

srog 003

NC DWQ Stream Identification Form Version 4.11

Date: 09/09/2014	Project/Site: ACP	Latitude: 34°46'01.492"N
Evaluator: DDWest	County: Robeson	Longitude: 79°03'19.473"W
Total Points: Stream is at least intermittent if ≥ 19 or perennial if ≥ 30* 19.75	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other UNT to Little e.g. Quad Name: Tenmile Swamp

A. Geomorphology (Subtotal = 9)

	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	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 = 0		Yes = 3	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 3.75)

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?	No = 0		Yes = 3	

C. Biology (Subtotal = 6.25)

18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macroinvertebrates (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	1	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:



srog003



Waterbody srog003 facing upstream



Waterbody srog003 facing downstream

srog003



Waterbody srog003 facing upline cross stream

USACE AID# _____ DWQ # _____ Site # _____ (indicate on attached map)



STREAM QUALITY ASSESSMENT WORKSHEET



Provide the following information for the stream reach under assessment:

- 1. Applicant's name: Dominion
 - 2. Evaluator's name: DD West
 - 3. Date of evaluation: 9/9/14
 - 4. Time of evaluation: 1020
 - 5. Name of stream: UNT to Saddletree Swamp
 - 6. River basin: Lumber
 - 7. Approximate drainage area: < 50ac
 - 8. Stream order: 1st order
 - 9. Length of reach evaluated: 300 ft
 - 10. County: Robeson
 - 11. Site coordinates (if known): prefer in decimal degrees.
 - 12. Subdivision name (if any): _____
- Latitude (ex. 34.872312): 39° 45'48.000" Longitude (ex. -77.556611): 79°03'27.888"
- 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):
perpendicular to Kennert Rd
14. Proposed channel work (if any): NONE
15. Recent weather conditions: Heavy rain yesterday
16. Site conditions at time of visit: Overcast, breezy, low 80° (°F)
17. Identify any special waterway classifications known: Section 10 Tidal Waters Essential Fisheries Habitat
 Trout Waters Outstanding Resource Waters Nutrient Sensitive Waters Water 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: _____
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 100 % Agricultural
 % Forested % Cleared / Logged % Other (_____)
22. Bankfull width: 3' 23. Bank height (from bed to top of bank): 5'
24. Channel slope down center of stream: Flat (0 to 2%) Gentle (2 to 4%) Moderate (4 to 10%) Steep (>10%)
25. Channel sinuosity: Straight 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): 12 Comments: Incised, man-made, agricultural ditch.

Evaluator's Signature [Signature] Date 9/9/14

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.

STREAM QUALITY ASSESSMENT WORKSHEET

	#	CHARACTERISTICS	ECOREGION POINT RANGE			SCORE
			Coastal	Piedmont	Mountain	
PHYSICAL	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	0
	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
	5	Groundwater discharge (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0-3	0-4	0-4	2
	6	Presence of adjacent floodplain (no floodplain = 0; extensive floodplain = max points)	0-4	0-4	0-2	0
	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
	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	1
	11	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0-4	0-5	N/A
STABILITY	12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0-5	0-4	0-5	0
	13	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0-5	0-5	0-5	1
	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
HABITAT	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	2
	18	Canopy coverage over streambed (no shading vegetation = 0; continuous canopy = max points)	0-5	0-5	0-5	0 1
	19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0-4	0-4	N/A
BIOLOGY	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	
TOTAL SCORE (also enter on first page)						12

* These characteristics are not assessed in coastal streams.

Strog002

NC DWQ Stream Identification Form Version 4.11

Date: 09/09/2014	Project/Site: ACP	Latitude: 39°45'48.000"
Evaluator: DD West	County: Robeson	Longitude: 79°03'27.888"
Total Points: Stream is at least intermittent if ≥ 19 or perennial if ≥ 30* 20	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other UNT to Saddle Creek e.g. Quad Name: Swamp

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	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 = 0		Yes = 3	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 7.5)

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?	No = 0		Yes = 3	

C. Biology (Subtotal = 7.5)

18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macroinvertebrates (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	1	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:

AN

srog002



Waterbody srog002 facing upstream



Waterbody srog002 facing downstream

srog002



Waterbody srog002 facing upline cross stream

NC DWQ Stream Identification Form Version 4.11

sr00002

Date: 8/23/16	Project/Site: ACP	Latitude: 34.76494
Evaluator: ESI - L. Roper	County: Robeson	Longitude: -79.05938
Total Points: Stream is at least intermittent if ≥ 19 or perennial if $\geq 30^*$ 13.5	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other e.g. Quad Name: Rennert

A. Geomorphology (Subtotal = 1)

	Absent	Weak	Moderate	Strong
1 ^a Continuity of channel bed and bank ditch	0	1	2	3
2. Sinuosity of channel along thalweg	0	0	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 = 0		Yes = 3	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 5.5)

