CHATHAM COUNTY
NORTH CAROLINA

WATERSHED PROTECTION DEPARTMENT

P.O. Box 548
Pittsboro, NC 27312
PHONE: (919) 545-8394

Fax: (919) 542-2698 ● E-mail: drew.blake@chathamnc.org ● Website: www.chathamnc.org

October 4, 2018

Soil & Environmental Consultants, PA
Mr. Steven Ball
8412 Falls of Neuse Road, Suite 104
Raleigh, NC 27615

Project Name:	Morgan Ridge Phase 2 Subdivision Parcel #'s 69883 & 1435
Location:	Emily Lane, Chatham County
Subject Features:	Two (2) intermittent streams, two (2) perennial streams, and four (4) wetlands
Date of Determination:	September 10, 2018

Explanation:
The site visit was completed on September 10, 2018 by Drew Blake with the Chatham County Watershed Protection Department and Steven Ball of Soil and Environmental Consultants, PA (S&EC), on Parcel #'s 69883 and 1435 that are located within the Jordan Lake watershed. S&EC personnel completed a previous site visit which resulted in the identification of two (2) intermittent streams (streams B & C), two (2) perennial streams (streams A & D), and four (4) wetlands on the property. S&EC submitted a request for Chatham County to complete a formal review to determine if the features would be subject to riparian buffers according to Section 304 of the Chatham County Watershed Protection Ordinance. All points of origin, stream type transitions, and wetland boundaries were reviewed and agreed to in the field. Additionally, personnel from the U.S. Army Corps of Engineers (USACE) had previously completed an on-site review of the consultant's findings as depicted on the Stream & Wetland Delineation Sketch Map.

Required Riparian Buffers:
Streams B and C will require a 50-ft buffer from the top of bank landward on both sides of the features. Streams A and D will require a 100-ft buffer from the top of bank landward on both sides of the features. All jurisdictional wetlands (W1, W2, and W3) will require a 50-ft buffer proceeding landward from the flagged wetland boundary in accordance with Section 304 (A) of the Chatham County Watershed Protection Ordinance. Wetland 3 (W3) was determined to be an isolated wetland by the USACE and is proposed to be filled in by the developer pending 401/404 permitting requirements and approvals. It is recommended that you contact Jason Sullivan, Planning Department Director, regarding the Major Subdivision Process in relation to the proposed filling of Wetland 3.

This on-site determination shall expire five (5) years from the date of this letter. Landowners or affected parties that dispute a determination made by Chatham County, on parcels outside of the Jordan Lake watershed, may submit a request for appeal in writing to the Watershed Review Board. A request for a determination by the Watershed Review Board shall be made in accordance with Section 304 of the Chatham County Watershed Protection Ordinance. Landowners or affected parties that dispute a determination made by Chatham County, on parcels inside the Jordan Lake watershed, shall submit a

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request for appeal in writing to NC DWR, 401 & Buffer Permitting Unit, 1650 Mail Service Center, Raleigh, NC 27669-1650 attention of the Director of the NC Division of Water Quality.

Should this project result in any direct impacts to surface water features (i.e., crossing and/or filling streams or wetlands) additional reviews may be necessary. Additionally, a Section 404/401 Permit may be required. Any inquiries regarding Section 404/401 permitting should be directed to the Division of Water Resources (Central Office) at (919)-807-6364 and the US Army Corp of Engineers (Raleigh Regulatory Field Office) at (919)-554-4884.

Respectfully,

Drew Blake

Drew Blake
Watershed Specialist

Enclosures: Riparian Buffer Review Application, submitted on 8/22/18
Agent Authorization Form
S&EC Wetland Data Forms 1-3
S&EC Stream Determination Forms
Post USACE Map provided by S&EC

cc: Rachael Thorn, Chatham County Watershed Protection Director
Kimberly Tyson, Planner II/Subdivision Administrator
Angela Birchett, Chatham County Zoning Administrator
Jason Sullivan, Chatham County Director of Planning

Watershed Protection Department
Website: www.chathamnc.org

Date Received: 8/22/18 PL# 2018-1778

Riparian Buffer Review Application
Surface Water Identification Request for
Major Subdivisions

Tract Information

Parcel #: 69883 and 1435 Watershed District (and name of creek if known): _____

Property Owner: Warren Bruce Page, Robert Bruce Page and Douglas Page

Location/Physical Address of Tract: Emily Lane

Driving Directions from Pittsboro: Take 15/501 north to manns chapel Rd; turn left..then right on Poythress Rd
Then take a left on Gilmore Rd, which turns into Emily Lane. Site will be on the gravel section, on right.

