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: Domina
2. Evaluator's name: D+D
3. Date of evaluation: 7/22/14
4. Time of evaluation: 12:00
5. Name of stream: Fishing Creek
6. River basin: Tar-Pamlico
7. Approximate drainage area: 7200 acres
8. Stream order: 7 2nd
9. Length of reach evaluated: 1001
10. County: Nash/Halifax
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any):

Latitude (ex. 34.872312): 36° 08' 43.991" Longitude (ex. -77.556611): 77° 47' 41.791"

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: 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 ___% Commercial ___% Industrial 45 % Agricultural 45 % Forested ___% Cleared / Logged ___% Other (_____)

22. Bankfull width: 75'

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: ___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): 84 **Comments:**

Evaluator's Signature _____ **Date** 7/22/14

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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	5
	2	**Evidence of past human alteration** (extensive alteration = 0; no alteration = max points)	0 – 6	0 – 5	0 – 5	5
	3	**Riparian zone** (no buffer = 0; contiguous, wide buffer = max points)	0 – 6	0 – 4	0 – 5	6
	4	**Evidence of nutrient or chemical discharges** (extensive discharges = 0; no discharges = max points)	0 – 5	0 – 4	0 – 4	5
	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	2
	7	**Entrenchment / floodplain access** (deeply entrenched = 0; frequent flooding = max points)	0 – 5	0 – 4	0 – 2	03
	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	3
	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	
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	3
	15	**Impact by agriculture, livestock, or timber production** (substantial impact =0; no evidence = max points)	0 – 5	0 – 4	0 – 5	4
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	3
	17	**Habitat complexity** (little or no habitat = 0; frequent, varied habitats = max points)	0 – 6	0 – 6	0 – 6	6
	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	4
	21	**Presence of amphibians** (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	4
	22	**Presence of fish** (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	4
	23	**Evidence of wildlife use** (no evidence = 0; abundant evidence = max points)	0 – 6	0 – 5	0 – 5	6
Total Points Possible			100	100	100	
TOTAL SCORE (also enter on first page)						84

* 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: 7/22/14	**Project/Site:** SERP	**Latitude:** 36°08'43.991"
Evaluator: Lucky / D+D	**County:** Nash/Halifax	**Longitude:** 77°47'41.78"
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** fish present and >18 on geomorphology	**Stream Determination (circle one)** Ephemeral Intermittent Perennial	**Other** Fishing Creek *e.g. Quad Name:*

A. Geomorphology (Subtotal = 24.5)

	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 = _____)

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	

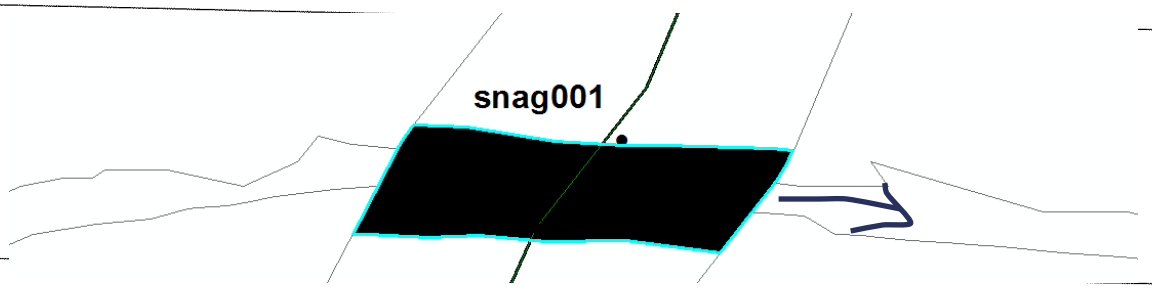
C. Biology (Subtotal = _____)

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:

Sketch:



snag001

Waterbody snag001 facing west upstream

Waterbody snag001 facing east downstream

snag001

Waterbody snag001 facing south cross stream

SNAG003

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: SE Dominion
2. Evaluator's name: D+D
3. Date of evaluation: 7/23/14
4. Time of evaluation: 1200
5. Name of stream: UNT to E. Stroud Creek
6. River basin: Tar-Pam
7. Approximate drainage area: 72 acres
8. Stream order: 1st
9. Length of reach evaluated: 50'
10. County: Nash
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any):

Latitude (ex. 34.872312): 36° 08' 05.326"
Longitude (ex. -77.556611): 77° 48' 09.302"

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): Road upgradient

14. Proposed channel work (if any): /
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 ___% Commercial ___% Industrial 80 ___% Agricultural 10 ___% Forested ___% Cleared / Logged ___% Other (_____)
22. Bankfull width: 3
23. Bank height (from bed to top of bank): 2
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): 45 **Comments:**

Evaluator's Signature _____ **Date** 7/23/14

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SNA6C03

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	01
	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	3
	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	2
	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	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	4
	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	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	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	0
	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)						45

* These characteristics are not assessed in coastal streams.

SNA6003

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: 7/23/14	**Project/Site:** SERP	**Latitude:** 36° 08' 05.326"
Evaluator: DHD	**County:** Nash	**Longitude:** 77°48'09.302"
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 22	**Stream Determination (circle one)** Ephemeral **Intermittent** Perennial	**Other** *e.g. Quad Name:* UNT to Fishing Creek

A. Geomorphology (Subtotal = 8.5)	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	

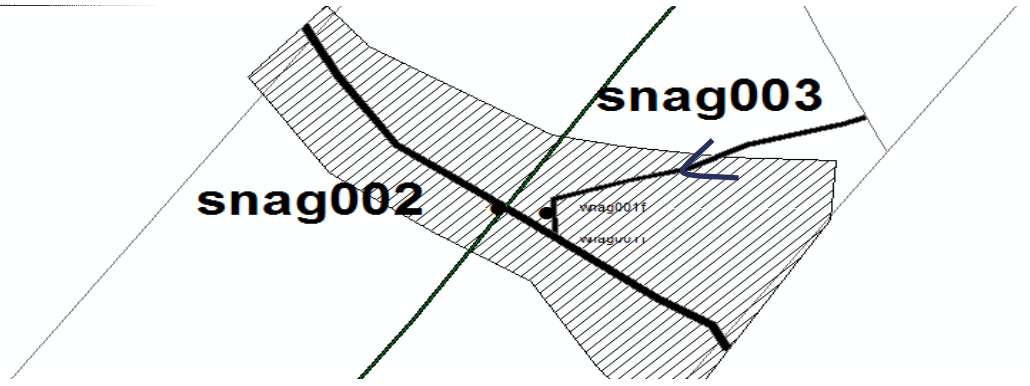
[a] artificial ditches are not rated; see discussions in manual

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 = 7.5)				
18. Fibrous roots in streambed	(3)	2	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macrobenthos (note diversity and abundance)	(0)	1	2	3
21. Aquatic Mollusks	(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:



snag003

Waterbody snag003 facing east upstream

Waterbody snag003 facing west downstream

snag003

Waterbody snag003 facing south cross stream

SNA6002

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: D+D
3. Date of evaluation: 7/23/14
4. Time of evaluation: 11:00
5. Name of stream: UNT to Fishing Creek
6. River basin: Tar-Pam
7. Approximate drainage area: 720 acres
8. Stream order: 1st
9. Length of reach evaluated: 200'
10. County: Nash
11. Site coordinates (if known): prefer in decimal degrees.
    Latitude (ex. 34.872312): 36° 08' 05.362"
    Longitude (ex. -77.556611): 77° 48' 09.615"
12. Subdivision name (if any):
    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: 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 ___% Commercial ___% Industrial 60 % Agricultural 30 % Forested ___% Cleared / Logged ___% Other (_____)
22. Bankfull width: 5'
23. Bank height (from bed to top of bank): 3'
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): 49 **Comments:**

Evaluator's Signature _____ **Date** 7/23/14

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SNAG002

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	3
	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	3
	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	3
	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	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	5
	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	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	2
	17	**Habitat complexity** (little or no habitat = 0; frequent, varied habitats = max points)	0 – 6	0 – 6	0 – 6	3
	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	0
	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)						49

* These characteristics are not assessed in coastal streams.

SNAG 002

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: 7/23/14	**Project/Site:** SERP	**Latitude:** 36°08'05.362"
Evaluator: D+D	**County:** Nash	**Longitude:** 77°48'09.615"
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 24	**Stream Determination (circle one)** Ephemeral (Intermittent) Perennial	**Other** *e.g. Quad Name:* UNT to Fishing Creek

A. Geomorphology (Subtotal = 11)	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	

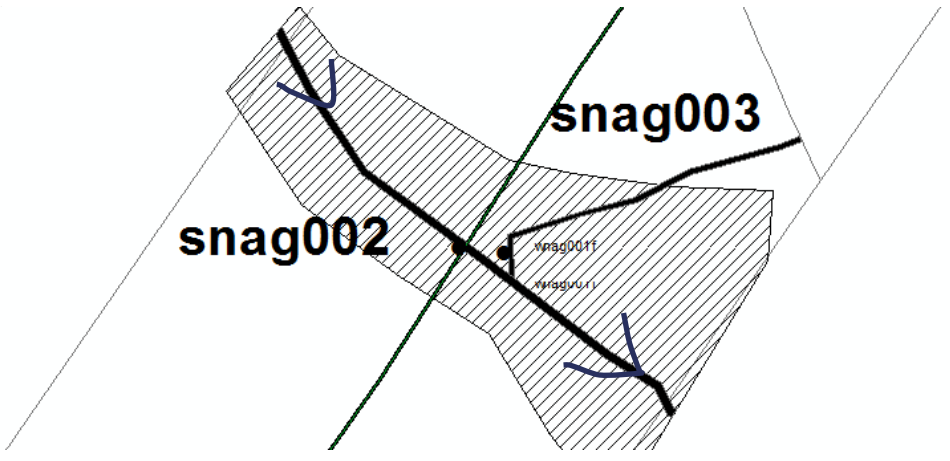
[a] artificial ditches are not rated; see discussions in manual

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 = 6)				
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:



snag002

Waterbody snag002 facing west upstream

Waterbody snag002 facing east downstream

snag002

Waterbody snag002 facing south cross stream

SNAG004

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: D+D
3. Date of evaluation: 7/23/14
4. Time of evaluation: 1306
5. Name of stream: UNT Fishing Creek
6. River basin: Tar-Pam
7. Approximate drainage area: >2 acres
8. Stream order: 1st
9. Length of reach evaluated: 200'
10. County: Nash
11. Site coordinates (if known): prefer in decimal degrees.
    Latitude (ex. 34.872312): 36° 07' 53.033"
    Longitude (ex. -77.556611): 77° 48' 20.000"
12. Subdivision name (if any):

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): Road Upgradient
14. Proposed channel work (if any): /
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 10 % Commercial 10 % Industrial 40 % Agricultural 30 % Forested ___% Cleared / Logged ___% Other (_____)
22. Bankfull width: 4'
23. Bank height (from bed to top of bank): 3'
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): 45 **Comments:**

Evaluator's Signature _____ **Date** 7/23/14

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.

SNA0004

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	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	3
	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	2
	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	4
	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	2
	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	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	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	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	0
	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)						45

* These characteristics are not assessed in coastal streams.

SNAG004

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: 7/23/14	**Project/Site:** SERP	**Latitude:** 36°07'53.033"
Evaluator: DtD	**County:** Nash	**Longitude:** 77°48'20.020"
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 22	**Stream Determination (circle one)** Ephemeral Intermittent Perennial	**Other** UNT Fishing Creek *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

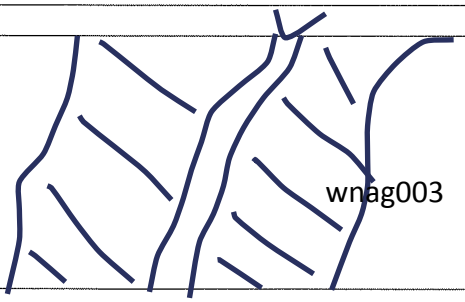
B. Hydrology (Subtotal = 6.5)				
12. Presence of Baseflow	0	1	2	3
13. Iron oxidizing bacteria	0	1	2	3
14. Leaf litter	1.5	1	0.5	0
15. Sediment on plants or debris	0	0.5	1	1.5
16. Organic debris lines or piles	0	0.5	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3	

C. Biology (Subtotal = 7.5)				
18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macrobenthos (note diversity and abundance)	0	1	2	3
21. Aquatic Mollusks	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:



snag004

snag004

Waterbody snag004 facing north upstream

Waterbody snag004 facing south downstream

snag004

Waterbody snag004 facing east cross stream

ONAH002

Open Waterbody Data Sheet

Survey Description

Project Name:	Waterbody Name:	Waterbody ID:	Date:
Southeastern Reliability	Unnamed	onah002	7-31-14

State:	County:	Company:	Crew Member Initials:	Photos:
NC	NASH		JD, DB	

Tract Number(s):	Nearest Milepost:	Associated Wetland ID(s):
18-013	329	—

Survey Type: *(check one)* ☒Centerline ☐Re-Route ☐Access Road ☐Other:

Physical Attributes

Waterbody Type: *(check one)* ☐Stock Pond ☐Natural Pond ☐Lake ☐Reservoir ☐Impoundment ☐Oxbow ☒Other: Excavated irrigation pond

Hydrologic Regime: ☒Permanently Flooded ☐Semipermanently Flooded ☐Seasonally Flooded ☐Temporarily Flooded

OHWM

Height: NA ft.

OHWM Indicator: *(check all that apply)*

☒Clear line on bank ☐Shelving ☐Wrested vegetation ☐Scouring ☐Water staining

☐Bent, matted, or missing vegetation ☐Wrack line ☐Litter and debris ☐Abrupt plant community change ☐Soil characteristic change

Depth of Water:	Bank height (average):	Bank slope (average):
2-5 ft. N/A☐	5 ft.	60 degrees

Qualitative Attributes

Water Appearance: *(check one)* ☐No water ☐Clear ☒Turbid ☐Sheen on surface ☐Surface scum ☐Algal mats ☐Other:

Substrate: *(check all that apply)* ☐ Bedrock ☐ Boulder ☐ Cobble ☐ Gravel ☒ Sand ☒ Silt/ clay ☐ Organic ☐ Other:

% of Substrate:	____%	____%	____%	____%	50 %	50 %	____%	____%

Width of Riparian Zone: 10 ft. N/A☐

Vegetative Layers: *(check all that apply)*

	☒ Trees:	☒ Saplings/Shrubs:	☒ Herbs
Avg. DBH of Dominants: *(approx.)*	12-14 in.	3-5 in.	12 height in.

Dominant Bank Vegetation *(list)*: Betula nigra, Salix nigra, Ulmus alata, Liquidambar styraciflua

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

Open water 2-5ft

Aquatic Organisms Observed *(list)*: Bullfrog, leopard frog

T&E Species Observed *(list)*: NONE

Disturbances (ex: livestock access, manure in waterbody, waste discharge pipes)**:**

Ag fields surrounding

Waterbody is: *(check one)* ☐ Natural ☒ Artificial, man-made ☐ Manipulated

Waterbody Quality[a]**:** *(check one)* ☐ High ☐ Moderate ☒ Low

Waterbody ID: ONAH002

[a] **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.

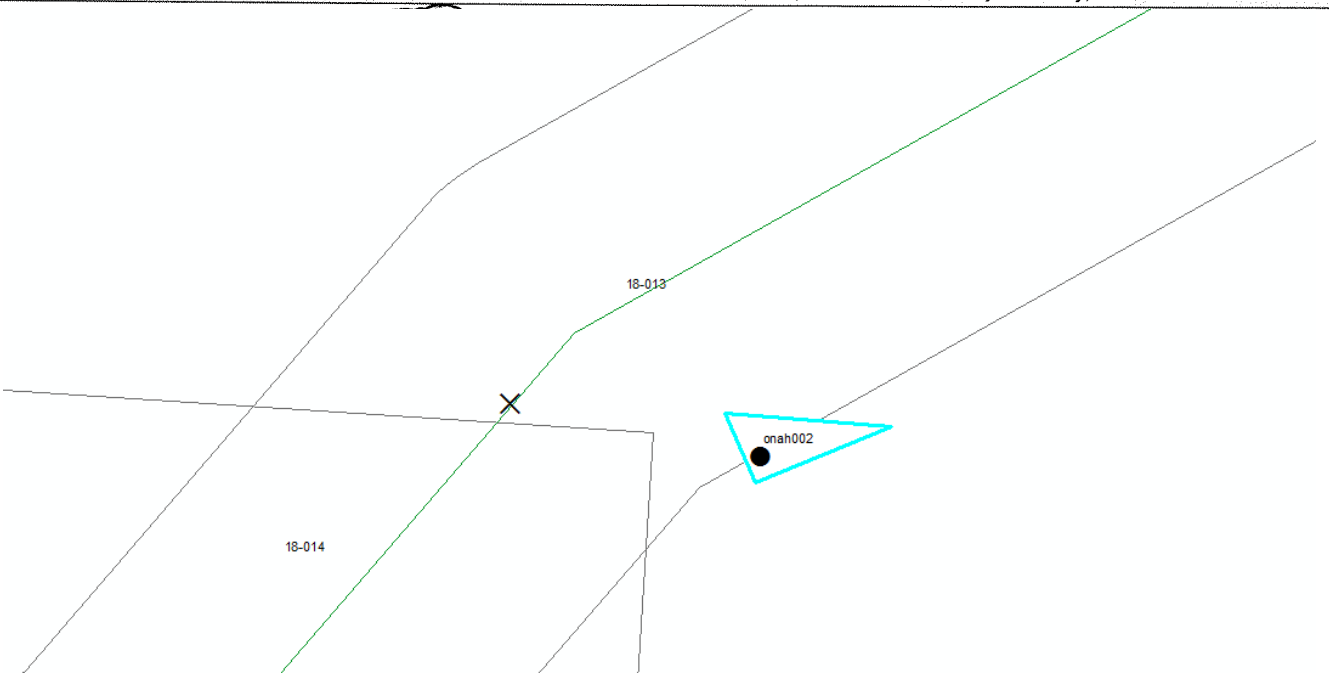
Moderate Quality: Altered by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or bank vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers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

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



onah002

Open water data point onah002 facing east

Open water data point onah002 facing south

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

SNAB100

STREAM QUALITY ASSESSMENT WORKSHEET

Provide the following information for the stream reach under assessment:

1. Applicant's name: Dominion - Atlantic Coast Pipeline
2. Evaluator's name: Todd Preuninger
3. Date of evaluation: 1/26/15
4. Time of evaluation: PM
5. Name of stream: UNT to Swift Creek
6. River basin: Tar - Pam
7. Approximate drainage area: _____
8. Stream order: 1st
9. Length of reach evaluated: ~ 100'
10. County: Nash
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any): _____

Latitude (ex. 34.872312): 36.079722 Longitude (ex. -77.556611): 77.855833

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): ~2000' west of the intersection of Massengale Rd + Watsonseed Farm Road
14. Proposed channel work (if any): excavation
15. Recent weather conditions: no significant rain in last 24 hours
16. Site conditions at time of visit: cloudy, 50°
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 ___% Commercial ___% Industrial 85% Agricultural 10 % Forested ___% Cleared / Logged ___% Other (_____)
22. Bankfull width: 2.0
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:** excavated channel to provide water to stock/ag pond. Meanders present within base of ditch. Fed by forested wetland - noted spoil piles

Evaluator's Signature Todd _____ **Date** 1/26/15

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	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	3
	4	**Evidence of nutrient or chemical discharges** (extensive discharges = 0; no discharges = max points)	0 – 5	0 – 4	0 – 4	3
	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	2
	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	1
	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	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	2
	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	1
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)						30

* 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

SNAB100

NC DWQ Stream Identification Form Version 4.11

Date: 1/26/15	**Project/Site:** Dominion Atlantic Coast Pipeline	**Latitude:** 36.079722
Evaluator: Todd Preuninger	**County:** Nash	**Longitude:** 77.855833
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 23	**Stream Determination (circle one)** Ephemeral (Intermittent) Perennial	**Other** *e.g. Quad Name:*

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

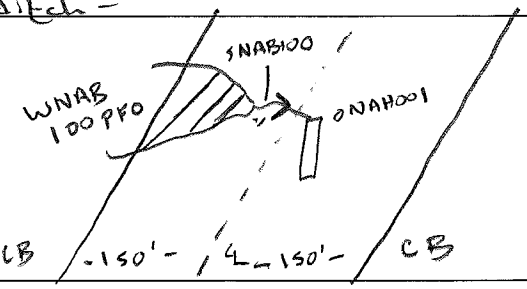
B. Hydrology (Subtotal = 7)				
12. Presence of Baseflow	0	1	(2)	3
13. Iron oxidizing bacteria	(0)	1	2	3
14. Leaf litter	(1.5)	1	0.5	0
15. Sediment on plants or debris	(0)	0.5	1	1.5
16. Organic debris lines or piles	0	(0.5)	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3	

C. Biology (Subtotal = 6)				
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: Excavated stream to provide water to stock/ag. pond. Meanders present in base of ditch – noted spoil pile

Sketch:



N

SNAB100 facing west upstream

SNAB100 facing south across

SNAB100 facing east downstream

Open Waterbody Data Sheet

Survey Description ONAH001

Project Name:	Waterbody Name:	Waterbody ID:	Date:
Southeastern Reliability	unnamed pond	ONAH001	7-24-14

State:	County:	Company:	Crew Member Initials:	Photos:
NC	NASH	DDWEST	JD, DB	3

Tract Number(s):	Nearest Milepost:	Associated Wetland ID(s):
18029	331	NONE

Survey Type: *(check one)* ☒ Centerline ☐ Re-Route ☐ Access Road ☐ Other:

Physical Attributes

Waterbody Type: *(check one)* ☐ Stock Pond ☐ Natural Pond ☐ Lake ☐ Reservoir ☐ Impoundment ☐ Oxbow ☒ Other: MAN MADE POND

Hydrologic Regime: ☒ Permanently Flooded ☐ Semipermanently Flooded ☐ Seasonally Flooded ☐ Temporarily Flooded

OHWM

Height: 4 ft.

