

SA

NC DWQ Stream Identification Form Version 4.11

Date: 11/8/13	Project/Site: R2250	Latitude: 35.5633
Evaluator: Brian Smith & Joe Sullivan	County: Pitt	Longitude: -77.4687
Total Points: Stream is at least intermittent if ≥ 19 or perennial if $\geq 30^*$ 19	Stream Determination (circle one) Ephemeral <u>Intermittent</u> Perennial	Other e.g. Quad Name:

A. Geomorphology (Subtotal = 4)

	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 = 8)

18. Fibrous roots in streambed	3	(2)	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macrobenthos (note diversity and abundance)	0	(1)	2	3
21. Aquatic Mollusks	0	1	(2)	3
22. Fish	(0)	0.5	1	1.5
23. Crayfish	(0)	0.5	1	1.5
24. Amphibians	(0)	0.5	1	1.5
25. Algae	(0)	0.5	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: Isopods & Amphipods - many ~~at~~ Many bivalves

Sketch:

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: NCDOT - R2050
 - 2. Evaluator's name: Brian Smith & Joe Sullivan
 - 3. Date of evaluation: 11/12/13
 - 4. Time of evaluation: 2:00 PM
 - 5. Name of stream: SA
 - 6. River basin: Neuse
 - 7. Approximate drainage area: 125 acres
 - 8. Stream order: 1
 - 9. Length of reach evaluated: 100 ft
 - 10. County: Pitt
 - 11. Site coordinates (if known): prefer in decimal degrees.
 - 12. Subdivision name (if any): _____
- Latitude (ex. 34.872312): 35.5633 Longitude (ex. -77.556611): -77.4687
- 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): _____
- 15. Recent weather conditions: Rain 2 days prior
- 16. Site conditions at time of visit: Sunny
- 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 20 % Agricultural 80 % Forested _____ % Cleared / Logged _____ % Other (_____)
- 22. Bankfull width: 6'
- 23. Bank height (from bed to top of bank): 1'
- 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): 33 Comments: _____

Evaluator's Signature Joe Sullivan Date 11/12/13

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	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	5
	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	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	1
	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	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	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	2
	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)						33

* These characteristics are not assessed in coastal streams.

NC DWQ Stream Identification Form Version 4.11

SB

Date: 12/11/13	Project/Site: R-2250	Latitude: 35.5517
Evaluator: P May	County: Pitt	Longitude: -77.4619
Total Points: Stream is at least intermittent if ≥ 19 or perennial if $\geq 30^*$ 23	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other 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 = 8.5)

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)

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: Abundant fingerail clams - intermittent due to low geomorph score.

Sketch:



STREAM QUALITY ASSESSMENT WORKSHEET



SB

Provide the following information for the stream reach under assessment:

- 1. Applicant's name: NCDOT R-2250
- 2. Evaluator's name: P. May
- 3. Date of evaluation: 12/11/13
- 4. Time of evaluation: 11:00
- 5. Name of stream: SB
- 6. River basin: Neuse
- 7. Approximate drainage area: 150 acres
- 8. Stream order: 1
- 9. Length of reach evaluated: 200'
- 10. County: Pitt
- 11. Site coordinates (if known): prefer in decimal degrees.
- 12. Subdivision name (if any): _____

Latitude (ex. 34.872312): 35.5517 Longitude (ex. -77.556611): -77.4619

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):
Ditch south of US-13 near end of National Ave.

14. Proposed channel work (if any): —

15. Recent weather conditions: Rain w/in 24 hrs

16. Site conditions at time of visit: Dry, sunny

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 40% Forested _____% Commercial _____% Industrial 50% Agricultural

_____% Cleared / Logged _____% Other (_____)

22. Bankfull width: 12'

23. Bank height (from bed to top of bank): 1.5'

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): 15 Comments: Deep ditched channel through agricultural fields. Limited buffer on one side.

Evaluator's Signature [Signature] Date 12/11/13

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STREAM QUALITY ASSESSMENT WORKSHEET

SB

	#	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	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	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	1
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	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	0
	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	1
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	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	0
Total Points Possible			100	100	100	
TOTAL SCORE (also enter on first page)						15

* These characteristics are not assessed in coastal streams.