Subdivision Name (if applicable): _____

Owner's/Agent Contact Information (Agent: Consultant, Real Estate Agent, Surveyor, Other) Circle one

Name: Steven Ball, S&EC

Contact Phone Numbers: (h) _____ (w) 919-846-5900 (c) _____

E-mail: sball@sandec.com

Mailing Address: 8412 Falls of Neuse Road, Suite 104 Raleigh, NC 27615

Do you wish to be contacted prior to Chatham County staff visiting the property? ☑ Yes ☐ No

How much notice is required prior to arrival onsite? Will need to review site with County

How would you like to receive the completed review letter? (Please check one of the following)
☐ I would like to pick up the completed Riparian Buffer Review at the County Office
☐ I would like the completed Riparian Buffer Review mailed to me
☑ I would like the completed Riparian Buffer Review e-mailed to me

Please include the following items with this request
☑ Completed consultant findings report including the following:
- ☑ GIS generated or hand drawn sketch of surface water features found onsite (Buffer Plan Sheet)
  No smaller than 1"=60' and paper size 11"x17" or larger
- ☑ NCDWQ Stream Identification Forms, Version 4.11, Wetland Determination Data Form –

Watershed Protection Department
Website: www.chathamnc.org

Riparian Buffer Review Application
Surface Water Identification Request

Eastern Mountains and Piedmont Region, digital photographs, notes, sketches, etc.

☑ NRCS map with property boundary depicted

☑ USGS map with property boundary depicted

☑ Statement of Credentials (Training Certificate for NCDWQ/NC State University Surface Waters Classification course, 2 years of jurisdictional wetland delineation according to the Eastern Mountains and Piedmont Regional Supplement to the 1987 US Corps of Engineers Wetland Delineation Manual)

☑ Signed Right to Enter Property Form

☑ Signed Owner's Agent Designation Form

☐ Fee (make checks payable to Chatham County) **$100 per feature confirmed onsite**

Feature *is defined as any surface water that is subject to Chatham County Riparian Buffers (streams, wetlands, ponds)*

Total Number of Features: 7 Total Paid: $700

I have read and understand the regulations of the Watershed Protection Ordinance, Section 304, and I agree to adhere to these associated policies and guidelines herein.

Owner/Agent Signature: Steven Ball Digitally signed by Steven Ball DN: cn=Steven Ball, o, ou=S&EC, email=sball@sandec.com, c=US Date: 2018.08.22 12:45:35 -04'00' Date: 8/22/18

CHATHAM COUNTY
NORTH CAROLINA

LAND & WATER RESOURCES DIVISION
Environmental Quality Department

PHONE: (919) 545-8204

Website: www.chathamnc.org

AUTHORIZED AGENT FOR LEGAL REPRESENTATION FORM

PROPERTY LEGAL DESCRIPTION:

LOT NO. N/A PARCEL ID (PIN) 1435 PARCEL SIZE 24 AC

STREET ADDRESS: OFF JONES FERRY ROAD

Please print:
Property Owner: WILLIAM BRUCE PAGE

Property Owner: _____

The undersigned, owner(s) of the above described property, do hereby authorize

Warren Mitchell, of Warren D. Mitchell, PE
(Contractor/Agent) (Name of consulting firm if applicable)
Steve Bay S&EC

to act on my/our behalf and take all actions, I/we could have taken if present, necessary for the processing, issuance and acceptance of reviews, inspections, or permits and any and all standard and special conditions attached to these approvals. The activities authorized include the following (**initial all that apply**):

___Building Permit
___Zoning Compliance Permits
___Floodplain Determination
X Soil Erosion and Sedimentation Control Permit
___Permits to install, repair, evaluate, or expand onsite wastewater system(s)
___Evaluation/inspection/permitting of a private drinking water well(s)
X Riparian Buffer Review pursuant to §304 of the Chatham County Watershed Protection Ordinance
___Other: _____

Property Owner's Address (if different than property above):

_____

Owner Telephone: 919-942-2641 Email: WPAGE10@NC.RR.COM

We hereby certify the above information submitted in this application is true and accurate to the best of our knowledge.