OHWM Indicator: *(check all that apply)*

☒ Clear line on bank ☐ Shelving ☐ Wrested vegetation ☐ Scouring ☒ Water staining

☐ Bent, matted, or missing vegetation ☐ Wrack line ☐ Litter and debris ☐ Abrupt plant community change ☒ Soil characteristic change

Depth of Water:	Bank height (average):	Bank slope (average):
2 ft. N/A☐	10 ft.	40 degrees

Qualitative Attributes

Water Appearance: *(check one)* ☐ No water ☐ Clear ☒ Turbid ☐ Sheen on surface ☒ Surface scum ☐ Algal mats ☐ Other:

Substrate: *(check all that apply)* ☐ Bedrock ☐ Boulder ☐ Cobble ☐ Gravel ☒ Sand ☐ Silt/ clay ☐ Organic ☐ Other:

% of Substrate:							
	%	%	%	%	100 %	%	%	%

Width of Riparian Zone: 0 ft. N/A☐

Vegetative Layers: *(check all that apply)* ☒ Trees: ☒ Saplings/Shrubs: ☒ Herbs

Avg. DBH of Dominants: *(approx.)* 10 in. 3 in. ____ in.

Dominant Bank Vegetation *(list)*: Chasmanthium sessiliflorum, Liquidambar styraciflua

Aquatic Habitats (ex: submerged or emerged aquatic vegetation, overhanging banks/roots, leaf packs, large submerged wood, riffles, deep pools, etc.): Duck weed on water surface

Aquatic Organisms Observed *(list)*: Gambusia, leopard & bull frogs

T&E Species Observed *(list)*: NONE

Disturbances (ex: livestock access, manure in waterbody, waste discharge pipes): —

Waterbody is: *(check one)* ☐ Natural ☒ Artificial, man-made ☐ Manipulated

Waterbody Quality[a]: *(check one)* ☐ High ☐ Moderate ☒ Low

Waterbody ID: ONAH001

[a] **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.

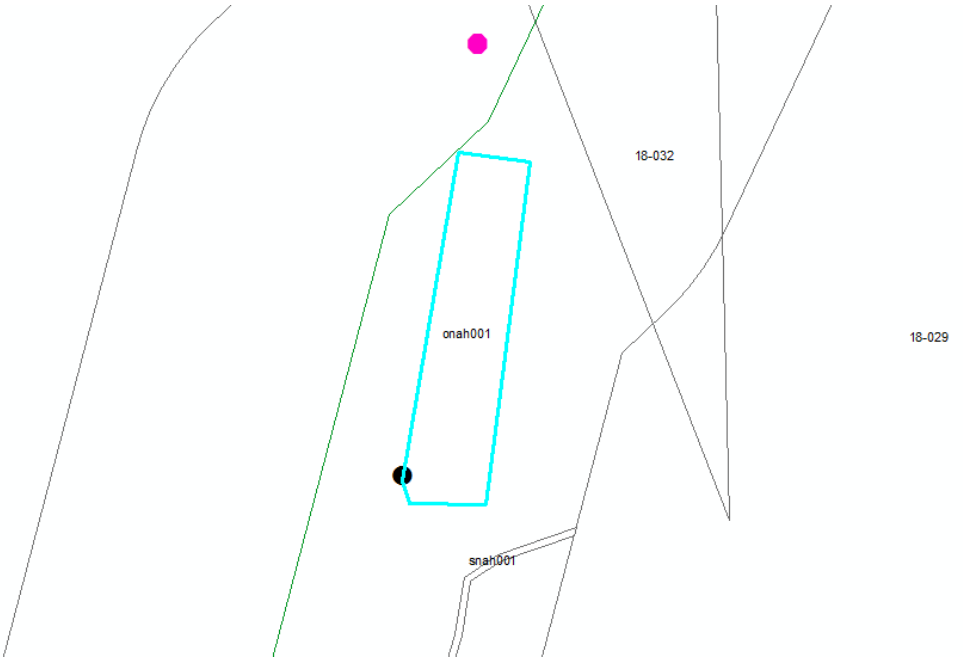
Moderate Quality: Altered by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or bank vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers 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 pond used for irrigation

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



onah001

Waterbody onah001 facing east

Waterbody onah001 facing south

SNAH001

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: DEWEST
3. Date of evaluation: 7-24-14
4. Time of evaluation: 10:54
5. Name of stream: UNT to Swift Creek
6. River basin: TAR-Pamlico
7. Approximate drainage area: 160Acres
8. Stream order: 1st
9. Length of reach evaluated: 100ft
10. County: NASH
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any):

Latitude (ex. 34.872312): 36°04'37.940" Longitude (ex. -77.556611): 77°51'29.633"

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: DRY

16. Site conditions at time of visit: NORMAL - FEW SHOWERS

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 70% Agricultural 30% Forested ___% Cleared / Logged ___% Other (_____)

22. Bankfull width: 4' 23. Bank height (from bed to top of bank): 6

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

25. Channel sinuosity: ___Straight ___Occasional bends ___Frequent meander X 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): 46 **Comments:**

Evaluator's Signature _____ **Date** 7-24-14

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STREAM QUALITY ASSESSMENT WORKSHEET SNAH001

	#	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	3
	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	1
	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	2
	9	**Channel sinuosity** (extensive channelization = 0; natural meander = max points)	0 – 5	0 – 4	0 – 3	3
	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	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	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	3
	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	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	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)						41/6

* These characteristics are not assessed in coastal streams.

SNAH001

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: 7-24-14	Project/Site: SERP	Latitude: 36°04'37.940"
Evaluator: DAWEST	County: NASH	Longitude: 77°51'29.633"
Total Points: 28.75 *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30**	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other UNT to Swift Creek *e.g. Quad Name:*

A. Geomorphology (Subtotal = 14.5)	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

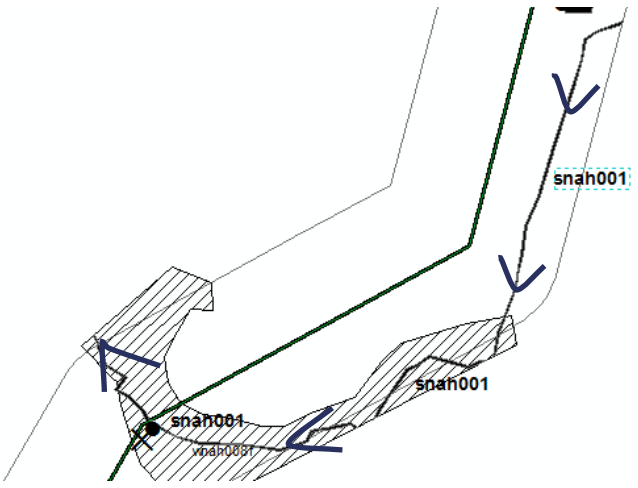
B. Hydrology (Subtotal = 7.5)				
12. Presence of Baseflow	0	1	2	3
13. Iron oxidizing bacteria	0	1	2	3
14. Leaf litter	1.5	1	0.5	0
15. Sediment on plants or debris	0	0.5	1	1.5
16. Organic debris lines or piles	0	0.5	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3	

C. Biology (Subtotal = 6.75)				
18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macrobenthos (note diversity and abundance)	0	1	2	3
21. Aquatic Mollusks	0	1	2	3
22. Fish	0	0.5	1	1.5
23. Crayfish	0	0.5	1	1.5
24. Amphibians	0	0.5	1	1.5
25. Algae	0	0.5	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:

Sk



snah001

Waterbody snah001 facing east upstream

Waterbody snah001 facing west downstream

snah001

Waterbody snah001 facing south cross stream

SNAH028

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: DDWest
3. Date of evaluation: Aug. 20, 2014
4. Time of evaluation: 3:40
5. Name of stream: UNT to Swift Creek
6. River basin: ~~UNT~~ Tar Pamlico
7. Approximate drainage area: >100 Acres
8. Stream order: 1st
9. Length of reach evaluated: 200 Feet
10. County: Nash
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any): NA

Latitude (ex. 34.872312): 36°04'24.181" Longitude (ex. -77.556611): 77°51'38.619"

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): View GPS or Lat & Long

14. Proposed channel work (if any): None

15. Recent weather conditions: Rainy

16. Site conditions at time of visit: Clear / Partly Cloudy – Wooded

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 ___% Commercial ___% Industrial 40 % Agricultural 50 % Forested ___% Cleared / Logged ___% Other (_____)

22. Bankfull width: 8

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): 63 **Comments:** Perennial

Evaluator's Signature Michael T. Kroon **Date** August 20, 2014

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SNAH028

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	3
	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	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	0
	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	NA*
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	3
	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	4
	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	2
	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	2
	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)						63

* These characteristics are not assessed in coastal streams.

SNAH028

NC DWQ Stream Identification Form Version 4.11

Date: August 20, 2014	**Project/Site:** SE Reliability	**Latitude:** 36°04'24.181"
Evaluator: DDWest	**County:** Nash	**Longitude:** 77°51'38.619"
Total Points: 39 *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30**	**Stream Determination (circle one)** Ephemeral Intermittent (Perennial)	**Other** *e.g. Quad Name:* ~~Peele~~ UNT to Swift Creek

A. Geomorphology (Subtotal = 18)	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

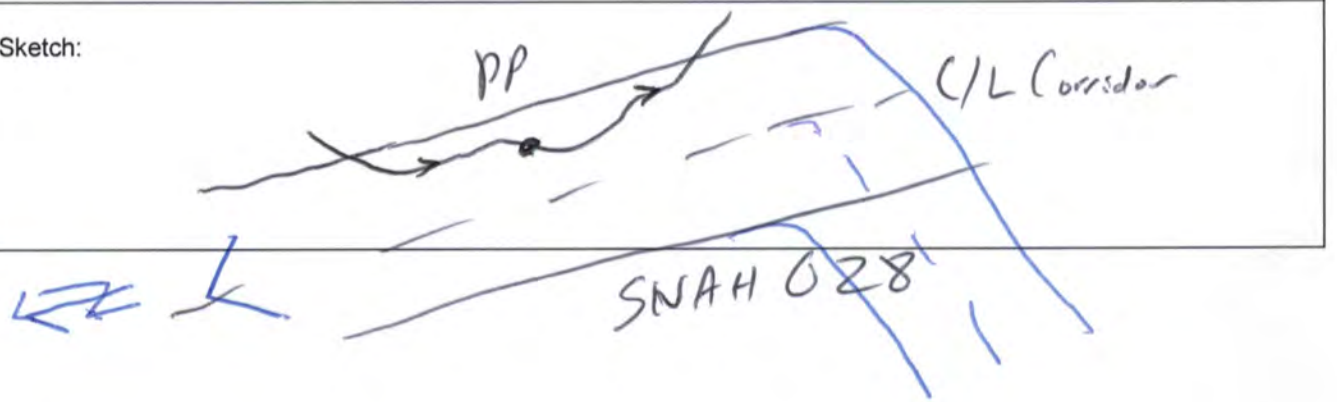
B. Hydrology (Subtotal = 11)				
12. Presence of Baseflow	0	1	2	(3)
13. Iron oxidizing bacteria	0	1	(2)	3
14. Leaf litter	1.5	(1)	0.5	0
15. Sediment on plants or debris	0	0.5	(1)	1.5
16. Organic debris lines or piles	0	0.5	(1)	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = (3)	

C. Biology (Subtotal = 10)				
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:

Sketch:



Waterbody snah028 facing north upstream

Waterbody snah028 facing south downstream

Waterbody snah028 facing east cross stream

SNAH002

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: DPWEST
3. Date of evaluation: 7-24-14
4. Time of evaluation: 12:34
5. Name of stream: Unnamed trib. Swift Creek
6. River basin: TAR - Pamlico
7. Approximate drainage area: 750 acres
8. Stream order: 1st
9. Length of reach evaluated: 100 ft
10. County: Nash
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any):

Latitude (ex. 34.872312): 36° 04" 22.246" Longitude (ex. -77.556611): 77° 51' 43.892"

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: 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: 6
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: ___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): 28 **Comments:** Perennial stream thru cow pasture

Evaluator's Signature _____ **Date** 7-24-14

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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	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	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	0
	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	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	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	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	2
	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	2
	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

SNAH002

Date: 7-24-14	**Project/Site:** SERP	**Latitude:** 36°04'22.746"
Evaluator: DDWEST	**County:** NASH	**Longitude:** 77°51'43.892
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 32.5	**Stream Determination (circle one)** Ephemeral Intermittent (Perennial)	**Other** UNT to Swift Creek *e.g. Quad Name:*

A. Geomorphology (Subtotal = 12.5)	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	

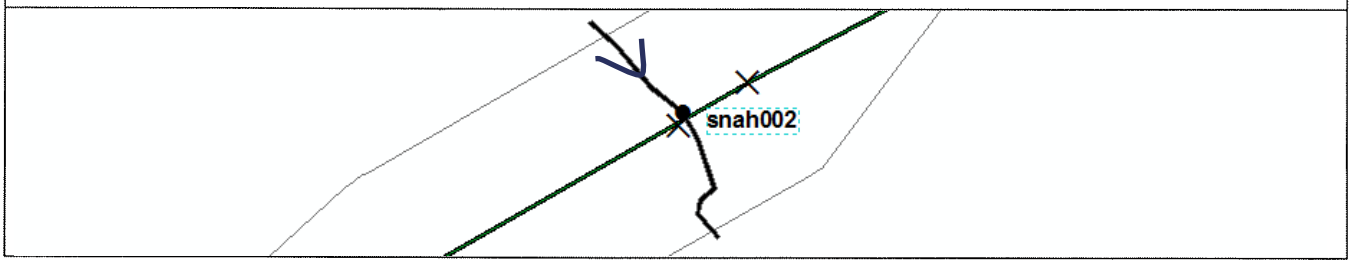
[a] artificial ditches are not rated; see discussions in manual

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 = 10.5)				
18. Fibrous roots in streambed	3	(2)	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macrobenthos (note diversity and abundance)	0	1	(2)	3
21. Aquatic Mollusks	(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:



snah002

Waterbody snah002 facing north upstream

Waterbody snah002 facing south downstream

snah002

Waterbody snah002 facing east cross stream

SNAH003

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: DDWEST
3. Date of evaluation: 7-24-14
4. Time of evaluation: 1:33
5. Name of stream: Swift creek
6. River basin: TAR-Pamlico
7. Approximate drainage area: > 1000 acres
8. Stream order: 2nd
9. Length of reach evaluated: 100ft
10. County: Nash
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any):

Latitude (ex. 34.872312): 36°04'15.316" Longitude (ex. -77.556611): 77°51'54.659"

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: 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 50% Agricultural 50% Forested ___% Cleared / Logged ___% Other (_____)
22. Bankfull width: NA
23. Bank height (from bed to top of bank): NA
24. Channel slope down center of stream: ___Flat (0 to 2%) X Gentle (2 to 4%) ___Moderate (4 to 10%) ___Steep (>10%)
25. Channel sinuosity: ___Straight ___Occasional bends X 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): 63 **Comments:** Swift creek

Evaluator's Signature _____ **Date** 7-24-14

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 SWMA 003

	#	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	5
	2	**Evidence of past human alteration** (extensive alteration = 0; no alteration = max points)	0 – 6	0 – 5	0 – 5	3
	3	**Riparian zone** (no buffer = 0; contiguous, wide buffer = max points)	0 – 6	0 – 4	0 – 5	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	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	2
	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	3
	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	2
	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	3
	17	**Habitat complexity** (little or no habitat = 0; frequent, varied habitats = max points)	0 – 6	0 – 6	0 – 6	5
	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	NA
BIOLOGY	20	**Presence of stream invertebrates** (see page 4) (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 5	0 – 5	3
	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	4
	23	**Evidence of wildlife use** (no evidence = 0; abundant evidence = max points)	0 – 6	0 – 5	0 – 5	5
		Total Points Possible	100	100	100	
		TOTAL SCORE (also enter on first page)				63

* These characteristics are not assessed in coastal streams.

snah003

NC DWQ Stream Identification Form Version 4.11

Date: 7-24-14	**Project/Site:** SERP	**Latitude:** 36°04'15.316"
Evaluator: DDWEST	**County:** NASH	**Longitude:** 77°51'54.659"
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 60.5	**Stream Determination (circle one)** Ephemeral Intermittent (Perennial)	**Other** Swift Creek *e.g. Quad Name:*

A. Geomorphology (Subtotal = 29)	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)	

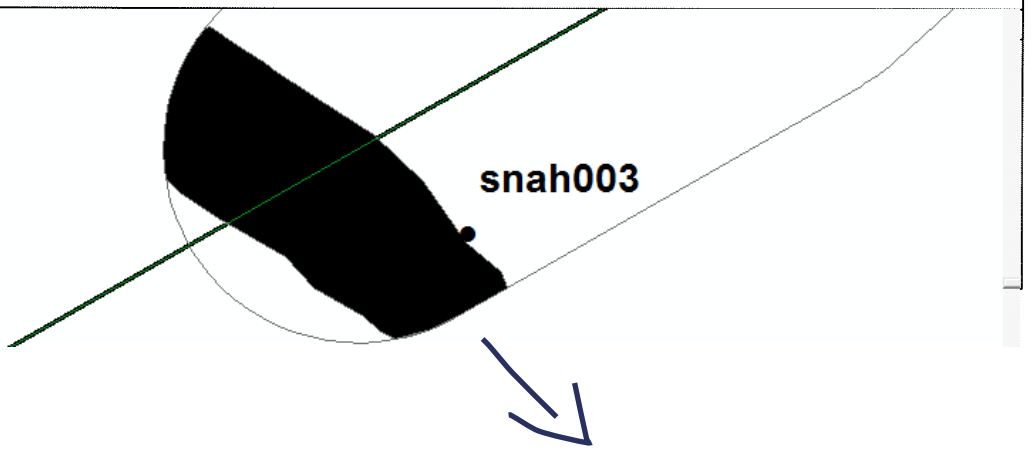
[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 12)				
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 = 19.5)				
18. Fibrous roots in streambed	(3)	2	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macrobenthos (note diversity and abundance)	0	1	2	(3)
21. Aquatic Mollusks	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:



snah003

Waterbody snah003 facing north upstream

Waterbody snah003 facing south downstream

snah003

Waterbody snah003 facing west cross stream

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

STREAM QUALITY ASSESSMENT WORKSHEET

SNAH006

Provide the following information for the stream reach under assessment:

1. Applicant's name: Dominion
2. Evaluator's name: DOWEST
3. Date of evaluation: 7-25-14
4. Time of evaluation:
5. Name of stream: unnamed trib to Flat Rock Branch
6. River basin: Tar-Pamlico
7. Approximate drainage area: 7100 acres
8. Stream order: 1st
9. Length of reach evaluated: 1000 ft
10. County: NASH
11. Site coordinates (if known): prefer in decimal degrees.
    Latitude (ex. 34.872312): 36°04'08.587"
    Longitude (ex. -77.556611): 77°52'10.850"
12. Subdivision name (if any):

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: 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 70% Agricultural 30% Forested ___% Cleared / Logged ___% Other (_____)
22. Bankfull width: 8
23. Bank height (from bed to top of bank): 12
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): 33 **Comments:** Channelized stream/perennial

Evaluator's Signature _____ **Date** 7-25-14

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.