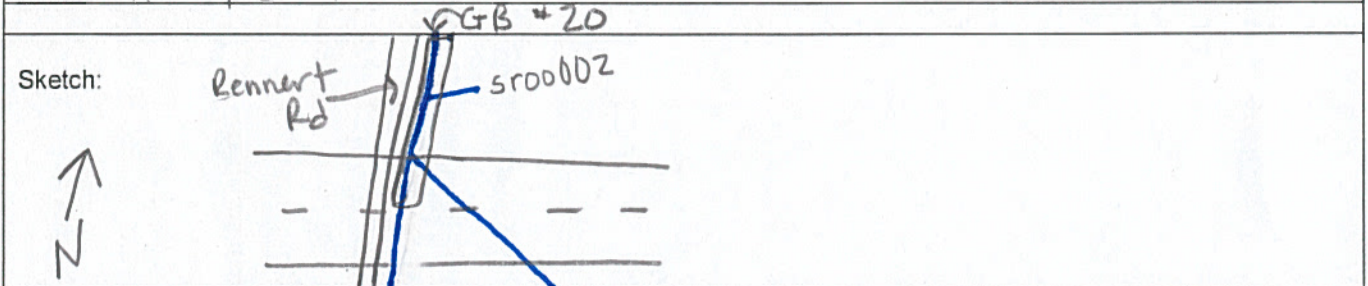
12. Presence of Baseflow	0	0	2	3
13. Iron oxidizing bacteria	0	1	2	3
14. Leaf litter	1.5	0	0.5	0
15. Sediment on plants or debris	0	0.5	1	1.5
16. Organic debris lines or piles	0	0.5	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3	

C. Biology (Subtotal = 7)

18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macroinvertebrates (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	1	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: OHWM present



OHWM: 3ft
Bank: 6ft



STREAM QUALITY ASSESSMENT WORKSHEET



Provide the following information for the stream reach under assessment:

- 1. Applicant's name: Dominion
- 2. Evaluator's name: ESI-L. Roper
- 3. Date of evaluation: 8/23/16
- 4. Time of evaluation: 930am
- 5. Name of stream: UT to Saddletree Swamp
- 6. River basin: Lumber
- 7. Approximate drainage area: 20ac
- 8. Stream order: 0
- 9. Length of reach evaluated: 20ft
- 10. County: Robeson
- 11. Site coordinates (if known): prefer in decimal degrees.
- 12. Subdivision name (if any): _____
- Latitude (ex. 34.872312): 34.76494
- Longitude (ex. -77.556611): -79.05938
- 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):
East of Kennert Rd. near Monica Rd
- 14. Proposed channel work (if any): TBD
- 15. Recent weather conditions: Warm + dry
- 16. Site conditions at time of visit: ag. field ditch + roadside
- 17. Identify any special waterway classifications known: Section 10 Tidal Waters Essential Fisheries Habitat
 Trout Waters Outstanding Resource Waters Nutrient Sensitive Waters Water 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: _____
- 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 40 % Agricultural
60 % Forested % Cleared / Logged % Other (_____)
- 22. Bankfull width: 6ft
- 23. Bank height (from bed to top of bank): 4ft
- 24. Channel slope down center of stream: Flat (0 to 2%) Gentle (2 to 4%) Moderate (4 to 10%) Steep (>10%)
- 25. Channel sinuosity: Straight 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): 19 ; Comments: _____

Evaluator's Signature Lauren Roper Date 8/24/16

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STREAM QUALITY ASSESSMENT WORKSHEET

	#	CHARACTERISTICS	ECOREGION POINT RANGE			SCORE
			Coastal	Piedmont	Mountain	
PHYSICAL	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	0
	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	2
	5	Groundwater discharge (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0-3	0-4	0-4	0
	6	Presence of adjacent floodplain (no floodplain = 0; extensive floodplain = max points)	0-4	0-4	0-2	0
	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
	9	Channel sinuosity (extensive channelization = 0; natural meander = max points)	0-5	0-4	0-3	1
	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	—
STABILITY	12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0-5	0-4	0-5	4
	13	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0-5	0-5	0-5	4
	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	0
HABITAT	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	0
	19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0-4	0-4	—
BIOLOGY	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	
TOTAL SCORE (also enter on first page)						19

* These characteristics are not assessed in coastal streams.

Environmental Field Surveys
Waterbody Photo Page



Waterbody data point sroo002 facing east upstream.



Waterbody data point sroo002 facing west downstream.

Environmental Field Surveys
Waterbody Photo Page



Waterbody data point sroo002 facing north across bank.