William B. Page
Owner Authorized Signature

Date: 8/17/18

Agent Authorized Signature

Date: 8-16-18 8/22/18

Applications can be mailed to: Planning Dept., PO Box 54, Pittsboro, NC 27312
For Questions, please contact: Lynn Richardson at 919-542-8207
Revised 3/2014

CHATHAM COUNTY
NORTH CAROLINA

LAND & WATER RESOURCES DIVISION
Environmental Quality Department

PHONE: (919) 545-8204

Website: www.chathamnc.org

AUTHORIZED AGENT FOR LEGAL REPRESENTATION FORM

PROPERTY LEGAL DESCRIPTION:

LOT NO. NA PARCEL ID (PIN) 69883 PARCEL SIZE 56.25 ac.

STREET ADDRESS: OFF JONES FERRY ROAD

Please print:
Property Owner: ROBERT BRUCE PAGE

Property Owner: DOUGLAS PAGE

The undersigned, owner(s) of the above described property, do hereby authorize

Warren Mitchell, of Warren D. Mitchell, PE
(Contractor/Agent) (Name of consulting firm if applicable)
Steven Ball BTEC

to act on my/our behalf and take all actions, I/we could have taken if present, necessary for the processing, issuance and acceptance of reviews, inspections, or permits and any and all standard and special conditions attached to these approvals. The activities authorized include the following (**initial all that apply**):

____Building Permit
____Zoning Compliance Permits
____Floodplain Determination
__X__Soil Erosion and Sedimentation Control Permit
____Permits to install, repair, evaluate, or expand onsite wastewater system(s)
____Evaluation/inspection/permitting of a private drinking water well(s)
__X__Riparian Buffer Review pursuant to §304 of the Chatham County Watershed Protection Ordinance
____Other:_____

Property Owner's Address (if different than property above):

Owner Telephone: _____ Email: dpage@hopnc.org

We hereby certify the above information submitted in this application is true and accurate to the best of our knowledge.

DocuSigned by:
Douglas E. Page
EB2AE46E9DD9445...
Owner Authorized Signature

Date: 8/20/2018 | 8:56:09 AM EDT

Agent Authorized Signature

Date: 8-16-18

8/22/18

Applications can be mailed to: Planning Dept., PO Box 54, Pittsboro, NC 27312
For Questions, please contact: Lynn Richardson at 919-542-8207
Revised 3/2014

CHATHAM COUNTY
NORTH CAROLINA

LAND & WATER RESOURCES DIVISION
Environmental Quality Department

PHONE: (919) 545-8204

Website: www.chathamnc.org

AUTHORIZED AGENT FOR LEGAL REPRESENTATION FORM

PROPERTY LEGAL DESCRIPTION:

LOT NO. NA PARCEL ID (PIN) 69883 PARCEL SIZE 56.25 ac.

STREET ADDRESS: OFF JONES FERRY ROAD

Please print:
Property Owner: ROBERT BRUCE PAGE

Property Owner: DOUGLAS PAGE

The undersigned, owner(s) of the above described property, do hereby authorize

Warren Mitchell, of Warren D. Mitchell, PE
(Contractor/Agent) (Name of consulting firm if applicable)
Steven Ball SEC

to act on my/our behalf and take all actions, I/we could have taken if present, necessary for the processing, issuance and acceptance of reviews, inspections, or permits and any and all standard and special conditions attached to these approvals. The activities authorized include the following (**initial all that apply**):

____Building Permit
____Zoning Compliance Permits
____Floodplain Determination
X Soil Erosion and Sedimentation Control Permit
____Permits to install, repair, evaluate, or expand onsite wastewater system(s)
____Evaluation/inspection/permitting of a private drinking water well(s)
X Riparian Buffer Review pursuant to §304 of the Chatham County Watershed Protection Ordinance
____Other:_____

Property Owner's Address (if different than property above):

_____

Owner Telephone: _____ Email: Autopage@aol.com

We hereby certify the above information submitted in this application is true and accurate to the best of our knowledge.

