

Bridge #234

Watauga County

Low/Minimal Impact Bridge Project Data Sheet

	TIP NO	
	WBS	17BP.11.R.106
	County	Watauga
	Bridge Number	234
	Description	Bridge #234 over Flannery Fork Creek on SR 1541 (Flannery Fork Road)
Stream	Basin	New River
	Classification	WS-II Tr HQW
	SIN	10-1-4-3-(2) (for all streams on site)
	Type (Perennial/Intermittent)	Flannery Fork-Perennial; SA-Perennial; SB-Intermittent; SC-Perennial
	Size (bankfull width)	Flannery Fork-16'; SA-3'; SB-1-2'; SC-2'
Existing Structure	Type	
	Size	
	Suff. Rating	
Proposed Structure	Type	
	Size (width-out to out)	
Stream	USACE Impacts (Y/N)	Yes
	Non 404 Impacts (Y/N)	No
Wetlands	USACE Impacts (Y/N)	Yes
	Non 404 Impacts (Y/N)	No
	CAMA Impacts (Y/N)	
NC DWQ Buffers	Impacts (Y/N)	
Buffer Application Required (>40 ft) (Y/N)		
NC DWQ StormWater Permit Required (Y/N)		
T&E	Habitat (Y/N)	Bald Eagle-No; Bog Turtle-No; Carolina Northern Flying Squirrel-No; Northern Long-eared Bat-Yes; Virginia big-eared bat-Yes; Spruce-fir moss spider-No; BlueRidge goldenrod-No; Heller's blazing star-No; Roan mountain bluet-No; Spreading avens-No
	Species Present	Bald Eagle-No; Bog Turtle-No; Carolina Northern Flying Squirrel-No; Northern Long-eared Bat-Unresolved; Virginia big-eared bat-Unresolved; Spruce-fir moss spider-No; BlueRidge goldenrod-No; Heller's blazing star-No; Roan mountain bluet-No; Spreading avens-No
	Bio Conclusion	Bald Eagle-No Effect; Bog Turtle-No Effect; Carolina Northern Flying Squirrel-No Effect; Northern Long-eared Bat-Unresolved; Virginia big-eared bat-Unresolved; Spruce-fir moss spider-No Effect; BlueRidge goldenrod-No Effect; Heller's blazing star-No Effect; Roan mountain bluet-No Effect; Spreading avens-No Effect
Moratorium	Type	Trout
	Dates	October 15 - April 15
Trout Waters	Native/Hatchery	
	Trout Species Present	Brown trout
	Trout Conditions (Y/N)	Yes
	WRC Reviewer	Kevin Hining via Marla Chambers
CAMA	AECs	
Essential Fish	Habitat (Y/N)	
Nav.	Opening	
USCG	Permit	
Historic	Properties	
Archaeological	Resources	
Tribal	Lands	
4(f)	Resources	
6(f) [LWCF]	Resources	
Wild and	Scenic River	No
Forest Service	Lands	
TVA	Area	
FEMA	Buyout	
FEMA	Flood Study	
USTs	Haz Mats	
	Relocates	
Location (decimal degrees)	LAT	36.15747
	LONG	-81.69371
Project Comments		The project study area consists of one wetland and 3 streams excluding Flannery Fork Creek. The bridge was the only habitat observed which could potentially serve as habitat for bats.
Completed by:	Chris Sheats	
	Consultant Biologist	
Reviewed by:	The Catena Group	
	Consulting Firm	