SNAH 006

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	2
	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	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	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	3
	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	3
		Total Points Possible	100	100	100	
		TOTAL SCORE (also enter on first page)				33

* 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

SNAH006

Date: 7/25	Project/Site: SERP	Latitude: 36°04'08.587"
Evaluator: DDWEST	County: Nash	Longitude: 77°52'10.856"
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 32.25	Stream Determination (circle one) Ephemeral Intermittent (Perennial)	Other UNT to Flat *e.g. Quad Name:* Rock Branch

A. Geomorphology (Subtotal = 12.5)

	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	(1)	2	3
10. Natural valley	0	(0.5)	1	1.5
11. Second or greater order channel	0	0.5	(1)	1.5
[a] artificial ditches are not rated; see discussions in manual	No = 0		Yes = 3	

B. Hydrology (Subtotal = 7)

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	

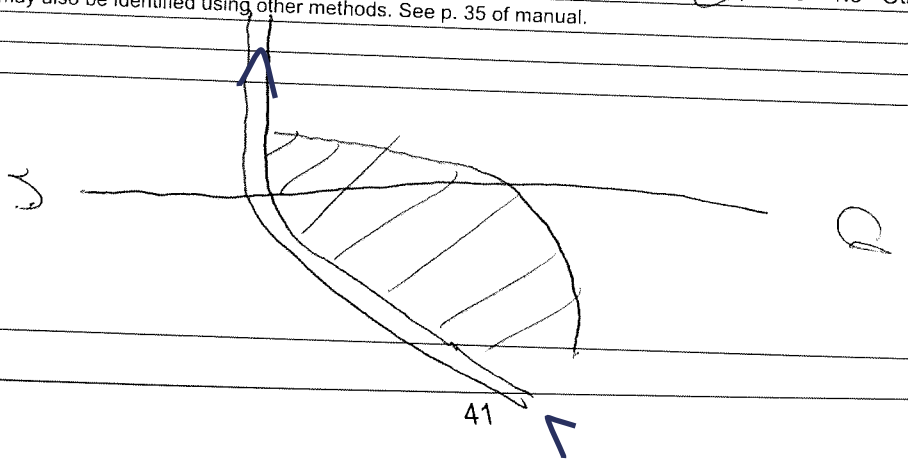
C. Biology (Subtotal = 12.75)

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



snah006

Waterbody snah006 facing west upstream

Waterbody snah006 facing east downstream

snah006

Waterbody snah006 facing south cross stream

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

snah005

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: 7-25-14
4. Time of evaluation: 12:29
5. Name of stream: unnamed tab Flatrock branch
6. River basin: Tar-Pamlico
7. Approximate drainage area: +100 acres
8. Stream order: 1st
9. Length of reach evaluated: 100ft
10. County: NASH
11. Site coordinates (if known): prefer in decimal degrees.
    Latitude (ex. 34.872312): 36°03'35.475'
    Longitude (ex. -77.556611): 77°52'32.969"
12. Subdivision name (if any): _____
    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: 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 20% Agricultural 80% Forested ___% Cleared / Logged ___% Other (_____)
22. Bankfull width: 6
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: ___Straight ___Occasional bends ___Frequent meander X 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): 60 **Comments:** _____

Evaluator's Signature _____ **Date** 7-25-14

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.

SWAH005

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	3
	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	2
	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	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	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	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	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	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	4
	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	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	1
	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)				60

* These characteristics are not assessed in coastal streams.

SNAH005

NC DWQ Stream Identification Form Version 4.11

Date: 7-25-14	**Project/Site:** SERP	**Latitude:** 36°03'35.425"
Evaluator: PDWEST	**County:** NASH	**Longitude:** 77°52'32.969
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 41.5	**Stream Determination (circle one)** Ephemeral Intermittent (Perennial)	**Other** UNT to Flat Rock Branch *e.g. Quad Name:*

A. Geomorphology (Subtotal = 21.5)

	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	1	(2)	3
10. Natural valley	0	0.5	(1)	1.5
11. Second or greater order channel	0	0.5	1	(1.5)
	No = (0)		Yes = 3	

[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 10)

12. Presence of Baseflow	0	1	2	(3)
13. Iron oxidizing bacteria	0	(1)	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)	

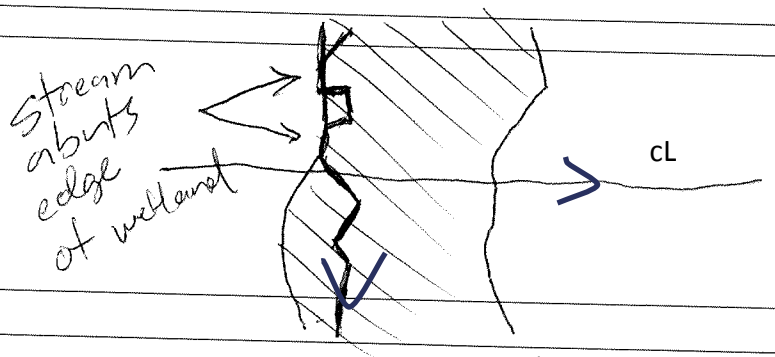
C. Biology (Subtotal = 10)

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:

Sketch:



snah005

Waterbody snah005 facing west upstream

Waterbody snah005 facing east downstream

snah005

Waterbody snah005 facing south cross stream

USACE AID# _____ DWQ # _____ Site # SWAH0014 (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: DDWEST
3. Date of evaluation: 7-25-14
4. Time of evaluation: 11:20
5. Name of stream: unnamed to Flat Rock Branch
6. River basin: Tar-Pamlico
7. Approximate drainage area: > 100 acres
8. Stream order: 1st
9. Length of reach evaluated: 100 ft
10. County: NASH
11. Site coordinates (if known): prefer in decimal degrees.
    Latitude (ex. 34.872312): 36 03' 28.370"
    Longitude (ex. -77.556611): 77 52' 36.510"
12. Subdivision name (if any): _____
13. Location of reach under evaluation (note nearby roads and landmarks and attach map identifying stream(s) location): _____
    Method location determined (circle): (GPS) Topo Sheet Ortho (Aerial) Photo/GIS Other GIS Other _____
14. Proposed channel work (if any): None
15. Recent weather conditions: Dry - few showers
16. Site conditions at time of visit: _____
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 20% Agricultural 80% Forested ___% Cleared / Logged ___% Other (_____)
22. Bankfull width: 4'
23. Bank height (from bed to top of bank): 5
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 ___Occasional bends X 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): 56

Comments: Narrow perennial stream with associated wetlands

Evaluator's Signature _____ **Date** 7-25-14

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

SWAH004

	#	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	2
	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	2
	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	2
	9	**Channel sinuosity** (extensive channelization = 0; natural meander = max points)	0 – 5	0 – 4	0 – 3	3
	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	1
	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	1
	17	**Habitat complexity** (little or no habitat = 0; frequent, varied habitats = max points)	0 – 6	0 – 6	0 – 6	3
	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	NA
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)				56

* 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

SNAH 004

Date: 7-25	**Project/Site:** SERP	**Latitude:** 36°03'28.370"
Evaluator: DDWEST	**County:** NASH	**Longitude:** 77°52'36.510"
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 33.25	**Stream Determination (circle one)** Ephemeral Intermittent Perennial	**Other** UNT to Flat Rock Branch *e.g. Quad Name:*

A. Geomorphology (Subtotal = 15.5)

	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)

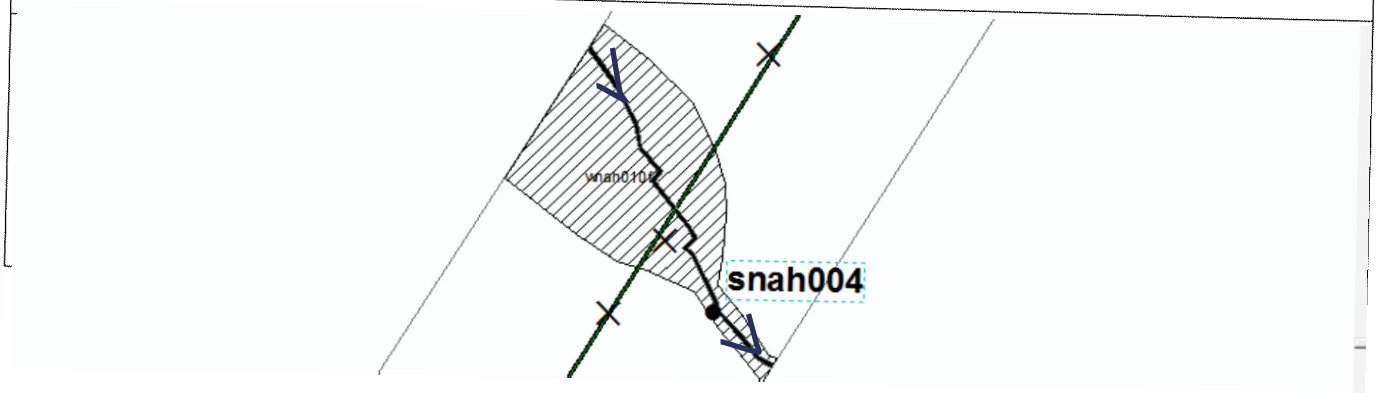
12. Presence of Baseflow	0	1	(2)	3
13. Iron oxidizing bacteria	0	(1)	2	3
14. Leaf litter	1.5	(1)	0.5	0
15. Sediment on plants or debris	0	(0.5)	1	1.5
16. Organic debris lines or piles	0	0.5	(1)	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3	

C. Biology (Subtotal = 9.25)

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:



snah004

Waterbody snah004 facing west upstream

Waterbody snah004 facing east downstream

snah004

Waterbody snah004 facing south cross stream

snah029

NC DWQ Stream Identification Form Version 4.11

Date: 3-17-15	**Project/Site:** ACP	**Latitude:** 36.054732°
Evaluator: DDWEST	**County:** Nash	**Longitude:** -77.879684°
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 20.5	**Stream Determination (circle one)** Ephemeral (Intermittent) Perennial	**Other** UNT to Flat Rock Branch *e.g. Quad Name*:

A. Geomorphology (Subtotal = 9.5)	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

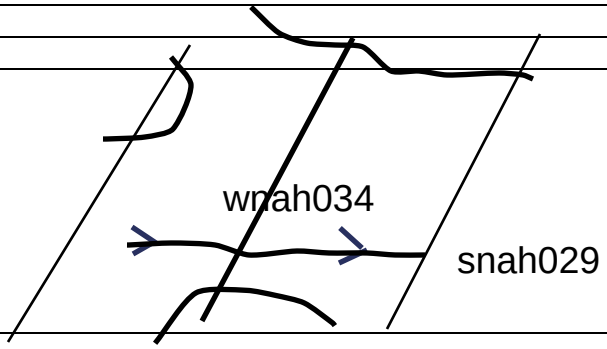
B. Hydrology (Subtotal = 7)				
12. Presence of Baseflow	0	(1)	2	3
13. Iron oxidizing bacteria	0	1	(2)	3
14. Leaf litter	1.5	(1)	0.5	0
15. Sediment on plants or debris	(0)	0.5	1	1.5
16. Organic debris lines or piles	(0)	0.5	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = (3)	

C. Biology (Subtotal = 4)				
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:

Sketch:



snah029

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: DDWest

3. Date of evaluation: 3.17.15 **4.** Time of evaluation: 1020

5. Name of stream: UNT to Flat Rock Branch **6.** River basin: Tar - Pam

7. Approximate drainage area: >100 ac. **8.** Stream order: 1st

9. Length of reach evaluated: 100' **10.** County: Nash

11. Site coordinates (if known): prefer in decimal degrees. **12.** Subdivision name (if any): none

Latitude (ex. 34.872312): 36.054732° Longitude (ex. –77.556611): -77.879684°

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): south of Wollett Mill Road

14. Proposed channel work (if any): none

15. Recent weather conditions: wet

16. Site conditions at time of visit: warm and 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: 5 % Residential ___% Commercial ___% Industrial 70 % Agricultural 25 % Forested ___% Cleared / Logged ___% Other (_____)

22. Bankfull width: 4 **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: ____Straight ___Occasional bends x 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): 60 **Comments:** observed in summer with no water present. water present in winter

Evaluator's Signature _____ **Date** 3.17.15

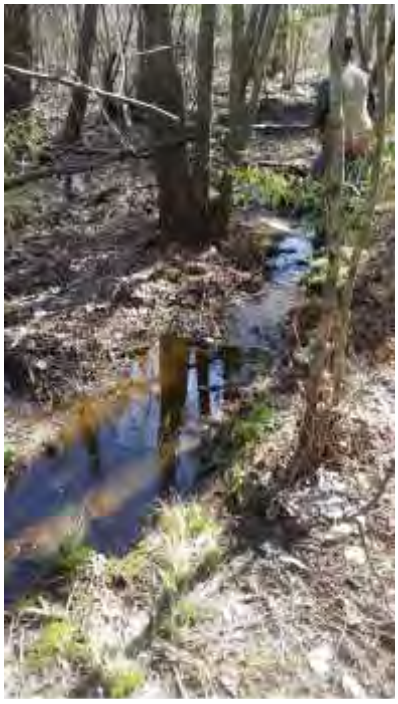
This channel evaluation form is intended to be used only as a guide to assist landowners and environmental professionals in gathering the data required by the United States Army Corps of Engineers to make a preliminary assessment of stream quality. The total score resulting from the completion of this 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

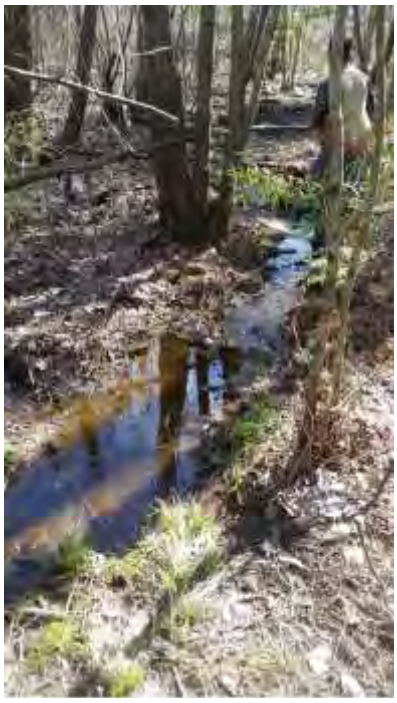
	#	CHARACTERISTICS	ECOREGION POINT RANGE			SCORE
			Coastal	Piedmont	Mountain	
PHYSICAL	1	**Presence of flow / persistent pools in stream** (no flow or saturation = 0; strong flow = max points)	0 – 5	0 – 4	0 – 5	2
	2	**Evidence of past human alteration** (extensive alteration = 0; no alteration = max 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	4
	4	**Evidence of nutrient or chemical discharges** (extensive discharges = 0; no discharges = max points)	0 – 5	0 – 4	0 – 4	3
	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	3
	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	6
	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	NA
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	1
	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	3
	18	**Canopy coverage over streambed** (no shading vegetation = 0; continuous canopy = max points)	0 – 5	0 – 5	0 – 5	5
	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	2
	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)						60

* These characteristics are not assessed in coastal streams.

snah029



snah029 facing upstream



snah029 facing downstream

snah029

snah029 cross stream

SNAH025

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: Aug. 20, 2014
4. Time of evaluation: 10:47
5. Name of stream: UN Trib to Flat Rock Br
6. River basin: Tar-Pamlico
7. Approximate drainage area: >100 Acres
8. Stream order: 2nd
9. Length of reach evaluated: 300+ Feet
10. County: Nash
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any):

Latitude (ex. 34.872312): 36°03'12.938" Longitude (ex. -77.556611): 77°52'51.293"

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):
South of Woolett Mill
14. Proposed channel work (if any): None
15. Recent weather conditions: Rain
16. Site conditions at time of visit: Cloudy / Wooded
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: 10
23. Bank height (from bed to top of bank): 2
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 ___Occasional bends X 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): 75 **Comments:** Very Perennial

Evaluator's Signature Michael T. Bynum **Date** Aug. 20, 2014

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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	4
	2	**Evidence of past human alteration** (extensive alteration = 0; no alteration = max points)	0 – 6	0 – 5	0 – 5	5
	3	**Riparian zone** (no buffer = 0; contiguous, wide buffer = max points)	0 – 6	0 – 4	0 – 5	5
	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	3
	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	5
	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	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	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	4
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	4
	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	3
	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	3
	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)						75

* These characteristics are not assessed in coastal streams.

SNAH025

NC DWQ Stream Identification Form Version 4.11

Date: August 20, 2014	**Project/Site:** SE Reliability A	**Latitude:** 36°03'12.938"
Evaluator: DD West	**County:** Nash	**Longitude:** 77°52'57.298"
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 45	**Stream Determination (circle one)** Ephemeral Intermittent (Perennial)	**Other** e.g. Quad Name: UNT to Flat Rock Branch

A. Geomorphology (Subtotal = 20.5)	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

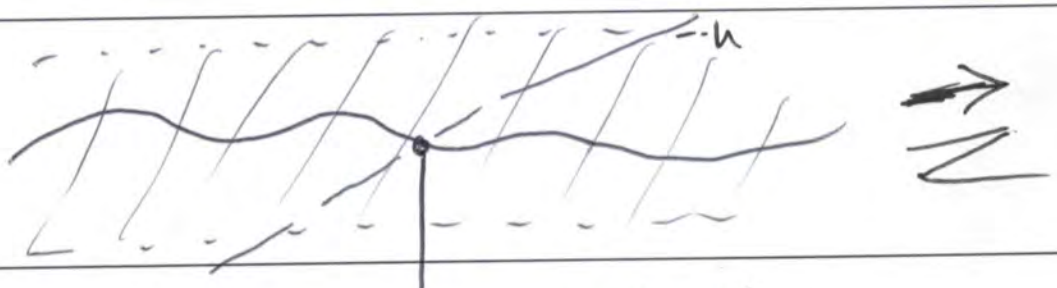
B. Hydrology (Subtotal = 11.5)				
12. Presence of Baseflow	0	1	2	(3)
13. Iron oxidizing bacteria	0	1	(2)	3
14. Leaf litter	(1.5)	1	0.5	0
15. Sediment on plants or debris	0	0.5	(1)	1.5
16. Organic debris lines or piles	0	0.5	(1)	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = (3)	

C. Biology (Subtotal = 13)				
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:

Sketch:



Waterbody snah025 facing south upstream

Waterbody snah025 facing north downstream

Waterbody snah025 facing upline cross stream

SNAH026

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: DDWest
3. Date of evaluation: August 26, 2014
4. Time of evaluation: 11:26
5. Name of stream: UNT to Flat Rock Br.
6. River basin: Tar-Pamlico
7. Approximate drainage area: >100
8. Stream order: 1st
9. Length of reach evaluated: 300+
10. County: Nash
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any):

Latitude (ex. 34.872312): 36°03'10.185" Longitude (ex. –77.556611): 77°52'53.302"

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: Rainy
16. Site conditions at time of visit: Cloudy
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: 4
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): 59 **Comments:** Perennial

Evaluator's Signature Michael T Bess **Date** Aug. 20, 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.

SNAH026

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	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	3
	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	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	3
	9	**Channel sinuosity** (extensive channelization = 0; natural meander = max points)	0 – 5	0 – 4	0 – 3	3
	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	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	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	2
	17	**Habitat complexity** (little or no habitat = 0; frequent, varied habitats = max points)	0 – 6	0 – 6	0 – 6	3
	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	NA*
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	2
	22	**Presence of fish** (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	3
	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)						59

* These characteristics are not assessed in coastal streams.