DocuSigned by:
Bruce Page
D261EE18A8D048B...
Owner Authorized Signature

Agent Authorized Signature

Date: 8/17/2018 | 10:33:04 AM EDT

Date: 8-16-18

8/22/18

Applications can be mailed to: Planning Dept., PO Box 54, Pittsboro, NC 27312
For Questions, please contact: Lynn Richardson at 919-542-8207
Revised 3/2014

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Page Property City/County: Chatham Sampling Date: 4/3/18
Applicant/Owner: Jones Ferry Properties, LLC State: NC Sampling Point: DP1
Investigator(s): S&EC - SB Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hilltop Local relief (concave, convex, none): Concave Slope (%): 0%
Subregion (LRR or MLRA): MLRA 136 Lat: 35.858441 Long: -79.155782 Datum: NAD 83
Soil Map Unit Name: WoB 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 [ ], Soil [ ], or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes [✓] No [ ]
Are Vegetation [ ], Soil [ ], or Hydrology [ ] 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)
- [ ] High Water Table (A2)
- [✓] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [✓] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] True Aquatic Plants (B14)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres on Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

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? (includes capillary fringe) Yes [✓] No [ ] Depth (inches): 5"

Wetland Hydrology Present? Yes [✓] No [ ]

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: DP1

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus taeda	60%	Yes	FAC
2. Liquidambar styraciflua	30%	Yes	FAC
3.			
4.			
5.			
6.			
	90% = Total Cover		
50% of total cover: 45%	20% of total cover: 18%		
Sapling Stratum (Plot size: 30' Radius)			
1. Liquidambar styraciflua	40%	Yes	FAC
2. Acer rubrum	20%	Yes	FAC
3. Juniperus virginiana	20%	Yes	FACU
4. Fagus grandifolia	10%	No	FACU
5.			
6.			
	90% = Total Cover		
50% of total cover: 45%	20% of total cover: 18%		
Shrub Stratum (Plot size: 30' Radius)			
1. Ilex opaca	30%	Yes	FACU
2.			
3.			
4.			
5.			
6.			
	30% = Total Cover		
50% of total cover: 15%	20% of total cover: 6%		
Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Woody Vine Stratum (Plot size: 30' Radius)			
1. Smilax rotundifolia	20%	Yes	FAC
2.			
3.			
4.			
5.			
	20% = Total Cover		
50% of total cover: 10%	20% of total cover: 4%		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 71% (A/B)

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 =

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]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ☑ No ☐

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

SOIL Sampling Point: DP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20"	2.5Y 6/2	85%	2.5Y 6/8	15%	D	M	CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ 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)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 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)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ☑ **No** ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Page Property City/County: Chatham Sampling Date: 4/3/18
Applicant/Owner: Jones Ferry Properties, LLC State: NC Sampling Point: DP2
Investigator(s): S&EC - SB Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Concave Slope (%): 0
Subregion (LRR or MLRA): MLRA 136 Lat: 35.858755 Long: -79.155796 Datum: NAD 83
Soil Map Unit Name: WoB 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 [ ], Soil [ ], or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes [✓] No [ ]
Are Vegetation [ ], Soil [ ], or Hydrology [ ] 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)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] True Aquatic Plants (B14)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres on Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

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? (includes capillary fringe) Yes [ ] No [✓] Depth (inches): _____

Wetland Hydrology Present? Yes [ ] No [✓]

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: DP2

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Liquidambar styraciflua	20%	Yes	FAC
2. Pinus taeda	60%	Yes	FAC
3. Acer rubrum	20%	Yes	FAC
4.			
5.			
6.			
	100% = Total Cover		
50% of total cover: 50%	20% of total cover: 20%		
Sapling Stratum (Plot size: 30' Radius)			
1. Juniperus virginiana	20%	Yes	FACU
2. Acer rubrum	30%	Yes	FAC
3. Liquidambar styraciflua	30%	Yes	FAC
4. Cornus florida	10%	No	FACU
5.			
6.			
	90% = Total Cover		
50% of total cover: 45%	20% of total cover: 18%		
Shrub Stratum (Plot size: 30' Radius)			
1. Ilex opaca	10%	Yes	FACU
2.			
3.			
4.			
5.			
6.			
	10% = Total Cover		
50% of total cover: 5%	20% of total cover: 2%		
Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Woody Vine Stratum (Plot size: 30' Radius)			
1. Smilax rotundifolia	20%	Yes	FAC
2.			
3.			
4.			
5.			
	20% = Total Cover		
50% of total cover: 10%	20% of total cover: 4%		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)