NC DWQ Stream Identification Form Version 4.11

SC0

Date: 12/11/13	Project/Site: R-2250	Latitude: 35.4639
Evaluator: P. May	County: Pitt	Longitude: -77.4363
Total Points: Stream is at least intermittent if ≥ 19 or perennial if $\geq 30^*$	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other e.g. Quad Name:

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 = 10.5)

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: 2 small crayfish & amphipods

Sketch:

SC

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: NCDOT R2250
 - 2. Evaluator's name: Phil May
 - 3. Date of evaluation: 12/11/13
 - 4. Time of evaluation: 2:00 PM
 - 5. Name of stream: SC
 - 6. River basin: Neuse
 - 7. Approximate drainage area: 10 acres
 - 8. Stream order: 1
 - 9. Length of reach evaluated: 100 ft
 - 10. County: Pitt
 - 11. Site coordinates (if known): prefer in decimal degrees.
 - 12. Subdivision name (if any): _____
- Latitude (ex. 34.872312): 35.4639 Longitude (ex. -77.556611): -77.4363
- 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): _____

15. Recent weather conditions: Cool + Dry

16. Site conditions at time of visit: Cold + Sunny

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 10 % Forested 80 % Agricultural 0 % Commercial 0 % Industrial 0 % Cleared / Logged 0 % Other (_____)

22. Bankfull width: 3 ft 23. Bank height (from bed to top of bank): 0 ft

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

25. Channel sinuosity: 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): 16 Comments: _____

Evaluator's Signature [Signature] Date 12/11/13

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SC

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	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	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	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	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	1
	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	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	0
Total Points Possible			100	100	100	
TOTAL SCORE (also enter on first page)						16

* These characteristics are not assessed in coastal streams.

SD

NC DWQ Stream Identification Form Version 4.11

Date: 12/11/13	Project/Site: R-2250	Latitude: 35.4426
Evaluator: P. May	County: Pitt	Longitude: -77.4324
Total Points: Stream is at least intermittent if ≥ 19 or perennial if $\geq 30^*$ 22	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other e.g. Quad Name:

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 <i>Ditched</i>	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)	Absent	Weak	Moderate	Strong
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)	Absent	Weak	Moderate	Strong
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: Dragonfly larvae, juvenile crayfish

Sketch:



STREAM QUALITY ASSESSMENT WORKSHEET



SD

4

Provide the following information for the stream reach under assessment:

1. Applicant's name: NCDOT R-2250 2. Evaluator's name: P. May
 3. Date of evaluation: 12/11/13 4. Time of evaluation: 1430
 5. Name of stream: SD 6. River basin: Nemee
 7. Approximate drainage area: 10 acres 8. Stream order: 1
 9. Length of reach evaluated: 200' 10. County: Pitt
 11. Site coordinates (if known): prefer in decimal degrees. 12. Subdivision name (if any): _____
 Latitude (ex. 34.872312): 35.4426 Longitude (ex. -77.556611): -77.4324

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): —
 15. Recent weather conditions: Rain w/in 24 hrs
 16. Site conditions at time of visit: Dry, sunny
 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 30 % Industrial 70 % Agricultural
 % Forested % Cleared / Logged % Other (_____)
 22. Bankfull width: 3' 23. Bank height (from bed to top of bank): 0.75'
 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): 27 Comments: Ditched intermittent stream.

Evaluator's Signature [Signature] Date 12/11/13

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

5D

	#	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	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	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	0
	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	1
	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	1
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	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	1
	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	2
	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	0
Total Points Possible			100	100	100	
TOTAL SCORE (also enter on first page)						22

* These characteristics are not assessed in coastal streams.

NC DWQ Stream Identification Form Version 4.11

SE

Date: 12/11/13	Project/Site: R-2250	Latitude: 35.4645
Evaluator: P. May	County: P.H	Longitude: -77.4367
Total Points: Stream is at least intermittent if ≥ 19 or perennial if $\geq 30^*$ 30	Stream Determination (circle one) Ephemeral Intermittent (Perennial)	Other e.g. Quad Name:

A. Geomorphology (Subtotal = 12)

	Absent	Weak	Moderate	Strong
1 ^a . Continuity of channel bed and bank	0	1	2 →	3
2. Sinuosity of channel along thalweg <i>Ditched</i>	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 <i>Ditched</i>	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 = 8)

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 = 12)

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: Dragonflies, night snails, fish, crayfish

Sketch:



STREAM QUALITY ASSESSMENT WORKSHEET



Provide the following information for the stream reach under assessment:

- 1. Applicant's name: NC DOT R-2250
- 2. Evaluator's name: P. May
- 3. Date of evaluation: 12/11/13
- 4. Time of evaluation: 1530
- 5. Name of stream: SE
- 6. River basin: Neuse
- 7. Approximate drainage area: 120 acres
- 8. Stream order: 2
- 9. Length of reach evaluated: 150'
- 10. County: Pitt
- 11. Site coordinates (if known): prefer in decimal degrees.
- 12. Subdivision name (if any): _____
- Latitude (ex. 34.872312): 35.4645
- Longitude (ex. -77.556611): -77.4367

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):
Crossing NC-11 south of Snow Hill St.