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Wetland A

Project/Site: Bridge #234 City/County: Watkins Sampling Date: 7-23-14
 Applicant/Owner: DCOT State: NC Sampling Point: WA-7
 Investigator(s): C. Sheets Section, Township, Range: Paove
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): none Slope (%): 0-2
 Subregion (LRR or MLRA): LRR-P Lat: 36.15756 Long: -81.69303 Datum: NAD83
 Soil Map Unit Name: Dellwood Caddy smpy bon NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐ (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☒ No ☐	Is the Sampled Area within a Wetland? Yes ☒ No ☐
Hydric Soil Present? Yes ☒ No ☐	
Wetland Hydrology Present? Yes ☒ No ☐	
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) ☒ Surface Water (A1) ☐ True Aquatic Plants (B14) ☐ High Water Table (A2) ☐ Hydrogen Sulfide Odor (C1) ☒ Saturation (A3) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Water Marks (B1) ☐ Presence of Reduced Iron (C4) ☐ Sediment Deposits (B2) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Drift Deposits (B3) ☐ Thin Muck Surface (C7) ☐ Algal Mat or Crust (B4) ☐ Other (Explain in Remarks) ☐ Iron Deposits (B5) ☐ Inundation Visible on Aerial Imagery (B7) ☒ Water-Stained Leaves (B9) ☐ Aquatic Fauna (B13)		Secondary Indicators (minimum of two required) ☐ Surface Soil Cracks (B6) ☒ Sparsely Vegetated Concave Surface (B8) ☐ Drainage Patterns (B10) ☐ Moss Trim Lines (B16) ☐ Dry-Season Water Table (C2) ☒ Crayfish Burrows (C8) ☐ Saturation Visible on Aerial Imagery (C9) ☐ Stunted or Stressed Plants (D1) ☐ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☒ Microtopographic Relief (D4) ☐ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): <u>0</u> Water Table Present? Yes ☒ No ☐ Depth (inches): <u>4"</u> Saturation Present? Yes ☒ No ☐ Depth (inches): <u>0'</u> (includes capillary fringe)	Wetland Hydrology Present? Yes ☒ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point WA-7

Tree Stratum (Plot size: <u>5x5m</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Betula alleghaniensis</u>	<u>35</u>	<u>Y</u>	<u>FAC</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>4</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75</u> (A/B)
4. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = FACW species _____ x 2 = FAC species _____ x 3 = FACU species _____ x 4 = UPL species _____ x 5 = Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
Sapling/Shrub Stratum (Plot size: <u>5x5m</u>) <u>35</u> = Total Cover				Hydrophytic Vegetation Indicators: ☐ 1 - Rapid Test for Hydrophytic Vegetation ☒ 2 - Dominance Test is >50% ☐ 3 - Prevalence Index is ≤3.0 ¹ ☐ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain)
1. <u>Rhododendron catawbiense</u>	<u>20</u>	<u>Y</u>	<u>FACU</u>	
2. <u>Alnus rubrum</u>	<u>25</u>	<u>Y</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
Herb Stratum (Plot size: <u>5x5ft</u>) <u>55</u> = Total Cover				Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.
1. <u>Impatiens capensis</u>	<u>20</u>	<u>Y</u>	<u>FACU</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes ☒ No ☐
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
Woody Vine Stratum (Plot size: <u>5x5ft</u>) <u>20</u> = Total Cover				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
0 = Total Cover				

Remarks: (Include photo numbers here or on a separate sheet.)

Sampling Point: WA-7

Sampling Point: _____

WA-7

[illegible]²Location: PL=Pore Lining, M=Matrix.

Indicators for Problematic Hydric Soils³:

- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (MLRA 147, 148)
- ___ Thin Dark Surface (S9) (MLRA 147, 148)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) (LRR N, MLRA 136)
- ___ Umbric Surface (F13) (MLRA 136, 122)
- ___ Piedmont Floodplain Soils (F19) (MLRA 148)
- ___ Red Parent Material (F21) (MLRA 127, 147)

- ☐ 2 cm Muck (A10) (MLRA 147)
☐ Coast Prairie Redox (A16)
 (MLRA 147, 148)
☐ Piedmont Floodplain Soils (F19)
 (MLRA 136, 147)
☐ Very Shallow Dark Surface (TF12)
 Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Type:

Depth (inches):