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 =

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]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ☑ No ☐

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

SOIL Sampling Point: DP2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20"	2.5Y 6/3	70%	2.5Y 6/6	30%				

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ 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)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 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)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ☐ **No** ☑

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Page Property City/County: Chatham Sampling Date: 6/27/18
Applicant/Owner: Jones Ferry Properties, LLC State: NC Sampling Point: DP3
Investigator(s): S&EC - SB Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): Sideslope depression Local relief (concave, convex, none): Concave Slope (%): 0%
Subregion (LRR or MLRA): MLRA 136 Lat: 35.858420 Long: -79.155891 Datum: NAD 83
Soil Map Unit Name: WoB 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 [ ], Soil [ ], or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes [✓] No [ ]
Are Vegetation [ ], Soil [ ], or Hydrology [ ] 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)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] True Aquatic Plants (B14)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres on Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

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? (includes capillary fringe) Yes [ ] No [✓] Depth (inches): _____

Wetland Hydrology Present? Yes [✓] No [ ]

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Hydrology is weak; no Primary indicators currently

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: DP3

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus taeda	25%	Yes	FAC
2. Liquidambar styraciflua	25%	Yes	FAC
3. Fraxinus pennsylvanica	10%	No	FACW
4. Carya tomentosa	20%	Yes	FACU
5.			
6.			
	80% = Total Cover		
50% of total cover: 40%	20% of total cover: 16%		
Sapling Stratum (Plot size: 30' Radius)			
1. Liquidambar styraciflua	10%	No	FAC
2. Acer rubrum	10%	No	FAC
3. Juniperus virginiana	30%	Yes	FACU
4. Carya tomentosa	35%	Yes	FACU
5. Quercus alba	15%	No	FACU
6.			
	100% = Total Cover		
50% of total cover: 50%	20% of total cover: 20%		
Shrub Stratum (Plot size: 30' Radius)			
1. Ilex opaca	30%	Yes	FACU
2.			
3.			
4.			
5.			
6.			
	30% = Total Cover		
50% of total cover: 15%	20% of total cover: 6%		
Herb Stratum (Plot size: 30' Radius)			
1. Carex sp	10%	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	10% = Total Cover		
50% of total cover: 5%	20% of total cover: 2%		
Woody Vine Stratum (Plot size: 30' Radius)			
1. Smilax rotundifolia	5%	No	FAC
2. Vitis rotundifolia	20%	Yes	FAC
3. Toxicodendron radicans	5%	No	Fac
4.			
5.			
	30% = Total Cover		
50% of total cover: 15%	20% of total cover: 6%		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species 20	x 2 = 40
FAC species 100	x 3 = 300
FACU species 130	x 4 = 520
UPL species	x 5 =
Column Totals: 250 (A)	880 (B)

Prevalence Index = B/A = 3.52

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]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

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Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ☐ No ☑

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

SOIL

Sampling Point: DP3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20"	2.5Y 6/2	85%	2.5Y 6/8	15%	D	M	CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ 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)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 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)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ☑ **No** ☐

Remarks:

C

NC DWQ Stream Identification Form Version 4.11

Date: 4/6/18	**Project/Site:** Emily Ln	**Latitude:**
Evaluator: DM	**County:** Chatham	**Longitude:**
Total Points: 22 *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 = 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 = 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 = 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:

NC DWQ Stream Identification Form Version 4.11

Date: 4/3/18	**Project/Site:**	**Latitude:**
Evaluator: PM	**County:** Chatham	**Longitude:**
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** 22.5	**Stream Determination (circle one)** Ephemeral Intermittent Perennial	**Other** *e.g. Quad Name:*