SNAH026

NC DWQ Stream Identification Form Version 4.11

Date: Aug. 20, 2014	**Project/Site:** SE Reliability	**Latitude:** 36°03'10.785"
Evaluator: DDW est	**County:** Nash	**Longitude:** 77°52'53.302"
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 36	**Stream Determination (circle one)** Ephemeral Intermittent (Perennial)	**Other** UNT A to Flat Rock Branch *e.g. Quad Name:* ~~Bailey~~

A. Geomorphology (Subtotal = 18)	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

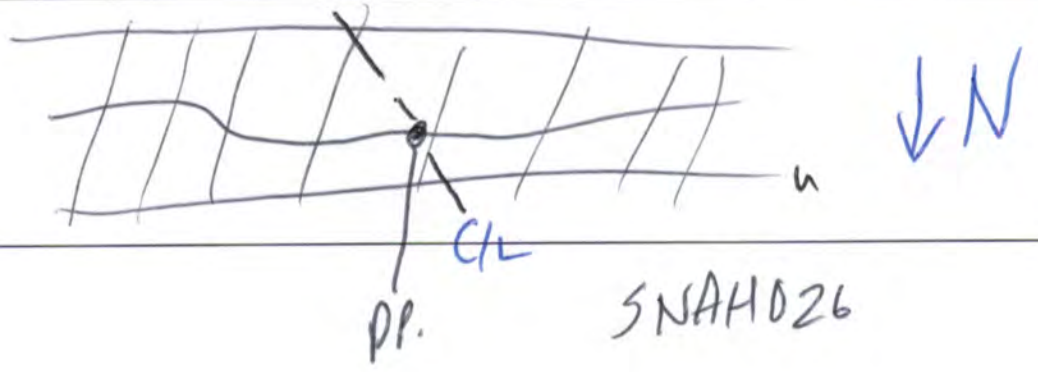
B. Hydrology (Subtotal = 9)				
12. Presence of Baseflow	0	1	(2)	3
13. Iron oxidizing bacteria	0	1	(2)	3
14. Leaf litter	1.5	1	(0.5)	0
15. Sediment on plants or debris	0	(0.5)	1	1.5
16. Organic debris lines or piles	0	0.5	(1)	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = (3)	

C. Biology (Subtotal = 9)				
18. Fibrous roots in streambed	3	(2)	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. 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:

Sketch:



Waterbody snah026 facing east upstream

Waterbody snah026 facing west downstream

Waterbody snah026 facing downline cross stream

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

SNAB102

STREAM QUALITY ASSESSMENT WORKSHEET

Provide the following information for the stream reach under assessment:

1. Applicant's name: Dominion / ACP
2. Evaluator's name: Todd Preminger
3. Date of evaluation: 3/9/15
4. Time of evaluation: AM
5. Name of stream: SNAB102, UNT to Flat Rock Br.
6. River basin: Tar River
7. Approximate drainage area:
8. Stream order: 2nd
9. Length of reach evaluated: ~ 100'
10. County: Nash
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any):

Latitude (ex. 34.872312): 36°02'43"N Longitude (ex. -77.556611): 77°53'14"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):

Approximately 2000' west of Deans Road

14. Proposed channel work (if any):
15. Recent weather conditions: warm, no rain in last 48 hours
16. Site conditions at time of visit: cloudy ~ 55
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: 15 % Residential ___% Commercial ___% Industrial 35 % Agricultural 50 % Forested ___% Cleared / Logged ___% Other (_____)
22. Bankfull width: 7
23. Bank height (from bed to top of bank): 5
24. Channel slope down center of stream: ___Flat (0 to 2%) X Gentle (2 to 4%) ___Moderate (4 to 10%) ___Steep (>10%)
25. Channel sinuosity: ____Straight ___Occasional bends X Frequent meander X 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): 58 **Comments:** Perennial channel with abutting wetlands

Evaluator's Signature _____ **Date** 3/9/15

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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	3
	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	3
	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	3
	9	**Channel sinuosity** (extensive channelization = 0; natural meander = max points)	0 - 5	0 – 4	0 – 3	3
	10	**Sediment input** (extensive deposition= 0; little or no sediment = max points)	0 - 5	0 - 4	0 - 4	2
	11	**Size & diversity of channel bed substrate** (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0 – 4	0 - 5	2
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	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	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	4
	19	**Substrate embeddedness** (deeply embedded = 0; loose structure = max)	NA*	0 – 4	0 – 4	2
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	1
	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)				58

* 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

SNAB102

NC DWQ Stream Identification Form Version 4.11

Date: 3/9/15	**Project/Site:** Dominion / ACP	**Latitude:** 36°02'43"N
Evaluator: Todd Preminger	**County:** Nash	**Longitude:** 77°53'14"W
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 43.5	**Stream Determination (circle one)** Ephemeral Intermittent (Perennial)	**Other** *e.g. Quad Name:*

A. Geomorphology (Subtotal = 25.5)	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

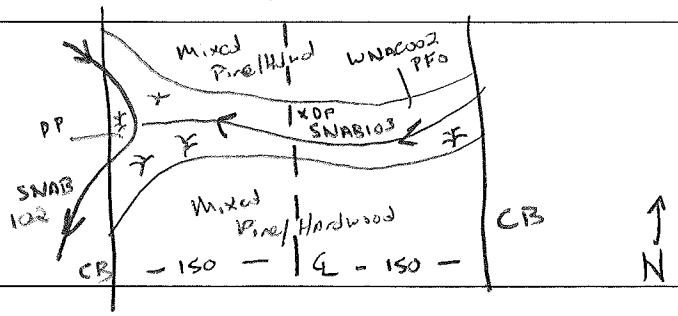
B. Hydrology (Subtotal = 9.5)				
12. Presence of Baseflow	0	1	2	(3)
13. Iron oxidizing bacteria	(0)	1	2	3
14. Leaf litter	(1.5)	1	0.5	0
15. Sediment on plants or debris	0	0.5	(1)	1.5
16. Organic debris lines or piles	0	0.5	(1)	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3	

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. 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: Perennial stream with abutting wetlands

Sketch:



Waterbody SNAB102 facing west upstream

Waterbody SNAB102 facing north downstream

Waterbody SNAB102 facing northwest across

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

SNAB103

STREAM QUALITY ASSESSMENT WORKSHEET

Provide the following information for the stream reach under assessment:

1. Applicant's name: Dominion
2. Evaluator's name: Todd Previnger
3. Date of evaluation: 3/9/15
4. Time of evaluation: AM
5. Name of stream: SNAB102 - UNT to Flat Rock Branch
6. River basin: Tar
7. Approximate drainage area: _____
8. Stream order: 1st
9. Length of reach evaluated: ~ 300'
10. County: Nash
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any): _____

Latitude (ex. 34.872312): 36°02'43"N Longitude (ex. –77.556611): 77°53'12"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): ~ 2000 feet west of Deans Rd.
14. Proposed channel work (if any): _____
15. Recent weather conditions: no rain in last 48 hours, ~65°
16. Site conditions at time of visit: cloudy, 60°
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: 15 % Residential ___% Commercial ___% Industrial 35 % Agricultural 50 % 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%) X 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): 45 **Comments:** Braided wetland system, located main flow line as intermittent channel.

Evaluator's Signature Todd M **Date** 3/9/15

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.

snab103

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	3
	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	1
	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	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
STABILITY	11	**Size & diversity of channel bed substrate** (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0 – 4	0 – 5	1
	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	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	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	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	3
	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	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)				45

* These characteristics are not assessed in coastal streams.

NC DWQ Stream Identification Form Version 4.11

SNAB103

Date: 3/9/15	**Project/Site:** Dominion / ACP	**Latitude:** 36°02'43"N
Evaluator: Todd Preminger	**County:** Nash	**Longitude:** 77°53'12"W
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 21.25	**Stream Determination (circle one)** Ephemeral Intermittent Perennial	**Other** *e.g. Quad Name:*

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

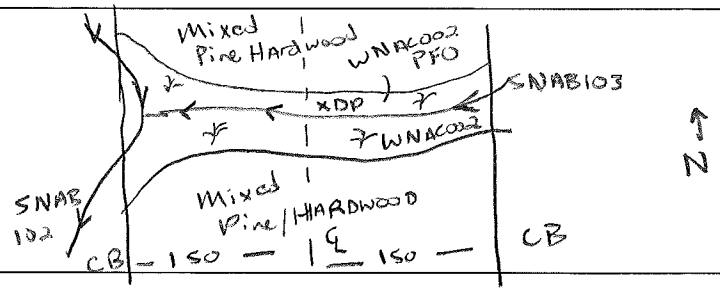
B. Hydrology (Subtotal = 4.5)				
12. Presence of Baseflow	0	1	(2)	3
13. Iron oxidizing bacteria	(0)	1	2	3
14. Leaf litter	(1.5)	1	0.5	0
15. Sediment on plants or debris	(0)	0.5	1	1.5
16. Organic debris lines or piles	0	0.5	(1)	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3	

C. Biology (Subtotal = 7.75)				
18. Fibrous roots in streambed	(3)	2	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macrobenthos (note diversity and abundance)	(0)	1	2	3
21. Aquatic Mollusks	(0)	1	2	3
22. Fish	(0)	0.5	1	1.5
23. Crayfish	0	(0.5)	1	1.5
24. Amphibians	0	(0.5)	1	1.5
25. Algae	(0)	0.5	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: Braided wetland system - located main flow line as intermittent channel

Sketch:



Waterbody SNAB103 facing east upstream

Waterbody SNAB103 facing west downstream

Waterbody SNAB103 facing north across

Open Waterbody Data Sheet

Survey Description

Project Name:	Waterbody Name:	Waterbody ID:	Date:
Atlantic Coast Pipeline	Unnamed Pond	ONAC001	3/9/2015

State:	County:	Company:	Crew Member Initials:	Photos:
North Carolina	Nash	NRG	CR, AS	ONAC001_001-003

Tract Number(s):	Nearest Milepost:	Associated Wetland ID(s):
18-058-A004	338.5	None

Survey Type: *(check one)* ☐Centerline ☒Re-Route ☐Access Road ☐Other:

Physical Attributes

Waterbody Type: *(check one)* ☒Stock Pond ☐ Natural Pond ☐ Lake ☐ Reservoir ☐ Impoundment ☐ Oxbow ☐ Other:

Hydrologic Regime: ☐ Permanently Flooded ☐ Semipermanently Flooded ☒ Seasonally Flooded ☐ Temporarily Flooded

OHWM

Height: NA ft.

OHWM Indicator: *(check all that apply)*

☐ Clear line on bank ☐Shelving ☐Wrested vegetation ☐Scouring ☒Water staining

☐Bent, matted, or missing vegetation ☐Wrack line ☐Litter and debris ☐Abrupt plant community change ☐Soil characteristic change

Depth of Water:	Bank height (average):	Bank slope (average):
2.5 ft. N/A☐	8 ft.	60 degrees

Qualitative Attributes

Water Appearance: *(check one)* ☐No water ☐Clear ☒Turbid ☐Sheen on surface ☐Surface scum ☐Algal mats ☐Other:

Substrate: *(check all that apply)* ☐ Bedrock ☐ Boulder ☐ Cobble ☐ Gravel ☒ Sand ☒ Silt/ clay ☐ Organic ☐ Other:

% of Substrate: ____% ____% ____% ____% 70 % 30 % ____% ____%

Width of Riparian Zone: ____ft. N/A☒

Vegetative Layers: *(check all that apply)* ☒ Trees: ☒ Saplings/Shrubs: ☒ Herbs

Avg. DBH of Dominants: *(approx.)* 4 in. 2 in.

Dominant Bank Vegetation *(list)*:

Loblolly pine, sweet-gum, red maple, wool grass

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

Downed logs in the pond

Aquatic Organisms Observed *(list)*:

Tadpoles, frogs, water skimmers

T&E Species Observed *(list)*:

None

Disturbances (ex: livestock access, manure in waterbody, waste discharge pipes):

Pond appears to have been artificially dug out over twenty years ago

Waterbody is: *(check one)* ☐ Natural ☒ Artificial, man-made ☐ Manipulated

Waterbody Quality [a]: *(check one)* ☐ High ☒ Moderate ☐ Low

Waterbody ID:
ONAC001

[a] **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.

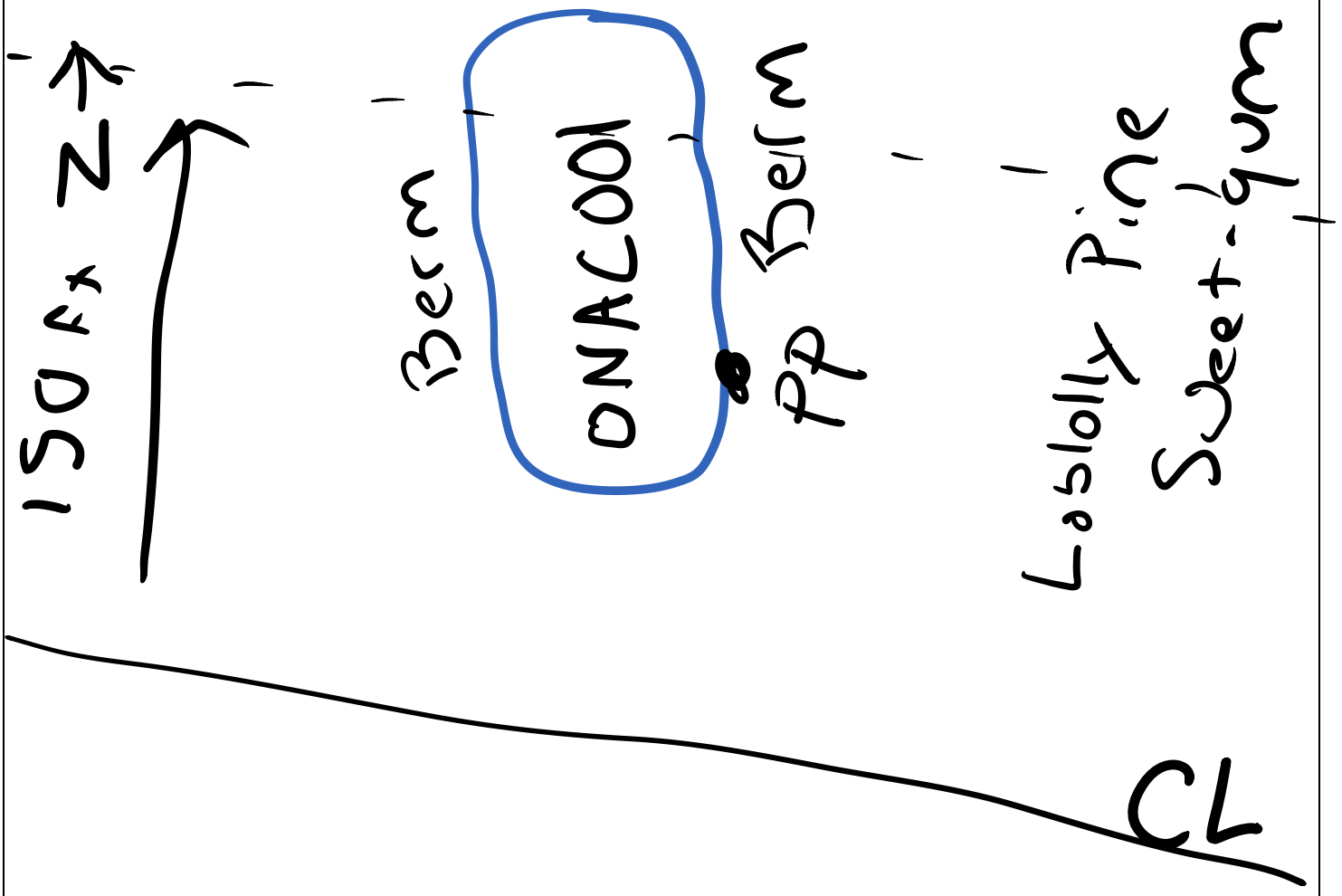
Moderate Quality: Altered by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or bank vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers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

The soil was not hydric**.** Pond may be dry during the growing season.

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



Open waterbody ONAC001 facing south

Open waterbody ONAC001 facing west

Open waterbody ONAC001 facing north

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

SNAB104

STREAM QUALITY ASSESSMENT WORKSHEET

Provide the following information for the stream reach under assessment:

1. Applicant's name: Dominion / ACP

2. Evaluator's name: Todd Preuninger

3. Date of evaluation: 3/10/15

4. Time of evaluation: PM

5. Name of stream: SNAB104 - UNT to Flat Rock Br.

6. River basin: Tar

7. Approximate drainage area: _____

8. Stream order: 1st

9. Length of reach evaluated: ~100'

10. County: Nash

11. Site coordinates (if known): prefer in decimal degrees.

12. Subdivision name (if any): _____

Latitude (ex. 34.872312): 36°02'06"N Longitude (ex. -77.556611): 77°52'26"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):

~200 North of Red Oak Battleboro Rd.

14. Proposed channel work (if any): _____

15. Recent weather conditions: no rain in last 48 hours - 55°

16. Site conditions at time of visit: cloudy, 65°

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: 15 % Residential ___% Commercial ___% Industrial 15 % Agricultural 70 % 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: 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): 27 **Comments:** Dug ditch (spoil piles present) with 4' banks loses bed/bank as it enters wetland (WWAC004) + becomes a braided system

Evaluator's Signature _____ **Date** 3/10/15

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: Coastal	Piedmont	Mountain	SCORE
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	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	2
	11	**Size & diversity of channel bed substrate** (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0 – 4	0 – 5	1
	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	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
	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	4
	19	**Substrate embeddedness** (deeply embedded = 0; loose structure = max)	NA*	0 – 4	0 – 4	1
	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	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)				27

* 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

SNAB104

Date: 3/10/15	**Project/Site:** Dominion ACP	**Latitude:** 36°02'06"N
Evaluator: Todd Prevatt	**County:** Nash	**Longitude:** 77°52'26"W
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 19.25	**Stream Determination (circle one)** Ephemeral Intermittent Perennial	**Other** *e.g. Quad Name:*

A. Geomorphology (Subtotal = 4.5)	Absent	Weak	Moderate	Strong
1[a]. Continuity of channel bed and bank - Dug Ditch	0	1	2	3
2. Sinuosity of channel along thalweg	0	(1)	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	(0)	1	2	3
4. Particle size of stream substrate	0	(1)	2	3
5. Active/relict floodplain	(0)	1	2	3
6. Depositional bars or benches	(0)	1	2	3
7. Recent alluvial deposits	0	(1)	2	3
8. Headcuts	(0)	1	2	3
9. Grade control	0	0.5	(1)	1.5
10. Natural valley	0	(0.5)	1	1.5
11. Second or greater order channel	No = 0		Yes = 3	

[a] artificial ditches are not rated; see discussions in manual

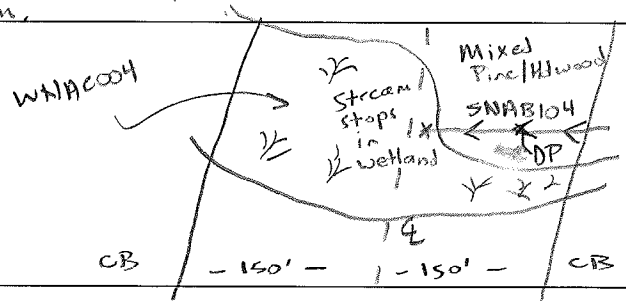
B. Hydrology (Subtotal = 8.0)				
12. Presence of Baseflow	0	1	(2)	3
13. Iron oxidizing bacteria	(0)	1	2	3
14. Leaf litter	(1.5)	1	0.5	0
15. Sediment on plants or debris	0	(0.5)	1	1.5
16. Organic debris lines or piles	0	0.5	(1)	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3	

C. Biology (Subtotal = 6.75)				
18. Fibrous roots in streambed	(3)	2	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macrobenthos (note diversity and abundance)	(0)	1	2	3
21. Aquatic Mollusks	(0)	1	2	3
22. Fish	(0)	0.5	1	1.5
23. Crayfish	(0)	0.5	1	1.5
24. Amphibians	(0)	0.5	1	1.5
25. Algae	(0)	0.5	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: Dug ditch / 4' banks, spoil piles. Loses bed/bank as it enters wetland (WNAC004) & becomes a braided system.