Hydric Soil Present? Yes ☒ No

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region *Wetland A (up)*

Project/Site: Bridge #234 City/County: Watauga Sampling Date: 7-25-14
 Applicant/Owner: NCDOT State: NC Sampling Point: WA-7
 Investigator(s): C. Sheets Section, Township, Range: Boone
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): none Slope (%): 10
 Subregion (LRR or MLRA): LR11-P Lat: 36.15756 Long: -81.64303 Datum: NAD83
 Soil Map Unit Name: Savannah loam NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☐ No ☒	Is the Sampled Area within a Wetland? Yes ☐ No ☒
Hydric Soil Present? Yes ☐ No ☒	
Wetland Hydrology Present? Yes ☐ No ☒	
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) ☐ Surface Water (A1) ☐ True Aquatic Plants (B14) ☐ High Water Table (A2) ☐ Hydrogen Sulfide Odor (C1) ☐ Saturation (A3) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Water Marks (B1) ☐ Presence of Reduced Iron (C4) ☐ Sediment Deposits (B2) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Drift Deposits (B3) ☐ Thin Muck Surface (C7) ☐ Algal Mat or Crust (B4) ☐ Other (Explain in Remarks) ☐ Iron Deposits (B5) ☐ Inundation Visible on Aerial Imagery (B7) ☐ Water-Stained Leaves (B9) ☐ Aquatic Fauna (B13)		Secondary Indicators (minimum of two required) ☐ Surface Soil Cracks (B6) ☐ Sparsely Vegetated Concave Surface (B8) ☐ Drainage Patterns (B10) ☐ Moss Trim Lines (B16) ☐ Dry-Season Water Table (C2) ☐ Crayfish Burrows (C8) ☐ Saturation Visible on Aerial Imagery (C9) ☐ Stunted or Stressed Plants (D1) ☐ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ Microtopographic Relief (D4) ☐ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): Water Table Present? Yes ☐ No ☒ Depth (inches): Saturation Present? Yes ☐ No ☒ Depth (inches): (includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WA-7 (4P)

Tree Stratum (Plot size: <u>5x5m</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Betula alleghaniensis</u>	<u>45</u>	<u>Y</u>	<u>FAC</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
4. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = FACW species _____ x 2 = FAC species _____ x 3 = FACU species _____ x 4 = UPL species _____ x 5 = Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
Sapling/Shrub Stratum (Plot size: <u>5x5m</u>) <u>45</u> = Total Cover				Hydrophytic Vegetation Indicators: ☐ 1 - Rapid Test for Hydrophytic Vegetation ☐ 2 - Dominance Test is >50% ☐ 3 - Prevalence Index is ≤3.0 ¹ ☐ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain)
1. <u>Rhododendron catabolicum</u>	<u>85</u>	<u>Y</u>	<u>FACU</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Herb Stratum (Plot size: _____) <u>85</u> = Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Woody Vine Stratum (Plot size: _____) <u>0</u> = Total Cover				Hydrophytic Vegetation Present? Yes _____ No ☒
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Remarks: (Include photo numbers here or on a separate sheet.) <u>0</u> = Total Cover				

Sampling Point: WA-Kup

[illegible]²Location: PL=Pore Lining, M=Matrix.

Indicators for Problematic Hydric Soils³:

- | | | |
|--|--|---|
| ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Muck (A10) (LRR N)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6) | ☐ Dark Surface (S7)
☐ Polyvalue Below Surface (S8) (MLRA 147, 148)
☐ Thin Dark Surface (S9) (MLRA 147, 148)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Iron-Manganese Masses (F12) (LRR N, MLRA 136)
☐ Umbric Surface (F13) (MLRA 136, 122)
☐ Piedmont Floodplain Soils (F19) (MLRA 148)
☐ Red Parent Material (F21) (MLRA 127, 147) | ☐ 2 cm Muck (A10) (MLRA 147)
☐ Coast Prairie Redox (A16) (MLRA 147, 148)
☐ Piedmont Floodplain Soils (F19) (MLRA 136, 147)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks) |
|--|--|---|
- ³Indicators of hydrophytic vegetation wetland hydrology must be present, unless disturbed or problematic.