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

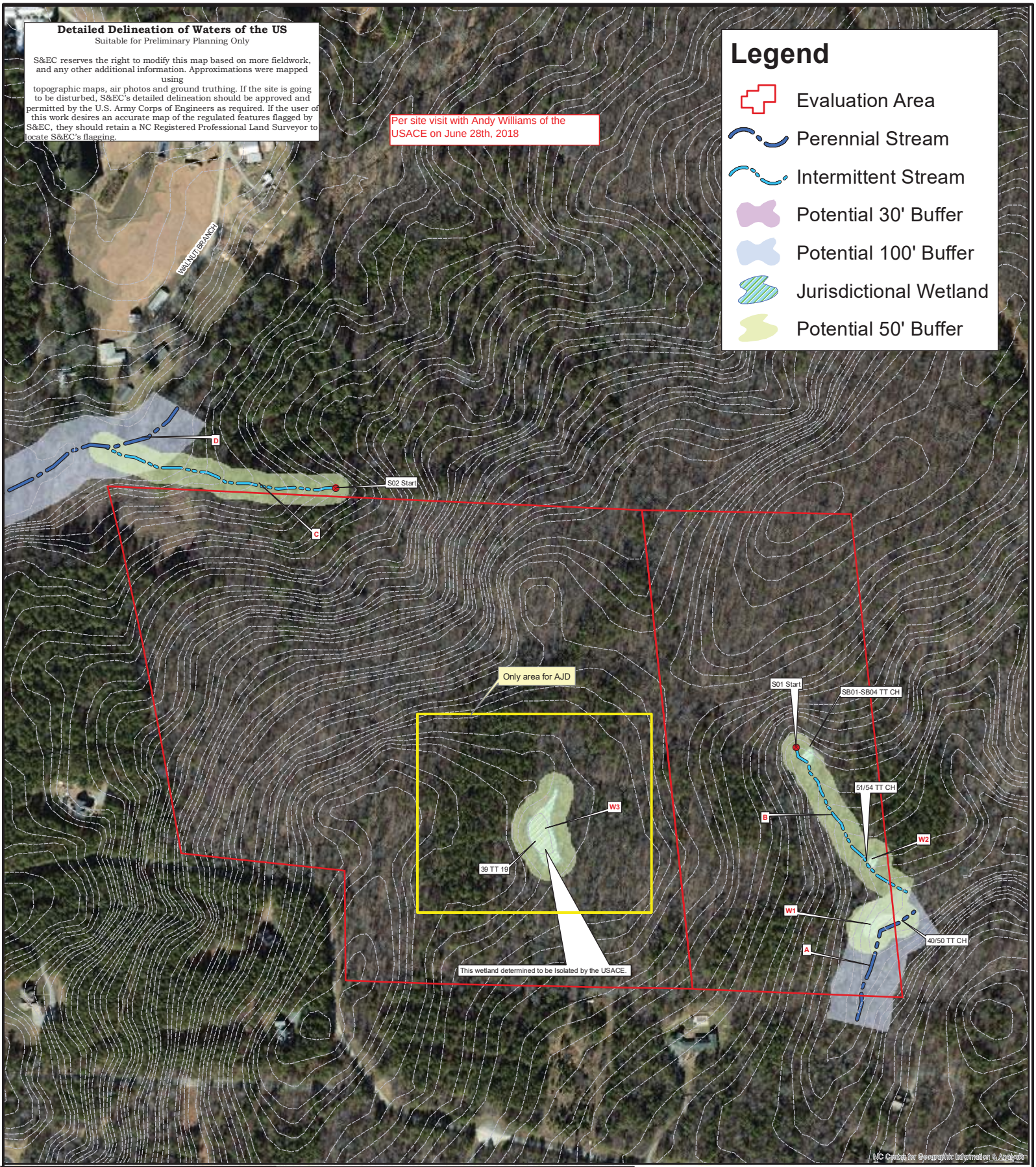
B. Hydrology (Subtotal = 6)				
12. Presence of Baseflow	0	1	2	3
13. Iron oxidizing bacteria	0	1	2	3
14. Leaf litter	1.5	1	0.5	0
15. Sediment on plants or debris	0	0.5	1	1.5
16. Organic debris lines or piles	0	0.5	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3	

C. Biology (Subtotal = 5.5)				
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:



Project Number:	13470.W1
Project Manager:	SB
Scale:	1" = 200'
Date:	8/6/18

Map Title: **Figure 3 - Sketch Map**

Page Property/Jones Ferry Site
Chatham County, NC

Map updated by: **Aerials from NCOne Map**
Chatham County GIS

0 200 400 800 Feet

N W E S

S&EC Soil & Environmental Consultants, PA