509001

USACE AID# _____ DWQ # _____ Site # _____ (indicate on attached map)



STREAM QUALITY ASSESSMENT WORKSHEET



Provide the following information for the stream reach under assessment:

- 1. Applicant's name: Dominion
- 2. Evaluator's name: PAUL PASCAROSA
- 3. Date of evaluation: 9/9/14
- 4. Time of evaluation: 0920
- 5. Name of stream: UP to Saddletree Swamp
- 6. River basin: Lumber River
- 7. Approximate drainage area: <50 ac
- 8. Stream order: 1st order
- 9. Length of reach evaluated: 300 ft
- 10. County: Robeson
- 11. Site coordinates (if known): prefer in decimal degrees.
- 12. Subdivision name (if any): _____
- Latitude (ex. 34.872312): 34°45'46.809" N Longitude (ex. -77.556611): 79°03'32.300" W
- 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): temporary none
- 15. Recent weather conditions: Overcast, cloudy low 80°(F) Heavy rain yesterday
- 16. Site conditions at time of visit: incised roadside feature Overcast, cloudy, low 80°F
- 17. Identify any special waterway classifications known: _____ Section 10 _____ Tidal Waters _____ Essential Fisheries Habitat _____ Trout Waters _____ Outstanding Resource Waters _____ Nutrient Sensitive Waters _____ Water 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: _____
- 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 95 % Agricultural _____ % Forested _____ % Cleared / Logged 5 % Other (fuel road)
- 22. Bankfull width: 4.53'
- 23. Bank height (from bed to top of bank): 8'
- 24. Channel slope down center of stream: _____ Flat (0 to 2%) _____ Gentle (2 to 4%) _____ Moderate (4 to 10%) ✓ Steep (>10%)
- 25. Channel sinuosity: ✓ Straight _____ 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): 25 Comments: Man-made incised feature road side.

Evaluator's Signature [Signature] Date 9/9/14

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STREAM QUALITY ASSESSMENT WORKSHEET *5/10/2001*

	#	CHARACTERISTICS	ECOREGION POINT RANGE			SCORE
			Coastal	Piedmont	Mountain	
PHYSICAL	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	0
	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	2
	5	Groundwater discharge (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0-3	0-4	0-4	2
	6	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	2
	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	1
	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
STABILITY	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	3
	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
HABITAT	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	0
	19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0-4	0-4	NA
BIOLOGY	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	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	
TOTAL SCORE (also enter on first page)						25

* These characteristics are not assessed in coastal streams.

Sr09001

NC DWQ Stream Identification Form Version 4.11

Date: 09/09/2014	Project/Site: ACP	Latitude: 34°45'46.809" N
Evaluator: DDWest	County: Robeson	Longitude: -79°03'32.300" W
Total Points: 20.5 Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*	Stream Determination (circle one) Ephemeral (intermittent) Perennial	Other: UNT to Saddle Creek Swamp e.g. Quad Name:

A. Geomorphology (Subtotal = 5.5)

	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	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 = 0		Yes = 3	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 6.5)

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?	No = 0		Yes = 3	

C. Biology (Subtotal = 8.5)

18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macroinvertebrates (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	1	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 →
Sr09001

srog001



Waterbody srog001 facing upstream



Waterbody srog001 facing downstream

srog001



Waterbody srog001 facing upline cross stream

Srok010

USACE AID# _____ DWQ # _____ Site # _____ (indicate on attached map)



STREAM QUALITY ASSESSMENT WORKSHEET



Provide the following information for the stream reach under assessment:

- 1. Applicant's name: Dominion
- 2. Evaluator's name: JGM DDWEST
- 3. Date of evaluation: 5 September 2014
- 4. Time of evaluation: 1220
- 5. Name of stream: Raft Swamp
- 6. River basin: Lumber
- 7. Approximate drainage area: 20 miles²
- 8. Stream order: 4th or greater
- 9. Length of reach evaluated: 100'
- 10. County: Robeson
- 11. Site coordinates (if known): prefer in decimal degrees.
- 12. Subdivision name (if any): NA
- Latitude (ex. 34.872312): 34° 45' 39.527"
- Longitude (ex. -77.556611): 79° 05' 12.936"
- 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):
Approximately 0.35 mile west of Shannon Road
- 14. Proposed channel work (if any): None
- 15. Recent weather conditions: Dry
- 16. Site conditions at time of visit: Normal
- 17. Identify any special waterway classifications known: _____ Section 10 _____ Tidal Waters _____ Essential Fisheries Habitat
_____ Trout Waters _____ Outstanding Resource Waters _____ Nutrient Sensitive Waters _____ Water 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: _____
- 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: 5% Residential 20% Commercial _____ % Industrial 15% Agricultural
60% Forested _____ % Cleared / Logged _____ % Other (_____)
- 22. Bankfull width: 50 feet
- 23. Bank height (from bed to top of bank): 1 foot
- 24. Channel slope down center of stream: Flat (0 to 2%) _____ Gentle (2 to 4%) _____ Moderate (4 to 10%) _____ Steep (>10%)
- 25. Channel sinuosity: _____ Straight _____ 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): 89 Comments: Braided Channel through Swamp
Evaluating what appears to be the main channel in
channel

Evaluator's Signature [Signature] Date 5 September 2014

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.