Sketch:



Waterbody SNAB104 facing southeast upstream

Waterbody SNAB104 facing northwest downstream

Waterbody SNAB104 facing southwest across

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

SNAB105

STREAM QUALITY ASSESSMENT WORKSHEET

Provide the following information for the stream reach under assessment:

1. Applicant's name: Dominion / ACP
2. Evaluator's name: Todd Preuninger
3. Date of evaluation: 3/10/15
4. Time of evaluation: PM
5. Name of stream: SNAB105 - UNT to Flat Rock Br.
6. River basin: Tar
7. Approximate drainage area:
8. Stream order: 2nd
9. Length of reach evaluated: ~100
10. County: Nash
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any):

Latitude (ex. 34.872312): 36°01'51"N Longitude (ex. -77.556611): 77°52'36"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):

~1500' south of Red Oak Battleboro Road

14. Proposed channel work (if any):
15. Recent weather conditions: no rain in last 48 hours
16. Site conditions at time of visit: cloudy, 75°
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: Beaver Pond
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: 15 % Residential ___% Commercial ___% Industrial 15 % Agricultural 65 % Forested 5 % Cleared / Logged ___% Other (_____)
22. Bankfull width: 4-8'
23. Bank height (from bed to top of bank): 1.0
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): 54 **Comments:** Stream originates below a beaver pond - becomes a braided system as it enters a freshwater marsh (WNAC005). Recently logged on left bank, noted deer & racoon tracks

Evaluator's Signature Todd Preuninger **Date** 7/10/15

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snab105

STREAM QUALITY ASSESSMENT WORKSHEET

	#	CHARACTERISTICS	ECOREGION POINT RANGE: Coastal	Piedmont	Mountain	SCORE
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	4
	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	3
	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	3
	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	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
STABILITY	11	**Size & diversity of channel bed substrate** (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0 – 4	0 – 5	2
	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	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	2
	17	**Habitat complexity** (little or no habitat = 0; frequent, varied habitats = max points)	0 – 6	0 – 6	0 – 6	3
	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	2
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	2
	22	**Presence of fish** (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	1
	23	**Evidence of wildlife use** (no evidence = 0; abundant evidence = max points)	0 – 6	0 – 5	0 – 5	2
		Total Points Possible	100	100	100	
		TOTAL SCORE (also enter on first page)				51

* 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

SNABIOS

NC DWQ Stream Identification Form Version 4.11

Date: 3/10/15	**Project/Site:** Dominion / ACP	**Latitude:** 36°01'51"N
Evaluator: Todd Preuninger	**County:** NASH	**Longitude:** 77°52'36"W
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 36	**Stream Determination (circle one)** Ephemeral Intermittent Perennial	**Other** *e.g. Quad Name:*

A. Geomorphology (Subtotal = 19)	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

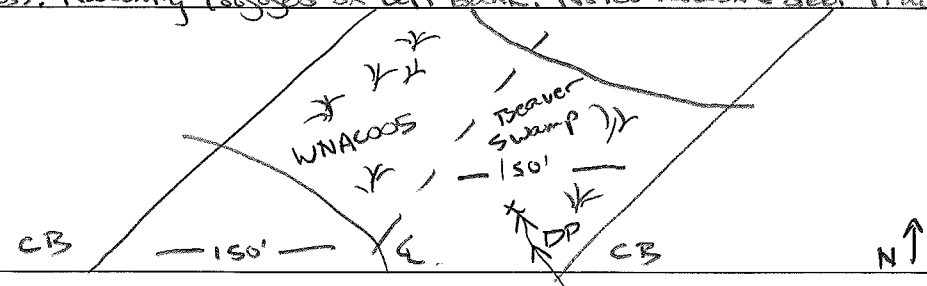
B. Hydrology (Subtotal = 9)				
12. Presence of Baseflow	0	1	2	3
13. Iron oxidizing bacteria	0	1	2	3
14. Leaf litter	1.5	1	0.5	0
15. Sediment on plants or debris	0	0.5	1	1.5
16. Organic debris lines or piles	0	0.5	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3	

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: Stream originates below a beaver pond, becomes a braided system as it enters freshwater marsh (WNAC005). Recently logged on left bank. Noted raccoon & deer tracks

Sketch:



SNABIOS

Waterbody SNAB105 facing southeast upstream

Waterbody SNAB105 facing northwest downstream

Waterbody SNAB105 facing southwest across

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

STREAM QUALITY ASSESSMENT WORKSHEET

SNACOO1

Provide the following information for the stream reach under assessment:

1. Applicant's name: Dominion
2. Evaluator's name: NRG
3. Date of evaluation: 3/11/15
4. Time of evaluation: 8:20 AM
5. Name of stream: Flat Rock Branch
6. River basin: Tar River basin
7. Approximate drainage area: 50 acres
8. Stream order: 2nd
9. Length of reach evaluated: 100 ft
10. County: Nash
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any):

Latitude (ex. 34.872312): 36°01' 48.878" N Longitude (ex. -77.556611): 77°52' 40.605" 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):
n/a

14. Proposed channel work (if any): None
15. Recent weather conditions: No recent precipitation
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 ____(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 85 % Forested 15 % Cleared / Logged ___% Other (_____)
22. Bankfull width: 8'
23. Bank height (from bed to top of bank): 9'
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): 78 **Comments:** Stream assessed down stream of a recent ClearCut. Although there is a tree buffer from the clear cut additional Sediment and runoff are entering the system as a result.

Evaluator's Signature Cole Reagan **Date** 3/11/15

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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	5
	2	**Evidence of past human alteration** (extensive alteration = 0; no alteration = max points)	0 – 6	0 – 5	0 – 5	5
	3	**Riparian zone** (no buffer = 0; contiguous, wide buffer = max points)	0 – 6	0 – 4	0 – 5	5
	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	4
	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	5
	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	NA
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	4
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	3
	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	NA
BIOLOGY	20	**Presence of stream invertebrates** (see page 4) (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 5	0 – 5	10
	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	5
Total Points Possible			100	100	100	
TOTAL SCORE (also enter on first page)						72

* 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

SNAC001

NC DWQ Stream Identification Form Version 4.11

Date: 3/11/15	**Project/Site:** Atlantic Coast Pipeline	**Latitude:** 36°01'48.878"N
Evaluator: NRG	**County:** Nash	**Longitude:** 77°52'40.605"W
Total Points: 38.75 *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30**	**Stream Determination (circle one)** Ephemeral Intermittent (Perennial)	**Other** *e.g. Quad Name:*

A. Geomorphology (Subtotal = 21.5)	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

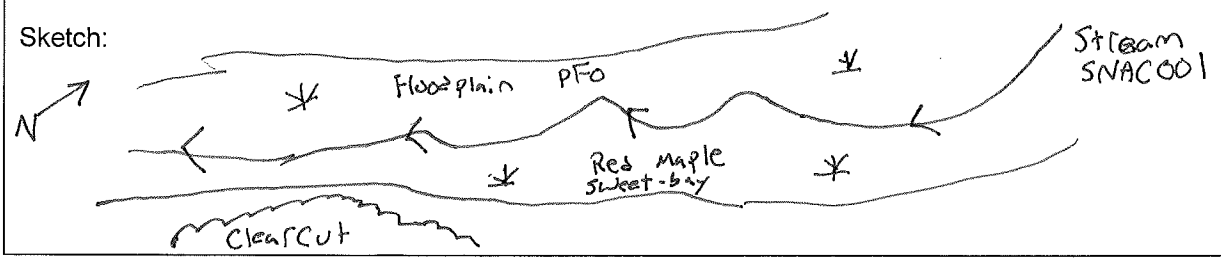
B. Hydrology (Subtotal = 9)				
12. Presence of Baseflow	0	1	2	(3)
13. Iron oxidizing bacteria	(0)	1	2	3
14. Leaf litter	(1.5)	1	0.5	(0)
15. Sediment on plants or debris	0	(0.5)	1	1.5
16. Organic debris lines or piles	0	0.5	(1)	1.5
17. Soil-based evidence of high water table?	No = 0		(Yes = 3)	

C. Biology (Subtotal = 8.25)				
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:

Sketch:



Waterbody SNAC001 facing north upstream

Waterbody SNAC001 facing west across

Waterbody SNAC001 facing south downstream

SNAG012

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: JD. DB
3. Date of evaluation: 8.21.15
4. Time of evaluation: 12:00
5. Name of stream: Flat Rock Branch
6. River basin: Tar-Pamlico
7. Approximate drainage area: >100 ac.
8. Stream order: 1
9. Length of reach evaluated: 100'
10. County: Nash
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any): N/A

Latitude (ex. 34.872312): 36.0268 Longitude (ex. -77.556611): -77.8820

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): CL

14. Proposed channel work (if any): None

15. Recent weather conditions: Thunderstorm 2 nights prior

16. Site conditions at time of visit: 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: 2 ac.

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 ___% Commercial ___% Industrial 30% Agricultural 60% Forested ___% Cleared / Logged ___% Other (_____)

22. Bankfull width: 12

23. Bank height (from bed to top of bank): 1-2'

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 ___Occasional bends ___Frequent meander X 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): 83 **Comments:** Per. stream located within wtld

Evaluator's Signature [signature] **Date** 8,21,15

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SNAG012

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	3
	7	**Entrenchment / floodplain access** (deeply entrenched = 0; frequent flooding = max points)	0 – 5	0 – 4	0 – 2	5
	8	**Presence of adjacent wetlands** (no wetlands = 0; large adjacent wetlands = max points)	0 – 6	0 – 4	0 – 2	6
	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	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	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	3
	15	**Impact by agriculture, livestock, or timber production** (substantial impact =0; no evidence = max points)	0 – 5	0 – 4	0 – 5	4
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	3
	17	**Habitat complexity** (little or no habitat = 0; frequent, varied habitats = max points)	0 – 6	0 – 6	0 – 6	5
	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	NA
BIOLOGY	20	**Presence of stream invertebrates** (see page 4) (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 5	0 – 5	3
	21	**Presence of amphibians** (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	4
	22	**Presence of fish** (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	3
	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)				83

* These characteristics are not assessed in coastal streams.

SNAG012

NC DWQ Stream Identification Form Version 4.11

Date: 8-21-15	**Project/Site:** ACP	**Latitude:** 36.0268
Evaluator: DDWEST	**County:** NASH	**Longitude:** 77.8820
Total Points: 42 *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30**	**Stream Determination (circle one)** Ephemeral Intermittent (Perennial)	**Other** *e.g. Quad Name:*

A. Geomorphology (Subtotal = 21)	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

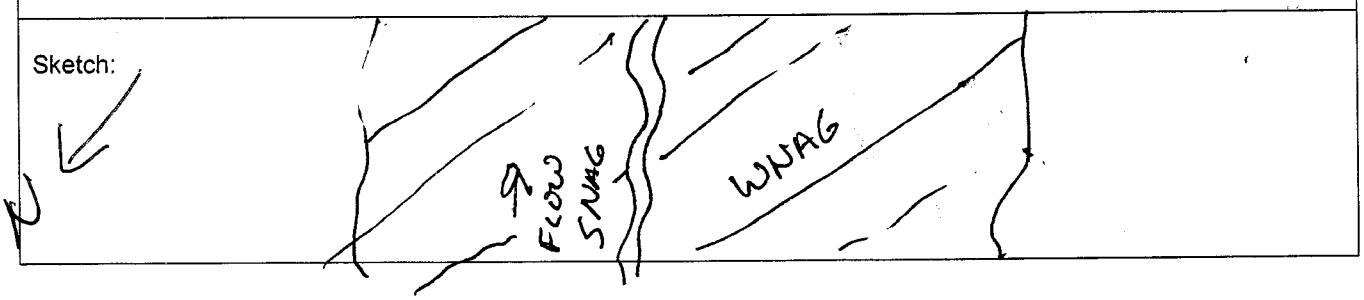
B. Hydrology (Subtotal = 10.5)				
12. Presence of Baseflow	0	1	2	(3)
13. Iron oxidizing bacteria	0	1	(2)	3
14. Leaf litter	1.5	(1)	0.5	0
15. Sediment on plants or debris	0	(0.5)	1	1.5
16. Organic debris lines or piles	0	0.5	(1)	1.5
17. Soil-based evidence of high water table?	No = 0		(Yes = 3)	

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. 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:

Sketch:



SNAG012

Waterbody *SNAG012*
facing upstream

Waterbody *SNAG012*
facing downstream

SNAG012

Waterbody SNAG012 facing upline cross stream

Open Waterbody Data Sheet

Survey Description

Project Name:	Waterbody Name:	Waterbody ID:	Date:
Atlantic Coast Pipeline	Unnamed Pond	ONAC002	3/11/2015

State:	County:	Company:	Crew Member Initials:	Photos:
North Carolina	Nash	NRG	CR, AS	ONAC00 2 001-003

Tract Number(s):	Nearest Milepost:	Associated Wetland ID(s):
18-071	340.2	WNAC006

Survey Type: *(check one)* ☐Centerline ☒Re-Route ☐Access Road ☐Other:

Physical Attributes

Waterbody Type: *(check one)* ☒Stock Pond ☐ Natural Pond ☐ Lake ☐ Reservoir ☐ Impoundment ☐ Oxbow ☐ Other:

Hydrologic Regime: ☒ Permanently Flooded ☐ Semipermanently Flooded ☐ Seasonally Flooded ☐ Temporarily Flooded

OHWM

Height: NA ft.

OHWM Indicator: *(check all that apply)* ☐ Clear line on bank ☐Shelving ☐Wrested vegetation ☐Scouring ☐Water staining ☐Bent, matted, or missing vegetation ☐Wrack line ☐Litter and debris ☐Abrupt plant community change ☐Soil characteristic change

Depth of Water:	Bank height (average):	Bank slope (average):
3 ft. N/A☐	5 ft.	80 degrees

Qualitative Attributes

Water Appearance: *(check one)* ☐No water ☒Clear ☐Turbid ☐Sheen on surface ☐Surface scum ☐Algal mats ☐Other:

Substrate: *(check all that apply)* ☐ Bedrock ☐ Boulder ☐ Cobble ☐ Gravel ☒ Sand ☐ Silt/ clay ☐ Organic ☐ Other:

% of Substrate: ____% ____% ____% ____% 100 % ____% ____% ____%

Width of Riparian Zone: ____ft. N/A☒

Vegetative Layers: *(check all that apply)* ☒ Trees: ☒ Saplings/Shrubs: ☒ Herbs

Avg. DBH of Dominants: *(approx.)* 12 in. 2 in.

Dominant Bank Vegetation *(list)*:

Loblolly Pine, Sweet-Gum, Water Oak, Giant Cane

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

Downed trees within pond

Aquatic Organisms Observed *(list)*:

Frog

T&E Species Observed *(list)*:

None

Disturbances (ex: livestock access, manure in waterbody, waste discharge pipes):

Manmade pond

Waterbody is: *(check one)* ☐ Natural ☒ Artificial, man-made ☐ Manipulated

Waterbody Quality [a]: *(check one)* ☐ High ☒ Moderate ☐ Low

Waterbody ID:
ONAC002

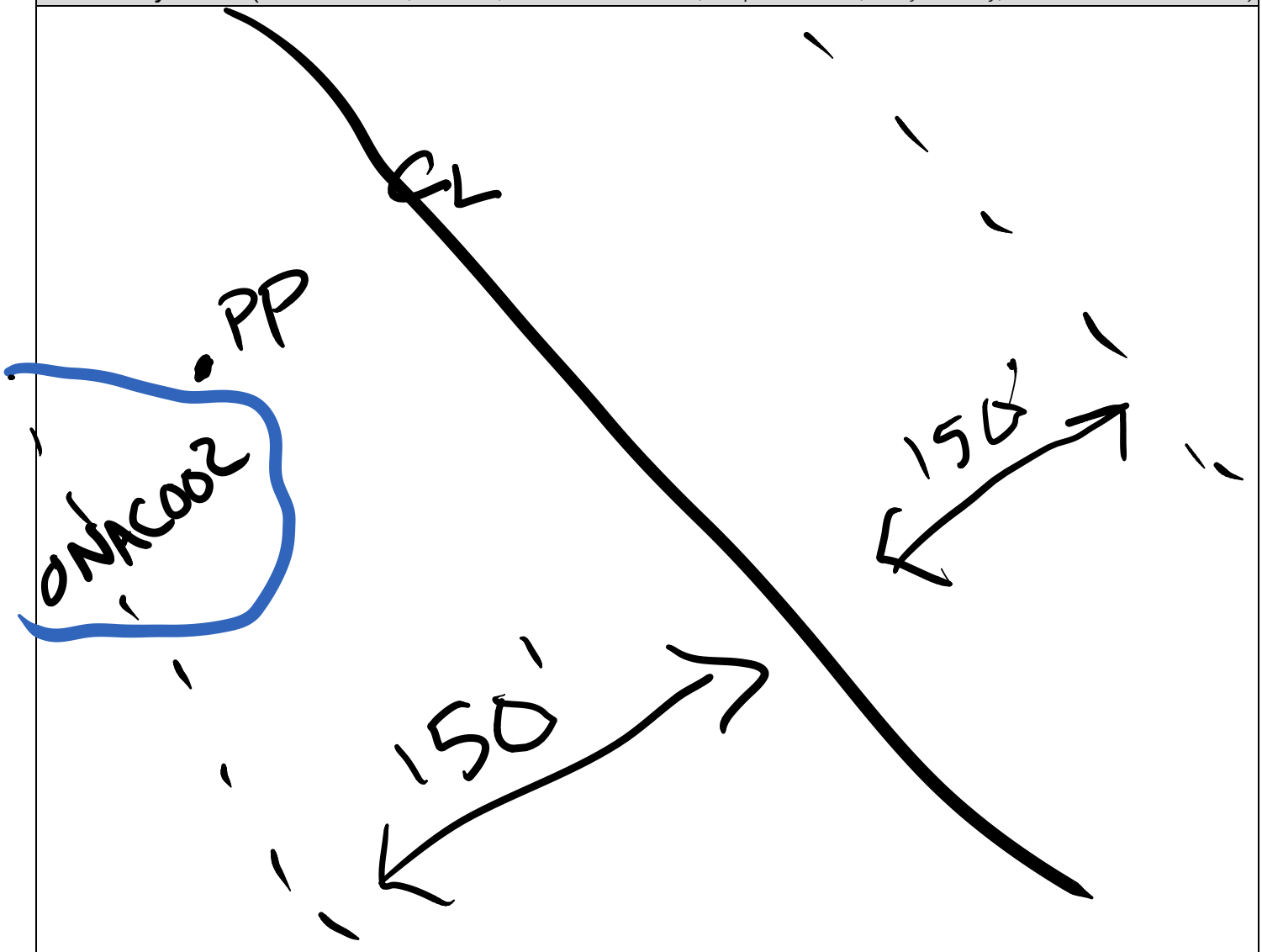
[a] **High Quality:** Natural, natural bank vegetation around entire waterbody; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

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*)



Open waterbody ONAC002 facing north

Open waterbody ONAC002 facing west

Open waterbody ONAC002 facing south

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

STREAM QUALITY ASSESSMENT WORKSHEET

Provide the following information for the stream reach under assessment: SNAH008

1. Applicant's name: Dominion
2. Evaluator's name: DDWEST
3. Date of evaluation: 8-4-14
4. Time of evaluation: 10:10
5. Name of stream: Unnamed trib to Pig Basket
6. River basin: TAR-Pamlico
7. Approximate drainage area: >100 acres
8. Stream order: 1st
9. Length of reach evaluated: 100 ft
10. County: NASH
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any):

Latitude (ex. 34.872312): 36°00'18.739" Longitude (ex. -77.556611): 77°54'37.859"

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: Dry - Few showers
16. Site conditions at time of visit: Normal
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 60% Agricultural 40% Forested ___% Cleared / Logged ___% Other (_____)
22. Bankfull width: 4
23. Bank height (from bed to top of bank): 6
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 ___Occasional bends ___Frequent meander X 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): 51 **Comments:**_____

Evaluator's Signature _____ **Date** 8-4-14

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.

SWA 14008

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	3
	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	3
	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	3
	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	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	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	1
	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	1
	17	**Habitat complexity** (little or no habitat = 0; frequent, varied habitats = max points)	0 – 6	0 – 6	0 – 6	3
	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	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	3
		Total Points Possible	100	100	100	
		TOTAL SCORE (also enter on first page)				51

* These characteristics are not assessed in coastal streams.

NC DWQ Stream Identification Form Version 4.11

SNAH008

Date: 8-4-2014	**Project/Site:** SERP	**Latitude:** 36°00' 18.739"
Evaluator: DDWEST	**County:** NASH	**Longitude:** 77°54' 37.859"
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 35.5	**Stream Determination (circle one)** Ephemeral Intermittent (Perennial)	**Other** UNT to Pig Basket Creek *e.g. Quad Name:*

A. Geomorphology (Subtotal = 18)	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

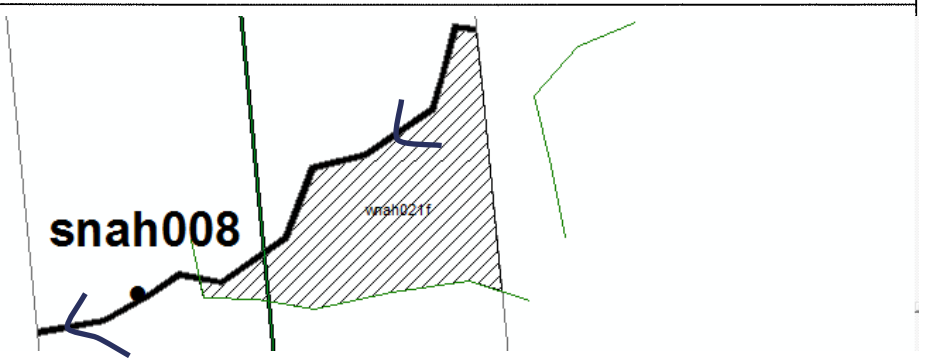
B. Hydrology (Subtotal = 8)				
12. Presence of Baseflow	0	1	(2)	3
13. Iron oxidizing bacteria	0	1	(2)	3
14. Leaf litter	1.5	1	(0.5)	0
15. Sediment on plants or debris	0	(0.5)	1	1.5
16. Organic debris lines or piles	0	0.5	(1)	1.5
17. Soil-based evidence of high water table?	No = 0		(Yes = 3)	

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. 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:

S



Waterbody snah008 facing east upstream

Waterbody snah008 facing west downstream

Waterbody snah008 facing upline cross stream

Open Waterbody Data Sheet

ONAH004

Survey Description

Project Name:	Waterbody Name:	Waterbody ID:	Date:
Southeastern Reliability	Unnamed	onah004	8-4

State:	County:	Company:	Crew Member Initials:	Photos:
NC	NASH	DDWEST	JD, MB	2

Tract Number(s):	Nearest Milepost:	Associated Wetland ID(s):
18-OEC	338	NONE

Survey Type: *(check one)* ☒Centerline ☐Re-Route ☐Access Road ☐Other:

Physical Attributes

Waterbody Type: *(check one)* ☒Stock Pond ☐Natural Pond ☐Lake ☐Reservoir ☐Impoundment ☐Oxbow ☐Other:

Hydrologic Regime: ☒Permanently Flooded ☐Semipermanently Flooded ☐Seasonally Flooded ☐Temporarily Flooded

OHWM

Height: NA ft.