Hydric Soil Present? Yes _____ No ☒

NC DWQ Stream Identification Form Version 4.11

STREAM A

Date: 7-26-14	Project/Site: Bridge #234	Latitude: 36.15722
Evaluator: C. Sheets	County: Wetzel	Longitude: -81.69421
Total Points: Stream is at least intermittent if ≥ 19 or perennial if $\geq 30^*$	Stream Determination (circle one) Ephemeral ☐ Intermittent ☒ Perennial ☐	Other <u>Beane 1978</u> e.g. Quad Name:

23.5

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

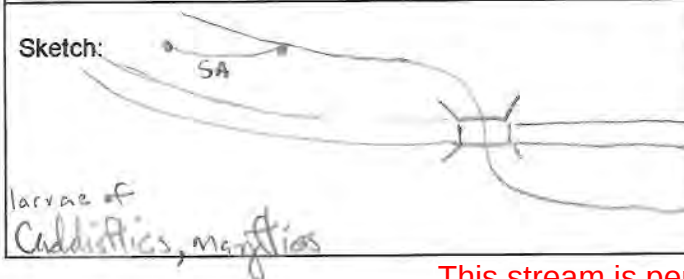
B. Hydrology (Subtotal = 6.5)	Absent	Weak	Moderate	Strong
12. Presence of Baseflow	0	1	(2)	3
13. Iron oxidizing bacteria	(0)	1	2	3
14. Leaf litter	1.5	(1)	0.5	0
15. Sediment on plants or debris	(0)	0.5	1	1.5
16. Organic debris lines or piles	0	(0.5)	1	1.5
17. Soil-based evidence of high water table?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

C. Biology (Subtotal = 9.5)	Absent	Weak	Moderate	Strong
18. Fibrous roots in streambed	3	(2)	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macroinvertebrates (note diversity and abundance)	0	1	(2)	3
21. Aquatic Mollusks	(0)	1	2	3
22. Fish	(0)	0.5	1	1.5
23. Crayfish	(0)	0.5	1	1.5
24. Amphibians	0	(0.5)	1	1.5
25. Algae	(0)	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75; OBL = 1.5 Other = 0			

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

Notes:

Sketch:



Bank Height (ft): 0.5 - 1'

Bankfull width (ft): 2 - 3'

Water depth (in): 1"

Channel substrate - Clay, Silt, Sand, Gravel, Cobble

This stream is perennial based on the presence of benthic macroinvertebrates that require perennial flows.

NC DWQ Stream Identification Form Version 4.11 STREAM SB

Date: <u>7-26-14</u>	Project/Site: <u>Bridge #234</u>	Latitude: <u>36.15800</u>
Evaluator: <u>C. Shoats</u>	County: <u>Watauga</u>	Longitude: <u>-81.69295</u>
Total Points: Stream is at least intermittent if ≥ 19 or perennial if $\geq 30^*$ <u>21.5</u>	Stream Determination (circle one) Ephemeral <u>Intermittent</u> Perennial	Other <u>None</u> e.g. Quad Name: <u>1978</u>

A. Geomorphology (Subtotal = <u>9</u>)				
	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 = <u>6</u>)				
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 = <u>6.5</u>)				
18. Fibrous roots in streambed	3	(2)	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macroinvertebrates (note diversity and abundance)	0	(1)	2	3
21. Aquatic Mollusks	(0)	1	2	3
22. Fish	(0)	0.5	1	1.5
23. Crayfish	(0)	0.5	1	1.5
24. Amphibians	0	(0.5)	1	1.5
25. Algae	(0)	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75; OBL = 1.5 Other = 0			

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

Notes:

Sketch:

Bank Height (ft) 0.5'

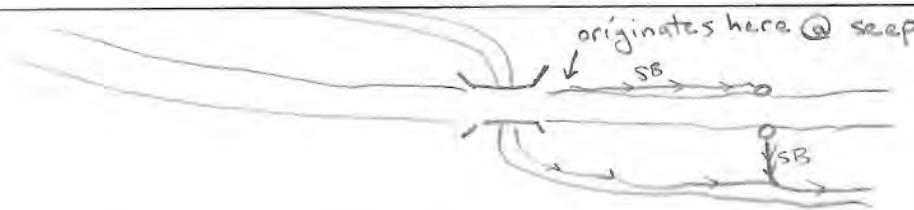
Bankfull width (ft) 3'

Water depth (in) 1"

Channel substrate - Clay, Silt, Sand, Gravel, Cobble, Bedrock

Velocity - fast, moderate, slow

Clarity - clear, slightly turbid, turbid



NC DWQ Stream Identification Form Version 4.11 STREAM SC

Date: <u>7-26-14</u>	Project/Site: <u>Bridge #234</u>	Latitude: <u>36.15785</u>
Evaluator: <u>C. Shurts</u>	County: <u>Watauga</u>	Longitude: <u>-81.69269</u>
Total Points: Stream is at least intermittent if ≥ 19 or perennial if $\geq 30^*$ <u>19</u>	Stream Determination (circle one) Ephemeral <u>Intermittent</u> <u>Perennial</u>	Other <u>Boone</u> e.g. Quad Name: <u>1978</u>

A. Geomorphology (Subtotal = <u>5.5</u>)				
	Absent	Weak	Moderate	Strong
1 ^a . Continuity of channel bed and bank	0	1	<u>(2)</u>	3
2. Sinuosity of channel along thalweg	0	<u>(1)</u>	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	<u>(0)</u>	1	2	3
4. Particle size of stream substrate	0	<u>(1)</u>	2	3
5. Active/relict floodplain	0	<u>(1)</u>	2	3
6. Depositional bars or benches	<u>(0)</u>	1	2	3
7. Recent alluvial deposits	<u>(0)</u>	1	2	3
8. Headcuts	<u>(0)</u>	1	2	3
9. Grade control	<u>(0)</u>	0.5	1	1.5
10. Natural valley	0	<u>(0.5)</u>	1	1.5
11. Second or greater order channel	No <u>(0)</u>		Yes = 3	

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

B. Hydrology (Subtotal = <u>6</u>)				
12. Presence of Baseflow	0	<u>(1)</u>	2	3
13. Iron oxidizing bacteria	<u>(0)</u>	1	2	3
14. Leaf litter	1.5	<u>(1)</u>	0.5	0
15. Sediment on plants or debris	0	<u>(0.5)</u>	1	1.5
16. Organic debris lines or piles	0	<u>(0.5)</u>	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes <u>(3)</u>	

C. Biology (Subtotal = <u>7.5</u>)				
18. Fibrous roots in streambed	<u>(3)</u>	2	1	0
19. Rooted upland plants in streambed	<u>(3)</u>	2	1	0
20. Macroinvertebrates (note diversity and abundance)	0	<u>(1)</u>	2	3
21. Aquatic Mollusks	<u>(0)</u>	1	2	3
22. Fish	<u>(0)</u>	0.5	1	1.5
23. Crayfish	<u>(0)</u>	0.5	1	1.5
24. Amphibians	0	<u>(0.5)</u>	1	1.5
25. Algae	<u>(0)</u>	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:

Bank Height (ft) 6"

Bankfull width (ft) 2'

Water depth (in) 1"

Channel substrate - Clay, Silt, Sand, Gravel, Cobble, Bedrock

Velocity - fast, moderate, slow

Clarity - clear, slightly turbid, turbid



Caddisfly, mayfly larvae

Benthic macroinvertebrates that require perennial flow are present.