14. Proposed channel work (if any): —

15. Recent weather conditions: Rain w/in 24 hrs

16. Site conditions at time of visit: Day, sunny

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: 20% Residential % Commercial % Industrial 80% Agricultural
 % Forested % Cleared / Logged % Other (_____)

22. Bankfull width: 5' 23. Bank height (from bed to top of bank): 0.5'

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): 24 Comments: Small Perennial stream ditched through study area.

Evaluator's Signature [Signature] Date 12/11/13

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

SE

	#	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	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	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	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	1
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	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	1
	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	1
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	0
	22	Presence of fish (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	1
	23	Evidence of wildlife use (no evidence = 0; abundant evidence = max points)	0-6	0-5	0-5	0
Total Points Possible			100	100	100	
TOTAL SCORE (also enter on first page)						24

* These characteristics are not assessed in coastal streams.

SF D455
SF

NC DWQ Stream Identification Form Version 4.11

Date: 12/11/2013	Project/Site: R 2250	Latitude: 35.5019
Evaluator: B. Smith	County: Pitt	Longitude: -77.4526
Total Points: Stream is at least intermittent if ≥ 19 or perennial if $\geq 30^*$ 20	Stream Determination (circle one) Ephemeral <u>Intermittent</u> Perennial	Other e.g. Quad Name:

A. Geomorphology (Subtotal = 4)

	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 = 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 = 9)

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: parrot feather

Sketch: 5 snails, 1 fingernail clam
2 tadpoles

**STREAM QUALITY ASSESSMENT WORKSHEET****Provide the following information for the stream reach under assessment:**

1. Applicant's name: NCDOT - R2250 2. Evaluator's name: Brian Smith
3. Date of evaluation: 12/11/13 4. Time of evaluation: 12:00 PM
5. Name of stream: SF 6. River basin: Neuse
7. Approximate drainage area: 40 Acres 8. Stream order: 1
9. Length of reach evaluated: 200 ft 10. County: Pitt
11. Site coordinates (if known): prefer in decimal degrees. 12. Subdivision name (if any): _____
- Latitude (ex. 34.872312): 35.5019 Longitude (ex. -77.556611): -77.4526
- 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):
crosses Abbott Farm Rd. west of Cheek Farm Rd.
14. Proposed channel work (if any): _____
15. Recent weather conditions: Cool + Dry
16. Site conditions at time of visit: Sunny Cool
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 90 % Agricultural
10 % Forested _____ % Cleared / Logged _____ % Other (_____)
22. Bankfull width: 4 ft 23. Bank height (from bed to top of bank): 1 ft
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: _____

Evaluator's Signature

Brian Smith

Date

12/11/13

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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	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	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	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	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	—
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	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	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	1
Total Points Possible			100	100	100	
TOTAL SCORE (also enter on first page)						21

* These characteristics are not assessed in coastal streams.

NC DWQ Stream Identification Form Version 4.11

SH
P105
54

Date: 12/13/13	Project/Site: 22250	Latitude: 35.4759
Evaluator: Joe Sullivan	County: Pitt	Longitude: -77.4383
Total Points: Stream is at least intermittent if ≥ 19 or perennial if $\geq 30^*$ 13	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other e.g. Quad Name:

A. Geomorphology (Subtotal = 4)

	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)

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: Jarphids, aquatic worm

Sketch:

Blank area for sketching the stream channel and surrounding features.

SH

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: NC DOT - R2250
- 2. Evaluator's name: Joe Sullivan
- 3. Date of evaluation: 12/13/13
- 4. Time of evaluation: 2:30 PM
- 5. Name of stream: SH
- 6. River basin: Neuse
- 7. Approximate drainage area: 30 acres
- 8. Stream order: 1
- 9. Length of reach evaluated: SOFT
- 10. County: Pitt
- 11. Site coordinates (if known): prefer in decimal degrees.
- 12. Subdivision name (if any): _____
- Latitude (ex. 34.872312): 35.4759
- Longitude (ex. -77.556611): -77.4393
- 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): _____
- 15. Recent weather conditions: Cool & Dry
- 16. Site conditions at time of visit: Cool & Dry
- 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: 85 % Residential 85 % Commercial _____ % Industrial 56 % Agricultural _____ % Forested _____ % Cleared / Logged _____ % Other (_____)
- 22. Bankfull width: 3 ft
- 23. Bank height (from bed to top of bank): 0.25 ft
- 24. Channel slope down center of stream: Flat (0 to 2%) Gentle (2 to 4%) Moderate (4 to 10%) Steep (>10%)
- 25. Channel sinuosity: 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): 20 Comments: _____

Evaluator's Signature Joseph Sullivan Date 12/13/13

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	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	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	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	-
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	1
	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	2
	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)						20

* These characteristics are not assessed in coastal streams.