OHWM Indicator: *(check all that apply)*

☒Clear line on bank ☐Shelving ☐Wrested vegetation ☐Scouring ☐Water staining

☐Bent, matted, or missing vegetation ☐Wrack line ☐Litter and debris ☐Abrupt plant community change ☐Soil characteristic change

Depth of Water:	Bank height (average):	Bank slope (average):
2-6 ft. N/A☐	3 ft.	40 degrees

Qualitative Attributes

Water Appearance: *(check one)* ☐No water ☐Clear ☒Turbid ☐Sheen on surface ☐Surface scum ☐Algal mats ☐Other:

Substrate: *(check all that apply)* ☐ Bedrock ☐ Boulder ☐ Cobble ☐ Gravel ☒ Sand ☒ Silt/ clay ☐ Organic ☐ Other:

% of Substrate: ____% ____% ____% ____% 50% 50% ____% ____%

Width of Riparian Zone: 0 ft. N/A☐

Vegetative Layers: *(check all that apply)* ☐ Trees: ☐ Saplings/Shrubs: ☒Herbs

Avg. DBH of Dominants: *(approx.)* ____in. ____in. ____in.

Dominant Bank Vegetation *(list)*: Mowed lawn

Aquatic Habitats (ex: submerged or emerged aquatic vegetation, overhanging banks/roots, leaf packs, large submerged wood, riffles, deep pools, etc.): Manicured ponds in yard

Aquatic Organisms Observed *(list)*: leopard, bull frogs, bream

T&E Species Observed *(list)*: NONE

Disturbances (ex: livestock access, manure in waterbody, waste discharge pipes): Maintained lawn surrounding pond

Waterbody is: *(check one)* ☐ Natural ☒Artificial, man-made ☐ Manipulated

Waterbody Quality [a]: *(check one)* ☐ High ☐ Moderate ☒Low

Waterbody ID: ONAH004

[a] **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.

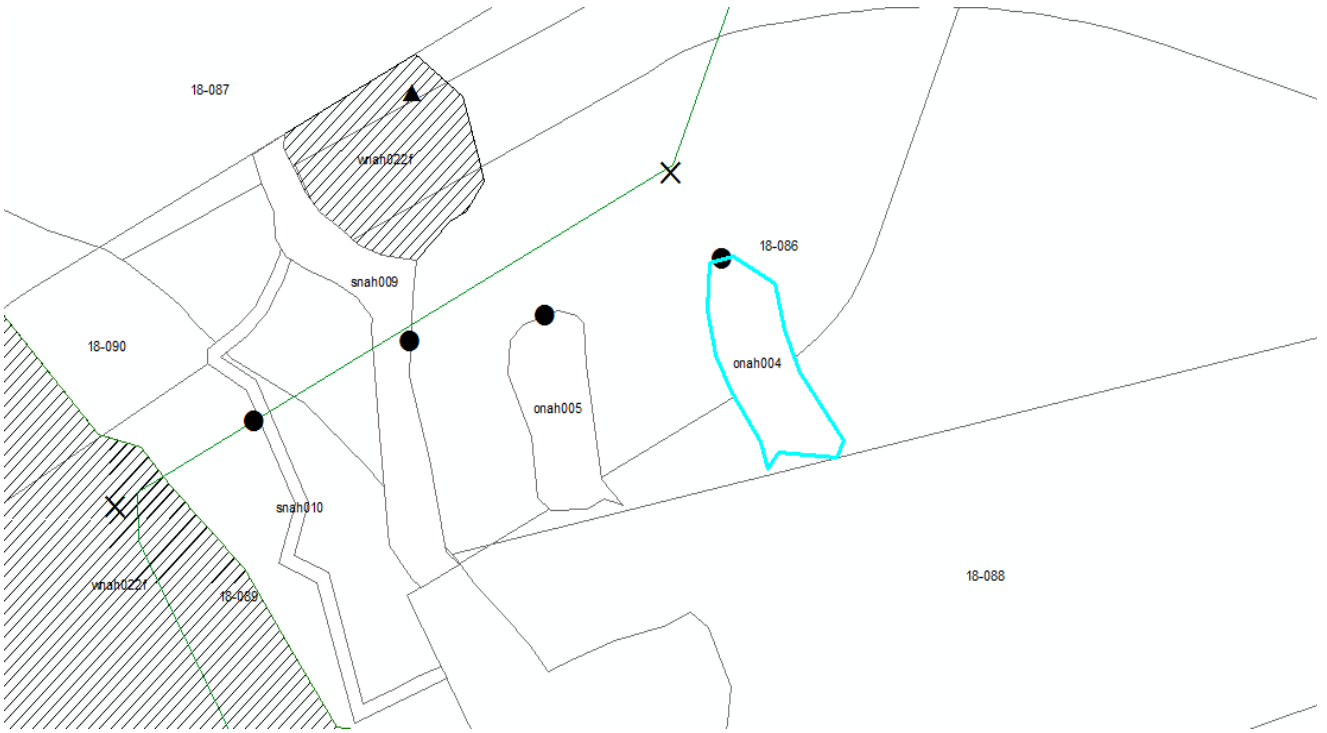
Moderate Quality: Altered by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or bank vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers 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 pond in yard
Mowed around.

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



Open water onah004 facing north

Open water onah004 facing west

Open Waterbody Data Sheet

ONAH005

Survey Description

Project Name:	Waterbody Name:	Waterbody ID:	Date:
Southeastern Reliability	UNNAMED	onah005	8-4

State:	County:	Company:	Crew Member Initials:	Photos:
NC	NASH	DDWEST	JD, MB	2

Tract Number(s):	Nearest Milepost:	Associated Wetland ID(s):
18 086	338	NONE

Survey Type: *(check one)* ☒ Centerline ☐ Re-Route ☐ Access Road ☐ Other:

Physical Attributes

Waterbody Type: *(check one)* ☒ Stock Pond ☐ Natural Pond ☐ Lake ☐ Reservoir ☐ Impoundment ☐ Oxbow ☐ Other:

Hydrologic Regime: ☒ Permanently Flooded ☐ Semipermanently Flooded ☐ Seasonally Flooded ☐ Temporarily Flooded

OHWM

Height: NA ft.

OHWM Indicator: *(check all that apply)*

☒ Clear line on bank ☐ Shelving ☐ Wrested vegetation ☐ Scouring ☐ Water staining

☐ Bent, matted, or missing vegetation ☐ Wrack line ☐ Litter and debris ☐ Abrupt plant community change ☐ Soil characteristic change

Depth of Water:	Bank height (average):	Bank slope (average):
2-6 ft. N/A☐	3 ft.	40 degrees

Qualitative Attributes

Water Appearance: *(check one)* ☐ No water ☐ Clear ☒ Turbid ☐ Sheen on surface ☐ Surface scum ☐ Algal mats ☐ Other:

Substrate: *(check all that apply)* ☐ Bedrock ☐ Boulder ☐ Cobble ☐ Gravel ☒ Sand ☒ Silt/ clay ☐ Organic ☐ Other:

% of Substrate: ____% ____% ____% ____% 50% 50% ____% ____%

Width of Riparian Zone: 0 ft. N/A☐

Vegetative Layers: *(check all that apply)* ☐ Trees: ☐ Saplings/Shrubs: ☒ Herbs

Avg. DBH of Dominants: *(approx.)* ____in. ____in. ____in.

Dominant Bank Vegetation *(list)*: Mowed lawn

Aquatic Habitats (ex: submerged or emerged aquatic vegetation, overhanging banks/roots, leaf packs, large submerged wood, riffles, deep pools, etc.): Manicured pond in yard

Aquatic Organisms Observed *(list)*: leopard, bull frogs, bream

T&E Species Observed *(list)*: NONE

Disturbances (ex: livestock access, manure in waterbody, waste discharge pipes): maintained lawn surrounding pond

Waterbody is: *(check one)* ☐ Natural ☒ Artificial, man-made ☐ Manipulated

Waterbody Quality[a]: *(check one)* ☐ High ☐ Moderate ☒ Low

Waterbody ID: ONAH025

[a] **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.

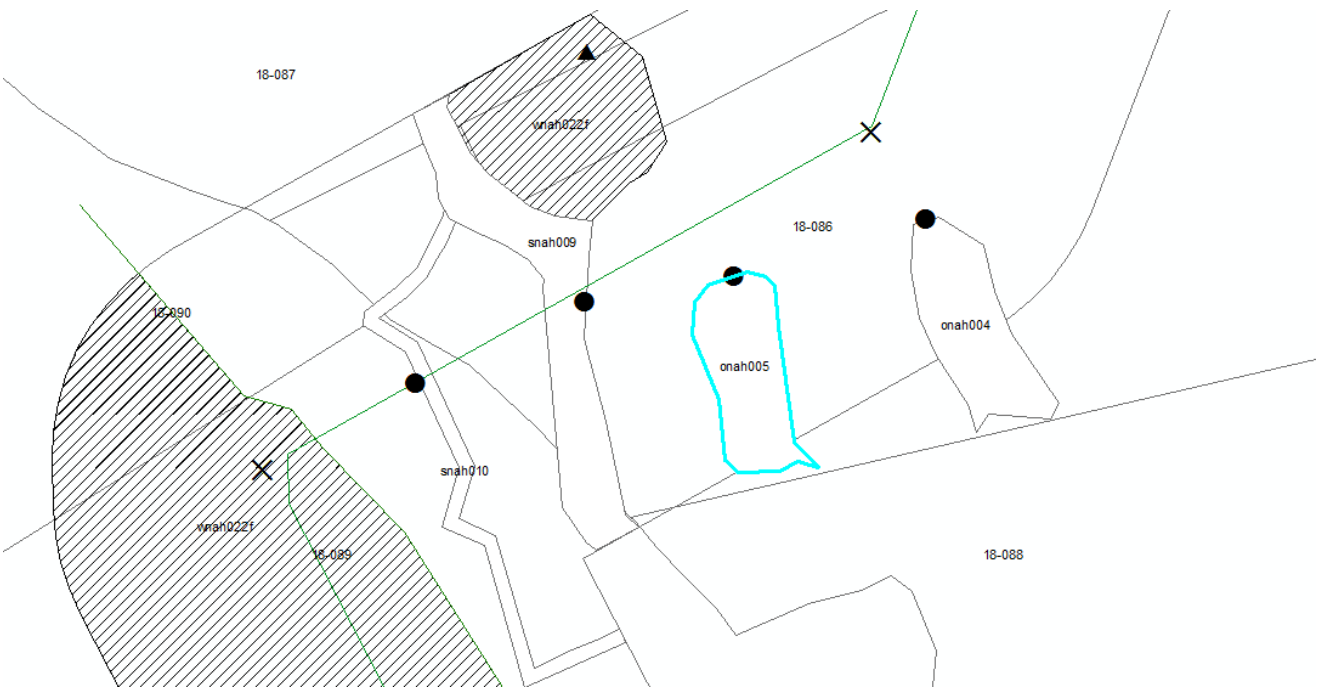
Moderate Quality: Altered by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or bank vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers 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 pond in yard maintained lawn surrounding.

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



Open water onah005 facing north

Open water onah005 facing west

SWAH009

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: 8-4-14
4. Time of evaluation:
5. Name of stream: [redacted] Pig Basket Creek
6. River basin: TAR-PAMLICO
7. Approximate drainage area: >100acres
8. Stream order: 1st
9. Length of reach evaluated: 100ft
10. County: NASH
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any):

Latitude (ex. 34.872312): 35°59'58.469" Longitude (ex. -77.556611): 77°54'41.132"

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: 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 40% Agricultural 60% Forested ___% Cleared / Logged ___% Other (_____)
22. Bankfull width: 25
23. Bank height (from bed to top of bank): 30
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 ___Occasional bends X 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): 65 **Comments:** Pig Basket Creek

Evaluator's Signature [signature] **Date** 8-4-14

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SNAH009

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	5
	2	**Evidence of past human alteration** (extensive alteration = 0; no alteration = max points)	0 – 6	0 – 5	0 – 5	3
	3	**Riparian zone** (no buffer = 0; contiguous, wide buffer = max points)	0 – 6	0 – 4	0 – 5	2
	4	**Evidence of nutrient or chemical discharges** (extensive discharges = 0; no discharges = max points)	0 – 5	0 – 4	0 – 4	3
	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	3
	9	**Channel sinuosity** (extensive channelization = 0; natural meander = max points)	0 – 5	0 – 4	0 – 3	3
	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	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	3
	17	**Habitat complexity** (little or no habitat = 0; frequent, varied habitats = max points)	0 – 6	0 – 6	0 – 6	5
	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	NA
BIOLOGY	20	**Presence of stream invertebrates** (see page 4) (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 5	0 – 5	3
	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	2
	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)						65

* These characteristics are not assessed in coastal streams.

SWAH009

NC DWQ Stream Identification Form Version 4.11

Date: 8-4-14	**Project/Site:** SERP	**Latitude:** 35°39'58.468"
Evaluator: DDWEST	**County:** NASH	**Longitude:** 77°54'41.132"
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 45.75	**Stream Determination (circle one)** Ephemeral Intermittent (Perennial)	**Other** Pig Basket Creek *e.g. Quad Name:*

A. Geomorphology (Subtotal = 21.5)	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	

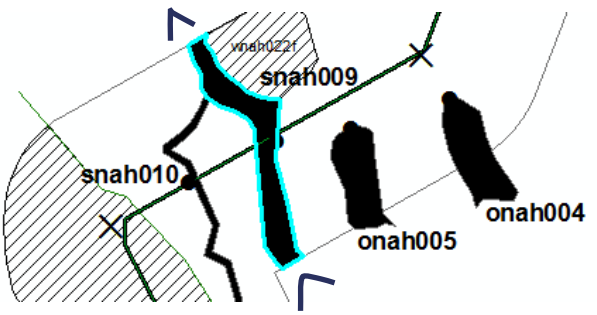
[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 11.5)				
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 = 12.75)				
18. Fibrous roots in streambed	3	(2)	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macrobenthos (note diversity and abundance)	0	1	(2)	3
21. Aquatic Mollusks	0	(1)	2	3
22. Fish	0	0.5	(1)	1.5
23. Crayfish	0	0.5	(1)	1.5
24. Amphibians	0	0.5	(1)	1.5
25. Algae	0	0.5	(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:



Waterbody snah009 facing north upstream

Waterbody snah009 facing south downstream

Waterbody snah009 facing upline cross stream

SNRH012

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: 8-4-14
4. Time of evaluation: 12:42
5. Name of stream: UNNAMED TRIB TO PIG BASKET
6. River basin: TAR-PAMLICO
7. Approximate drainage area: 7100 c
8. Stream order: 1st
9. Length of reach evaluated: 100 ft
10. County: NASH
11. Site coordinates (if known): prefer in decimal degrees.
    Latitude (ex. 34.872312): 35°59'57.713"
    Longitude (ex. -77.556611): 77°54'42.624"
12. Subdivision name (if any):

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: Dry - Few showers
16. Site conditions at time of visit: Normal
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 10% Agricultural 90 % Forested ____% Cleared / Logged ____% Other (_____)
22. Bankfull width: 9
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: ____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): 40 **Comments:** Intermittent channel that ties back into Pig Basket Creek

Evaluator's Signature _____ **Date** 8-4-14

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SNAH010

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	3
	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	3
	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	2
	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	2
	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	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	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	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	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	4
	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)						40

* These characteristics are not assessed in coastal streams.

SNAH010

NC DWQ Stream Identification Form Version 4.11

Date: 8-4-14	**Project/Site:** SERP	**Latitude:** 35 59' 57.713"
Evaluator: DBWEST	**County:** NASH	**Longitude:** 77 54' 42.624"
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 26.75	**Stream Determination (circle one)** Ephemeral Intermittent Perennial	**Other** UNT to Pig Basket Creek *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	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	

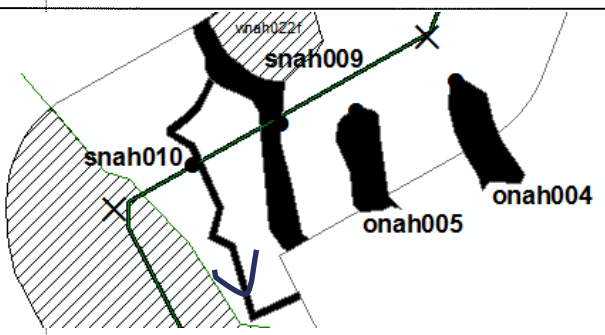
[a] artificial ditches are not rated; see discussions in manual

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 = 7.25)				
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:



Waterbody snah010 facing north upstream

Waterbody snah010 facing south downstream

Waterbody snah010 facing east cross stream

USACE AID#_____ DWQ #_____ Site #____ (indicate on attached map) SNAH012

STREAM QUALITY ASSESSMENT WORKSHEET

Provide the following information for the stream reach under assessment:

1. Applicant's name: Dominion
2. Evaluator's name: DDWEST
3. Date of evaluation: 8-4-14
4. Time of evaluation: 1:30
5. Name of stream: Pig Basket Creek
6. River basin: TAR-PAMLICO
7. Approximate drainage area: 2100 acres
8. Stream order: 1st
9. Length of reach evaluated: 100 ft
10. County: NASH
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any):

Latitude (ex. 34.872312): 35° 59' 53.249" Longitude (ex. -77.556611): 77° 54' 39.576"

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: Dry - few showers
16. Site conditions at time of visit: Normal
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 40% Agricultural 60% Forested ___% Cleared / Logged ___% Other (_____)
22. Bankfull width: 5
23. Bank height (from bed to top of bank): [illegible]
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 ___Occasional bends X 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): 58 **Comments:** side braid channel to Pig Basket Creek

Evaluator's Signature [signature] **Date** 8-4-14

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SNAH012

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	3
	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	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	3
	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	4
	9	**Channel sinuosity** (extensive channelization = 0; natural meander = max points)	0 – 5	0 – 4	0 – 3	3
	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	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	2
	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	2
	17	**Habitat complexity** (little or no habitat = 0; frequent, varied habitats = max points)	0 – 6	0 – 6	0 – 6	3
	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	NA
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	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	4
Total Points Possible			100	100	100	
TOTAL SCORE (also enter on first page)						58

* These characteristics are not assessed in coastal streams.

SNAH012

NC DWQ Stream Identification Form Version 4.11

Date: 8-4-14	**Project/Site:** SERP	**Latitude:** 77°54'39.576"
Evaluator: DDWEST	**County:** NASH	**Longitude:** 35°59'53.249"
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 36	**Stream Determination (circle one)** Ephemeral Intermittent (Perennial)	**Other** Pig Basket Creek *e.g. Quad Name:*

A. Geomorphology (Subtotal = 14.5)	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

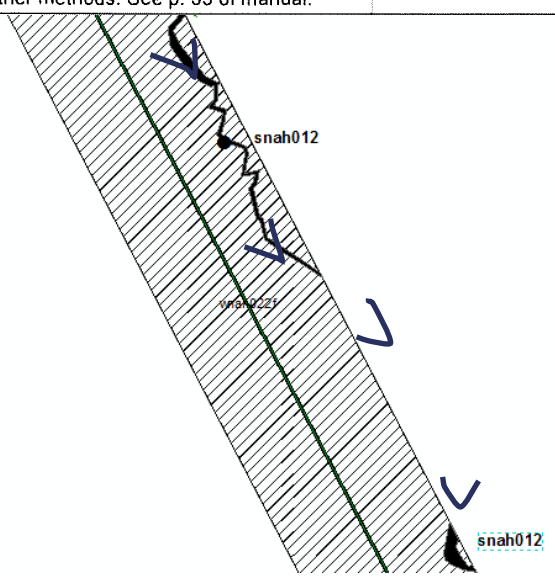
B. Hydrology (Subtotal = 7.5)				
12. Presence of Baseflow	0	1	2	(3)
13. Iron oxidizing bacteria	0	1	(2)	3
14. Leaf litter	1.5	(1)	0.5	0
15. Sediment on plants or debris	0	(0.5)	1	1.5
16. Organic debris lines or piles	0	0.5	(1)	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3	

C. Biology (Subtotal = 14)				
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:

Sketch:



Waterbody snah012 facing north upstream

Waterbody snah012 facing south downstream

Waterbody snah012 facing east cross stream

SNAH015

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: DDWEST
3. Date of evaluation: 8-5-14
4. Time of evaluation: 11:00
5. Name of stream: STONY CREEK
6. River basin: TAR-PAMLICO
7. Approximate drainage area: >100acres
8. Stream order: 2nd
9. Length of reach evaluated: 100ft
10. County: NASH
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any):

Latitude (ex. 34.872312): 35°59'04.625"N Longitude (ex. -77.556611): 77°54'39.713"

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: 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 30% Agricultural 70% Forested ___% Cleared / Logged ___% Other (_____)
22. Bankfull width: 28
23. Bank height (from bed to top of bank): 35
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 ___Occasional bends X 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): 68 **Comments:**

Evaluator's Signature _____ **Date** 8-5-14

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SNAH015

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	5
	2	**Evidence of past human alteration** (extensive alteration = 0; no alteration = max points)	0 – 6	0 – 5	0 – 5	3
	3	**Riparian zone** (no buffer = 0; contiguous, wide buffer = max points)	0 – 6	0 – 4	0 – 5	5
	4	**Evidence of nutrient or chemical discharges** (extensive discharges = 0; no discharges = max points)	0 – 5	0 – 4	0 – 4	3
	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	3
	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	3
	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	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	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	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	4
	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	2
	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	2
	23	**Evidence of wildlife use** (no evidence = 0; abundant evidence = max points)	0 – 6	0 – 5	0 – 5	5
Total Points Possible			100	100	100	
TOTAL SCORE (also enter on first page)						68

* These characteristics are not assessed in coastal streams.

SNAH015

NC DWQ Stream Identification Form Version 4.11

Date: 8-5-14	**Project/Site:** SERP	**Latitude:** 35°59'04.625
Evaluator: DDWEST	**County:** NASH	**Longitude:** 77°54'39.713
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 43	**Stream Determination (circle one)** Ephemeral Intermittent Perennial	**Other** Stony Creek *e.g. Quad Name:*

A. Geomorphology (Subtotal = 18)	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	

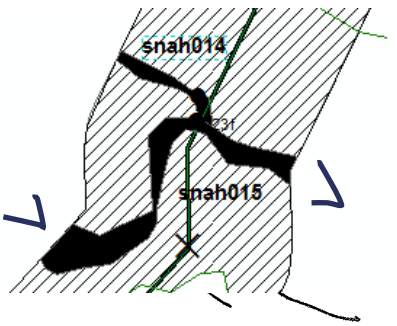
[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 10.5)				
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 = 15.5)				
18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macrobenthos (note diversity and abundance)	0	1	2	3
21. Aquatic Mollusks	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:



Waterbody snah015 facing west upstream

Waterbody snah015 facing east downstream

snah015

Waterbody snah015 facing upline cross stream

SNAH016

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

STREAM QUALITY ASSESSMENT WORKSHEET

SNAH016

Provide the following information for the stream reach under assessment:

1. Applicant's name: Dominion
2. Evaluator's name: EDWEST
3. Date of evaluation: 8-5-14
4. Time of evaluation: 12:50
5. Name of stream: Unnamed trib to Stony Creek
6. River basin: TAR-PAMLICO
7. Approximate drainage area: >50 acres
8. Stream order: 1st
9. Length of reach evaluated: 100 ft
10. County: NASH
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any):

Latitude (ex. 34.872312): 35°58'46" Longitude (ex. -77.556611): 77°54'52.527"

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: 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: 10% Residential ___% Commercial ___% Industrial ___% Agricultural 80% Forested ___% Cleared / Logged ___% Other (_____)
22. Bankfull width: 4
23. Bank height (from bed to top of bank): 6
24. Channel slope down center of stream: ___Flat (0 to 2%) X 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): 46 **Comments:** Seeps issuing out of adjacent hillside forming small, narrow perennial stream

Evaluator's Signature _____ **Date** 8-5-14

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SNAB0116

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	3
	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	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	3
	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	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	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	1
	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	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	4
	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	3
Total Points Possible			100	100	100	
TOTAL SCORE (also enter on first page)						46

* These characteristics are not assessed in coastal streams.

SNAH016

NC DWQ Stream Identification Form Version 4.11

Date: 8-5-14	**Project/Site:** SERP	**Latitude:** 35°58'45.536"
Evaluator: DDWEST	**County:** NASH	**Longitude:** 77°54'52.527"
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 36.5	**Stream Determination (circle one)** Ephemeral Intermittent (Perennial)	**Other** UNT to Stony Creek *e.g. Quad Name:*

A. Geomorphology (Subtotal = 13.5)

	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 = 12)

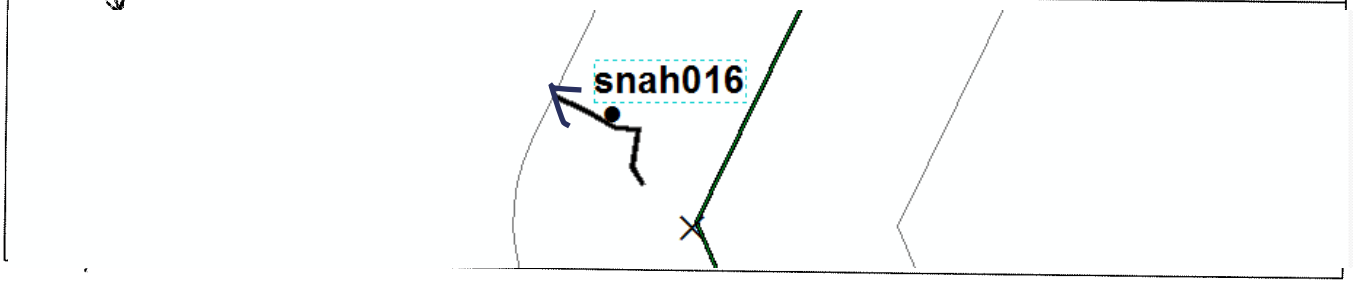
12. Presence of Baseflow	0	1	2	(3)
13. Iron oxidizing bacteria	0	1	2	(3)
14. Leaf litter	1.5	(1)	0.5	0
15. Sediment on plants or debris	0	0.5	(1)	1.5
16. Organic debris lines or piles	0	0.5	(1)	1.5
17. Soil-based evidence of high water table?	No = 0		(Yes = 3)	

C. Biology (Subtotal = 11)

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:



Waterbody snah016 facing east upstream

Waterbody snah016 facing west downstream

Waterbody snah016 facing upline cross stream

SNAH017

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: DDWEST
3. Date of evaluation: 8-5-14
4. Time of evaluation: 2153
5. Name of stream: unnamed trib to Stoney Creek
6. River basin: TAR-PAMLICO
7. Approximate drainage area: >100 acres
8. Stream order: 1st
9. Length of reach evaluated: 100 ft
10. County: NASH
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any):

Latitude (ex. 34.872312): 35°55'30.861" Longitude (ex. -77.556611): 77°54'49.263"

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: 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 50% Agricultural 50% Forested ___% Cleared / Logged ___% Other (_____)
22. Bankfull width: 6
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: ___Straight ___Occasional bends ___Frequent meander X 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): 47 **Comments:**

Evaluator's Signature _____ **Date** 8-5-14

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SNAH017

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	3
	5	**Groundwater discharge** (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0 – 3	0 – 4	0 – 4	10
	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	1
	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	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	2
	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	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	4
	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	3
Total Points Possible			100	100	100	
TOTAL SCORE (also enter on first page)						47

* These characteristics are not assessed in coastal streams.

SNAH017

NC DWQ Stream Identification Form Version 4.11

Date: 8-5-14	**Project/Site:** SERP	**Latitude:** 35°58'30.861"
Evaluator: DWEST	**County:** NASH	**Longitude:** 77°54'49.263"
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 39.75	**Stream Determination (circle one)** Ephemeral Intermittent (Perennial)	**Other** UNT to Stony Creek *e.g. Quad Name:*

A. Geomorphology (Subtotal = 19.5)

	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 = 9.5)

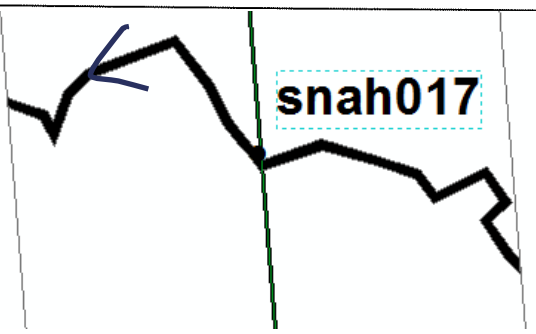
12. Presence of Baseflow	0	1	(2)	3
13. Iron oxidizing bacteria	0	1	(2)	3
14. Leaf litter	1.5	(1)	0.5	0
15. Sediment on plants or debris	0	(0.5)	1	1.5
16. Organic debris lines or piles	0	0.5	(1)	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3	

C. Biology (Subtotal = 10.75)

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



Waterbody snah017 facing east upstream

Waterbody snah017 facing west downstream

Waterbody snah017 facing upline cross stream

USACE AID#_____ DWQ #_____ Site #_____ (indicate on attached map) SNAG 008

STREAM QUALITY ASSESSMENT WORKSHEET

Provide the following information for the stream reach under assessment:

1. Applicant's name: Dominion
2. Evaluator's name: J. GAY
3. Date of evaluation: 5 August 2014
4. Time of evaluation: 1300
5. Name of stream: UNT to Stony Creek
6. River basin: TAR
7. Approximate drainage area: unknown
8. Stream order: 1st
9. Length of reach evaluated: 50
10. County: NASH
11. Site coordinates (if known): prefer in decimal degrees.
    Latitude (ex. 34.872312): 35°58'07.644
    Longitude (ex. –77.556611): 77°55'16.467
12. Subdivision name (if any): n/a

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: LARGE RAIN EVENT in PAST 5/8 hours

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 ___% Agricultural ___% Forested ___% Cleared / Logged ___% Other (_____)

22. Bankfull width: 8

23. Bank height (from bed to top of bank): 3

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): 49 **Comments:**_____

Evaluator's Signature_____ **Date** 5 August 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.

STREAM QUALITY ASSESSMENT WORKSHEET SNAG008

	#	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	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	1
	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	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	1
	9	**Channel sinuosity** (extensive channelization = 0; natural meander = max points)	0 – 5	0 – 4	0 – 3	3
	10	**Sediment input** (extensive deposition= 0; little or no sediment = max points)	0 – 5	0 – 4	0 – 4	2
	11	**Size & diversity of channel bed substrate** (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0 – 4	0 – 5	NA
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	3
	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	3
	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	3
	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	2
	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)				49

* These characteristics are not assessed in coastal streams.

NC DWQ Stream Identification Form Version 4.11

SNAG 008

Date: 5 August 2014	**Project/Site:** SERP	**Latitude:** 35°58'03.644
Evaluator: DD WEST	**County:** NASH	**Longitude:** 77°55'16.467
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 30.5	**Stream Determination (circle one)** Ephemeral Intermittent Perennial	**Other** UNT to Stony Creek *e.g. Quad Name:*

A. Geomorphology (Subtotal = 13.5)

	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 = 9)

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	

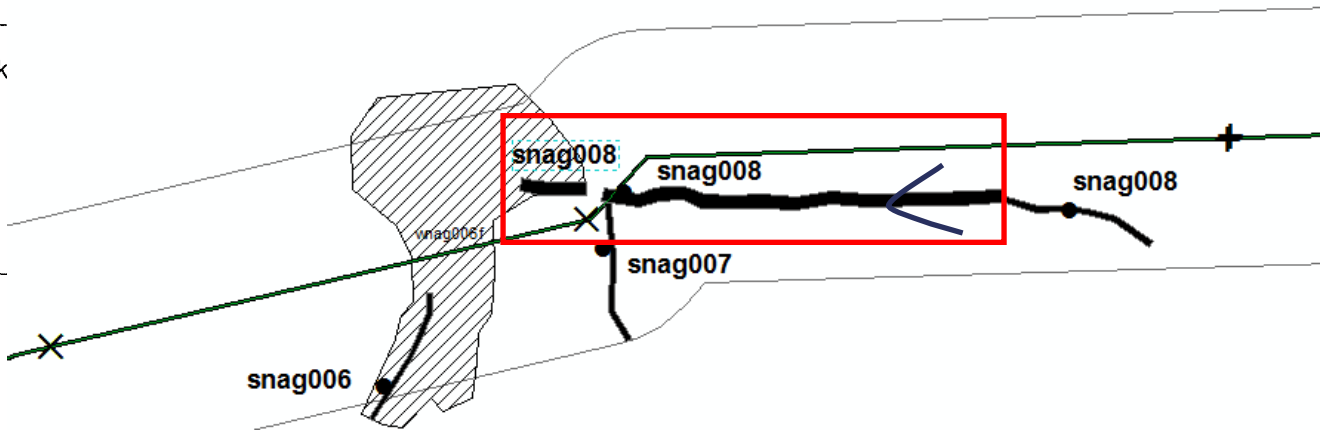
C. Biology (Subtotal = 8)

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:

Sk



snag008

snag008 facing upstream

snag008 facing downstream

snag008

snag008 side shot

NC Division of Water Quality –Methodology for Identification of Intermittent and Perennial Streams and Their Origins v. 4.11 004 Int.

NC DWQ Stream Identification Form Version 4.11 SNAG008

Date: 8/5/14	**Project/Site:** SERP	**Latitude:** 35° 58' 03.387
Evaluator: DD West	**County:** Nash	**Longitude:** 77°55'09.923
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 22	**Stream Determination (circle one)** Ephemeral (Intermittent) Perennial	**Other** *e.g. Quad Name:*

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

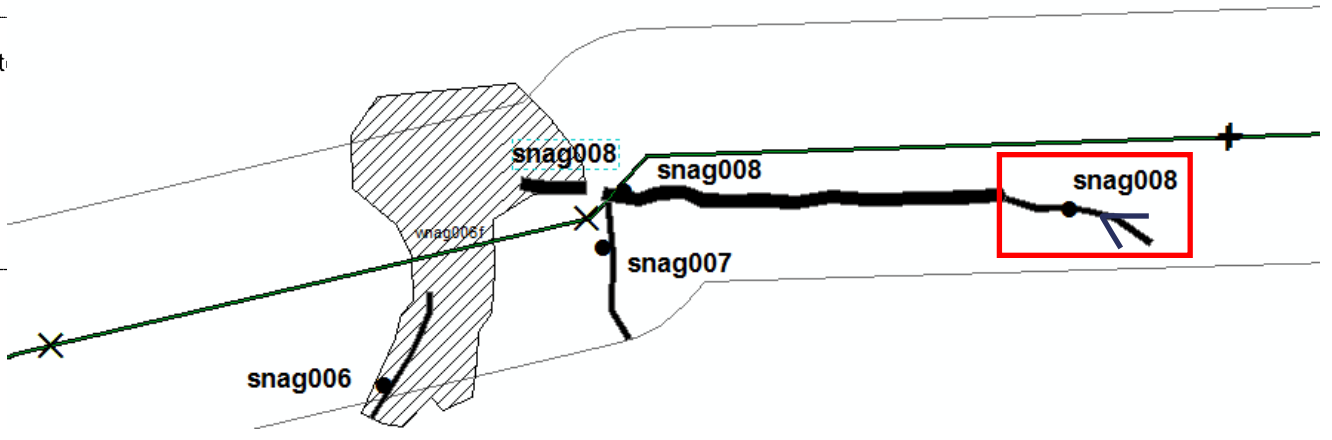
B. Hydrology (Subtotal = 8.5)				
12. Presence of Baseflow	0	1	(2)	3
13. Iron oxidizing bacteria	0	(1)	2	3
14. Leaf litter	1.5	(1)	0.5	0
15. Sediment on plants or debris	0	(0.5)	1	1.5
16. Organic debris lines or piles	0	0.5	(1)	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = (3)	

C. Biology (Subtotal = 6.5)				
18. Fibrous roots in streambed	3	(2)	1	0
19. Rooted upland plants in streambed	3	(2)	1	0
20. Macrobenthos (note diversity and abundance)	0	(1)	2	3
21. Aquatic Mollusks	(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:

Sket



SNAG 006

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: DSB
3. Date of evaluation: 8-5-14
4. Time of evaluation: 1325
5. Name of stream: UNT to Stony Creek
6. River basin: Tar
7. Approximate drainage area:
8. Stream order: 1st
9. Length of reach evaluated: 100'
10. County: Nash
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any):

Latitude (ex. 34.872312): 35° 58' 03.387" Longitude (ex. -77.556611): -77° 55' 09.523

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): upstream of pur. reach of SNAG008
14. Proposed channel work (if any): —
15. Recent weather conditions: Past 48 hrs.
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 ___% Agricultural ___% Forested ___% Cleared / Logged ___% Other (_____)
22. Bankfull width: 6
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): 33 **Comments:** Rated Int. on PWA Form

Evaluator's Signature _____ **Date** 8/5/14

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	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	3
	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	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	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	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	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	4
	19	**Substrate embeddedness** (deeply embedded = 0; loose structure = max)	NA*	0 – 4	0 – 4	2
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)				33

* These characteristics are not assessed in coastal streams.

snag008 int

snag008 int facing upstream

snag008 int facing downstream

snag008 int

snag008 int side shot

USACE AID#_____ DWQ #_____ Site #SNAG007 (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: J. GAY
3. Date of evaluation: 5 August 2014
4. Time of evaluation: 1245
5. Name of stream: UNT TO Stony Creek
6. River basin: TAR
7. Approximate drainage area: _____
8. Stream order: 1st
9. Length of reach evaluated: 50'
10. County: NASH
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any): n/a

Latitude (ex. 34.872312): 35° 58' 02.991" Longitude (ex. –77.556611): 77° 55 16.722"

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: LARGE RAIN EVENT in past 48 hours

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 ___% Agricultural ___% Forested ___% Cleared / Logged ___% Other (_____)

22. Bankfull width: 6

23. Bank height (from bed to top of bank): 3

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): 40 **Comments:** _____

Evaluator's Signature _____ **Date** 5 August 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.

STREAM QUALITY ASSESSMENT WORKSHEET SW6007

	#	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	0
	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	3
	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	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	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	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	2
	17	**Habitat complexity** (little or no habitat = 0; frequent, varied habitats = max points)	0 – 6	0 – 6	0 – 6	3
	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	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	1
	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)						40

* These characteristics are not assessed in coastal streams.

NC DWQ Stream Identification Form Version 4.11

SNAG-007

Date: 5 August 2014	**Project/Site:** SERD	**Latitude:** 35° 58' 02.999"
Evaluator: DD WEST	**County:** NASH	**Longitude:** 77° 55' 16.722"
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 25.5	**Stream Determination (circle one)** Ephemeral Intermittent Perennial	**Other** UNT to Stony Creek *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	

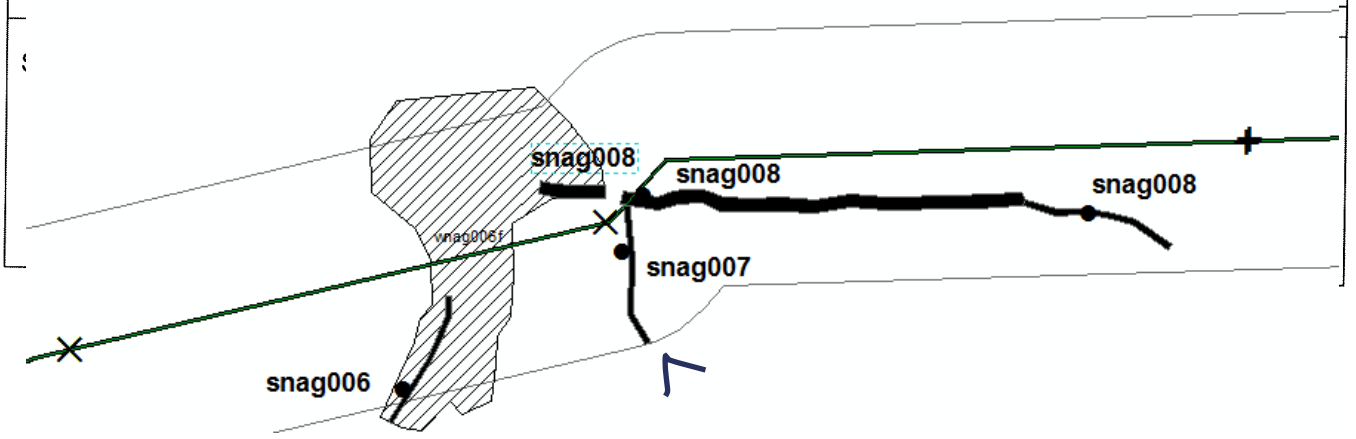
[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 10)				
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. 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:



snag007

snag007 facing upstream

snag007 facing downstream

snag007

snag007 side shot

SNAG006

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: J. GAY
3. Date of evaluation: 5 August 2014
4. Time of evaluation: 1400
5. Name of stream: UNT TO Stony Creek
6. River basin: TAR
7. Approximate drainage area: unknown
8. Stream order: 1st
9. Length of reach evaluated: 50
10. County: NASH
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any): _____

Latitude (ex. 34.872312): 35° 58' 01.439" Longitude (ex. –77.556611): 77° 55' 19.922"

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: LARGE RAIN EVENT in PAST 48 hours

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 60 % Agricultural 40 % Forested ___% Cleared / Logged ___% Other (_____)

22. Bankfull width: 10

23. Bank height (from bed to top of bank): 2

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): 67 **Comments:** _____

Evaluator's Signature _____ **Date** 5 August 2014

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SNAG006

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	3
	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	3
	5	**Groundwater discharge** (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0 – 3	0 – 4	0 – 4	3
	6	**Presence of adjacent floodplain** (no floodplain = 0; extensive floodplain = max points)	0 – 4	0 – 4	0 – 2	4
	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	6
	9	**Channel sinuosity** (extensive channelization = 0; natural meander = max points)	0 – 5	0 – 4	0 – 3	3
	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	NA
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	5
	15	**Impact by agriculture, livestock, or timber production** (substantial impact =0; no evidence = max points)	0 – 5	0 – 4	0 – 5	5
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	3
	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	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	3
Total Points Possible			100	100	100	
TOTAL SCORE (also enter on first page)						67

* 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: 5 August 2014	**Project/Site:** SERF	**Latitude:** 35°58'01.439"
Evaluator: DD West	**County:** NASH	**Longitude:** 77°55'19.922"
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 31	**Stream Determination (circle one)** Ephemeral Intermittent **Perennial**	**Other** UNT to Stony Creek *e.g. Quad Name:*

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	

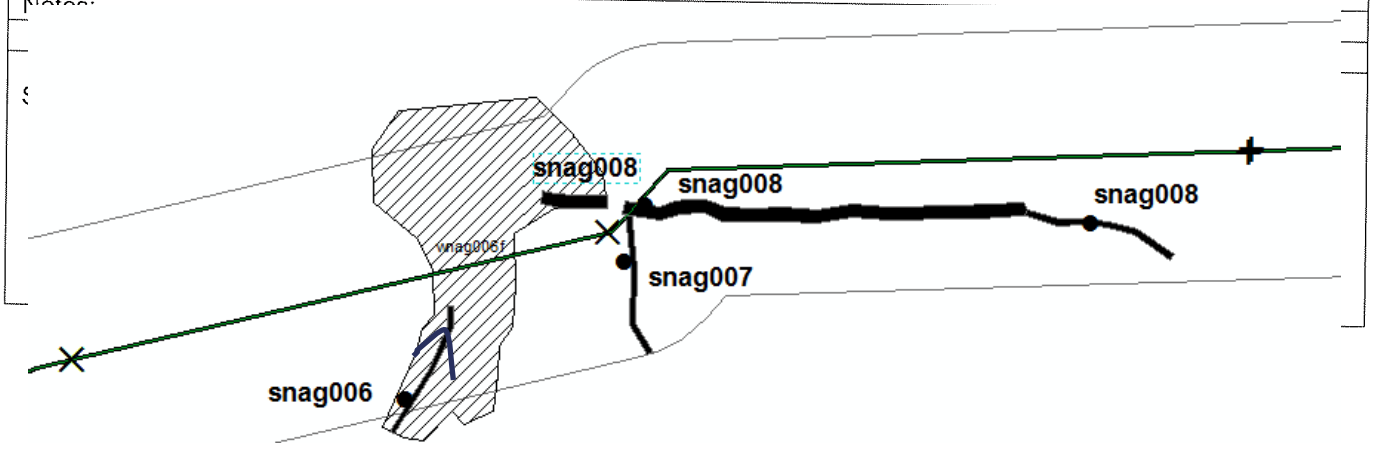
[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 11.5)				
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. 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:



snag006

snag006 facing upstream

snag006 facing downstream

snag006

snag006 side shot

USACE AID# _____ DWQ # SNAG005 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: J. GAY
3. Date of evaluation: 5 August 2014
4. Time of evaluation: 1000
5. Name of stream: UNT to Stony Creek
6. River basin: Tar River Basin
7. Approximate drainage area: _____
8. Stream order: 1st
9. Length of reach evaluated: 100 feet
10. County: Nash
11. Site coordinates (if known): prefer in decimal degrees.
    Latitude (ex. 34.872312): 35° 57' 52.548"
    Longitude (ex. –77.556611): 77° 55' 47.489'
12. Subdivision name (if any): _____
    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: Large Rain Events 48 hours earlier
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 ___% Agricultural ___% Forested ___% Cleared / Logged ___% Other (_____)
22. Bankfull width: 4 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): 82 **Comments:** Braided Conveyances form a distinct channel approximately 200 feet upstream of Rail Road track

Evaluator's Signature _____ **Date** 5 August 2014

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SNAG 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	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	6
	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	4
	7	**Entrenchment / floodplain access** (deeply entrenched = 0; frequent flooding = max points)	0 – 5	0 – 4	0 – 2	5
	8	**Presence of adjacent wetlands** (no wetlands = 0; large adjacent wetlands = max points)	0 – 6	0 – 4	0 – 2	6
	9	**Channel sinuosity** (extensive channelization = 0; natural meander = max points)	0 – 5	0 – 4	0 – 3	5
	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	5
	13	**Presence of major bank failures** (severe erosion = 0; no erosion, stable banks = max points)	0 – 5	0 – 5	0 – 5	5
	14	**Root depth and density on banks** (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	5
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	5
	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	2
	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	5
Total Points Possible			100	100	100	
TOTAL SCORE (also enter on first page)						82

* These characteristics are not assessed in coastal streams.

NC DWQ Stream Identification Form Version 4.11

Snag005

Date: 5 August 2014	**Project/Site:** SERP	**Latitude:** 36°57'52.548"
Evaluator: D.D West	**County:** NASH	**Longitude:** 77°55'47.489"
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 30	**Stream Determination (circle one)** Ephemeral Intermittent (Perennial)	**Other** UNT to Stony Creek *e.g. Quad Name:*

A. Geomorphology (Subtotal = 12.5)

	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 = 9.5)

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)	

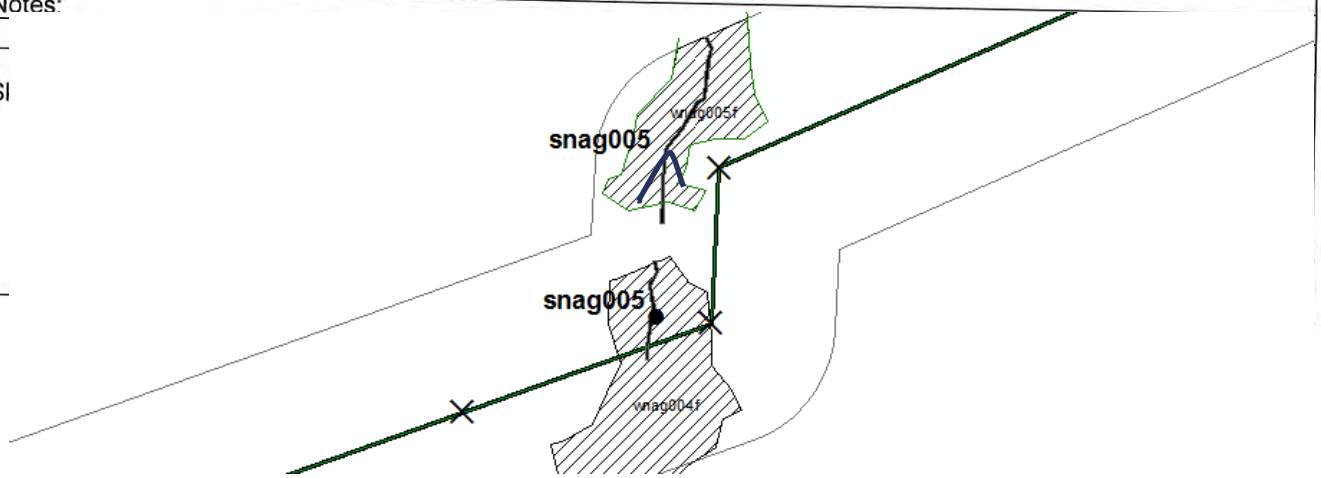
C. Biology (Subtotal = 8)

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:

Sl



snag005

snag005 facing upstream

snag005 facing downstream

snag005

snag005 side shot

SNAG 011

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: DDWEST
3. Date of evaluation: 8-5-14
4. Time of evaluation:
5. Name of stream: unnamed trib to Stony Creek
6. River basin: TAR-PAMLICO
7. Approximate drainage area: 750 acres
8. Stream order: 1st
9. Length of reach evaluated: 100 ft
10. County: NASH
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any): na

Latitude (ex. 34.872312): 35° 57' 30.440" Longitude (ex. -77.556611): 77° 56' 25.733"

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): NOW

15. Recent weather conditions: 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: 30% Residential ___% Commercial ___% Industrial 30% Agricultural 40% Forested ___% Cleared / Logged ___% Other (_____)

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

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): 34 **Comments:**

Evaluator's Signature _____ **Date** 8-5-14

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STREAM QUALITY ASSESSMENT WORKSHEET

DNAGON

	#	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	2
	3	**Riparian zone** (no buffer = 0; contiguous, wide buffer = max points)	0 – 6	0 – 4	0 – 5	2
	4	**Evidence of nutrient or chemical discharges** (extensive discharges = 0; no discharges = max points)	0 – 5	0 – 4	0 – 4	2
	5	**Groundwater discharge** (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0 – 3	0 – 4	0 – 4	2
	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	2
	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	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	NA
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	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	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	1
	17	**Habitat complexity** (little or no habitat = 0; frequent, varied habitats = max points)	0 – 6	0 – 6	0 – 6	3
	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	NA
BIOLOGY	20	**Presence of stream invertebrates** (see page 4) (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 5	0 – 5	D
	21	**Presence of amphibians** (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	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)				54

* These characteristics are not assessed in coastal streams.

NC DWQ Stream Identification Form Version 4.11

SNAG 011

Date: 8-5-14	**Project/Site:** SERP	**Latitude:** 35°57'30.440"
Evaluator: DDWEST	**County:** NASH	**Longitude:** 77°56'25.733"
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 32.75	**Stream Determination (circle one)** Ephemeral Intermittent (Perennial)	**Other** UNT to Stony Creek *e.g. Quad Name:*

A. Geomorphology (Subtotal = 13.5)

	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

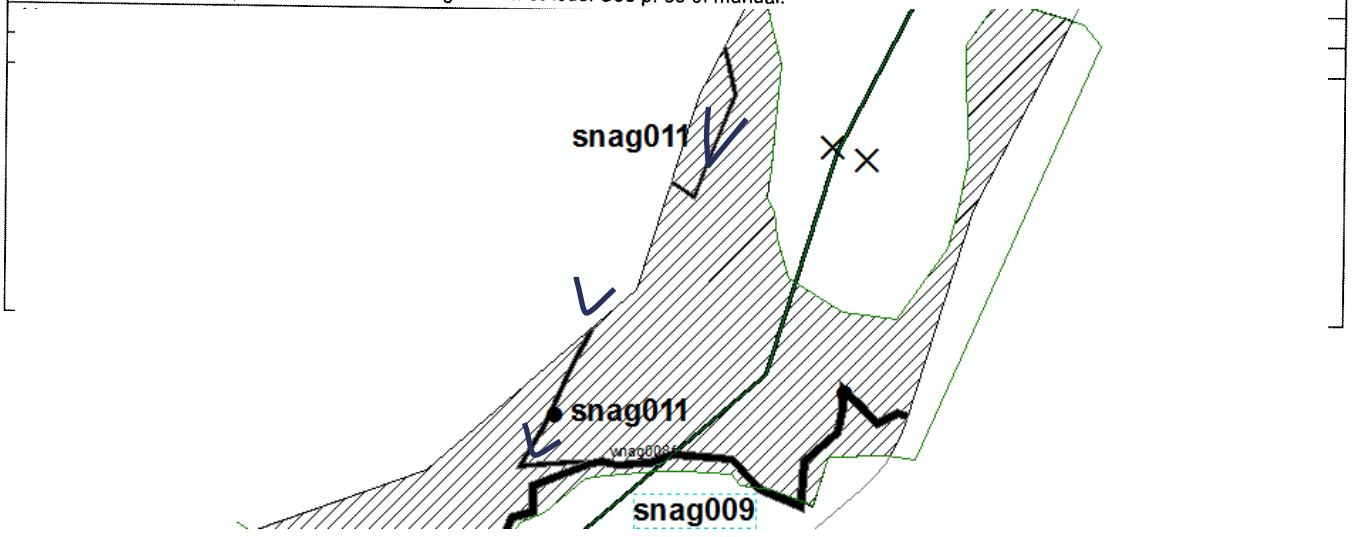
B. Hydrology (Subtotal = 9.5)

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 = 9.75)

18. Fibrous roots in streambed	3	(2)	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macrobenthos (note diversity and abundance)	0	(1)	2	3
21. Aquatic Mollusks	(0)	1	2	3
22. Fish	(0)	0.5	1	1.5
23. Crayfish	0	0.5	(1)	1.5
24. Amphibians	0	0.5	(1)	1.5
25. Algae	0	0.5	(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.



snag011

snag011 facing upstream

snag011 facing downstream

snag011

snag011 side shot

SNAG 009

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: J.GAY
3. Date of evaluation: 5 August 2014
4. Time of evaluation: 1745
5. Name of stream: UNT to Stony Creek
6. River basin: TAR
7. Approximate drainage area: _____
8. Stream order: 1
9. Length of reach evaluated: 50
10. County: NASH
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any): n/a

Latitude (ex. 34.872312): 35°57' 30.546" Longitude (ex. -77.556611): 77°58' 22.098"

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: HEAVY RAIN in PAST 48 hours

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 30 % Agricultural 70 % Forested ___% Cleared / Logged ___% Other (_____)

22. Bankfull width: 8

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): 81 **Comments:**_____

Evaluator's Signature_____ **Date** 5 August 2014

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SNAG 069

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	5
	3	**Riparian zone** (no buffer = 0; contiguous, wide buffer = max points)	0 – 6	0 – 4	0 – 5	6
	4	**Evidence of nutrient or chemical discharges** (extensive discharges = 0; no discharges = max points)	0 – 5	0 – 4	0 – 4	4
	5	**Groundwater discharge** (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0 – 3	0 – 4	0 – 4	3
	6	**Presence of adjacent floodplain** (no floodplain = 0; extensive floodplain = max points)	0 – 4	0 – 4	0 – 2	4
	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	6
	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	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	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	4
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	3
	17	**Habitat complexity** (little or no habitat = 0; frequent, varied habitats = max points)	0 – 6	0 – 6	0 – 6	5
	18	**Canopy coverage over streambed** (no shading vegetation = 0; continuous canopy = max points)	0 – 5	0 – 5	0 – 5	5
	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	2
	21	**Presence of amphibians** (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	2
	22	**Presence of fish** (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	1
	23	**Evidence of wildlife use** (no evidence = 0; abundant evidence = max points)	0 – 6	0 – 5	0 – 5	5
		Total Points Possible	100	100	100	
		TOTAL SCORE (also enter on first page)				81

* These characteristics are not assessed in coastal streams.

SNAG 009

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: 5 August 2014	**Project/Site:** SERP	**Latitude:** 35° 57' 30.5546"
Evaluator: DD WEST	**County:** NASH	**Longitude:** 77° 56' 22.098"
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 40.5	**Stream Determination (circle one)** Ephemeral Intermittent Perennial	**Other** UNT to Stony Creek *e.g. Quad Name:*

A. Geomorphology (Subtotal = 18)	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	

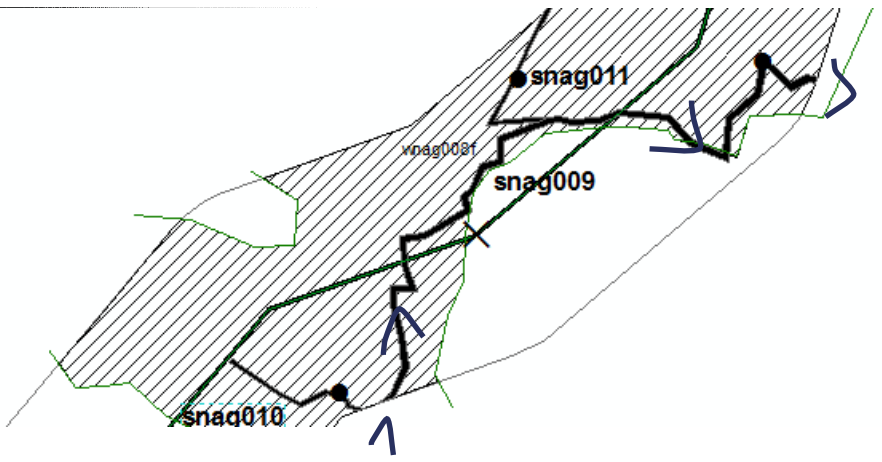
[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 9.5)				
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 = 13)				
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:



snag009

snag009 facing upstream

snag009 facing downstream

snag009

snag009 side shot

SnaG010

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: J. GAY
3. Date of evaluation: 5 August 2014
4. Time of evaluation: 1700
5. Name of stream: UNT D STONY Creek
6. River basin: TAR
7. Approximate drainage area: unknown
8. Stream order: 1st
9. Length of reach evaluated: 100
10. County: NASH
11. Site coordinates (if known): prefer in decimal degrees.
12. Subdivision name (if any):

Latitude (ex. 34.872312): 35° 57' 26.758" Longitude (ex. -77.556611): 77° 56' 28.398"

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: HEAVY RAIN in PAST 48 HOURS

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 ___% Agricultural ___% Forested ___% Cleared / Logged ___% Other (_____)

22. Bankfull width: 5 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): 80 **Comments:**

Evaluator's Signature _____ **Date** 5 August 2014

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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	4
	2	**Evidence of past human alteration** (extensive alteration = 0; no alteration = max points)	0 – 6	0 – 5	0 – 5	6
	3	**Riparian zone** (no buffer = 0; contiguous, wide buffer = max points)	0 – 6	0 – 4	0 – 5	6
	4	**Evidence of nutrient or chemical discharges** (extensive discharges = 0; no discharges = max points)	0 – 5	0 – 4	0 – 4	4
	5	**Groundwater discharge** (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0 – 3	0 – 4	0 – 4	3
	6	**Presence of adjacent floodplain** (no floodplain = 0; extensive floodplain = max points)	0 – 4	0 – 4	0 – 2	4
	7	**Entrenchment / floodplain access** (deeply entrenched = 0; frequent flooding = max points)	0 – 5	0 – 4	0 – 2	5
	8	**Presence of adjacent wetlands** (no wetlands = 0; large adjacent wetlands = max points)	0 – 6	0 – 4	0 – 2	6
	9	**Channel sinuosity** (extensive channelization = 0; natural meander = max points)	0 – 5	0 – 4	0 – 3	3
	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	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	3
	15	**Impact by agriculture, livestock, or timber production** (substantial impact =0; no evidence = max points)	0 – 5	0 – 4	0 – 5	5
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	3
	18	**Canopy coverage over streambed** (no shading vegetation = 0; continuous canopy = max points)	0 – 5	0 – 5	0 – 5	5
	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	3
	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	4
		Total Points Possible	100	100	100	
		TOTAL SCORE (also enter on first page)				80

* 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: 5 August 2014	**Project/Site:** SERP	**Latitude:** 35°57'26.758"
Evaluator: DD West	**County:** Nash	**Longitude:** 77°56'28.348"
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 30	**Stream Determination (circle one)** Ephemeral Intermittent Perennial	**Other** UNT to Stony Creek *e.g. Quad Name:*

A. Geomorphology (Subtotal = 12.5)	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	

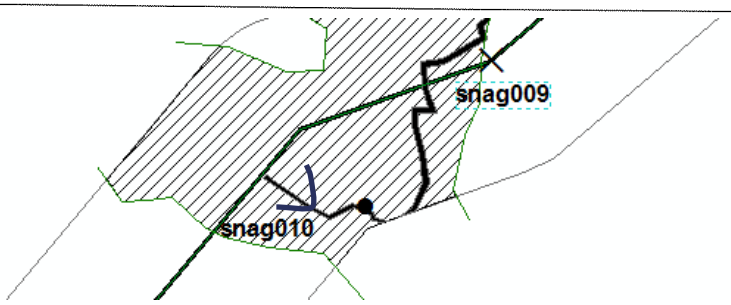
[a] artificial ditches are not rated; see discussions in manual

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 = 8.5)				
18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macrobenthos (note diversity and abundance)	0	1	2	3
21. Aquatic Mollusks	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:



snag010

snag010 facing upstream

snag010 facing downstream

snag010

snag010 side shot