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 28, 2019

Sean Clark
Sage Ecological
3707 Swift Drive
Raleigh, NC 27606

Project Name:	Chestnut Creek Subdivision - Parcel 1439
Location:	Jones Ferry Road, Chatham County
Subject Features:	Two (2) ephemeral streams, four (4) intermittent streams, three (3) perennial streams, and twelve (12) wetlands
Date of Determination:	July 10, 2019

Explanation:
The site visit was completed on July 10, 2019 by Drew Blake with the Chatham County Watershed Protection Department, Sean Clark of Sage Ecological Services (Sage), and Jean Gibby of the US Army Corps of Engineers, on Parcel # 1439 that is located within the Jordan Lake watershed. Sage personnel completed a previous site visit which resulted in the identification of two (2) ephemeral streams, four (4) intermittent streams, three (3) perennial streams, and twelve (12) wetlands on the property. Sage 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 by all parties in attendance.

Required Riparian Buffers:
The two (2) ephemeral streams will require a 30-ft buffer from the top of bank landward on both sides of the features. The four (4) intermittent streams will require a 50-ft buffer from the top of bank landward on both sides of the features. The three (3) perennial streams will require a 100-ft buffer from the top of bank landward on both sides of the features. All jurisdictional wetlands 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.

Proposed Buffer Impacts:
Submittal of a No Practical Alternatives Authorization Application, in accordance with Section 304 (I) of the Chatham County Watershed Protection Ordinance, must occur if this project results in impacts to riparian buffers. Submittal of a No Practical Alternatives Authorization will be required for all septic lines that cross riparian buffers to access off site septic systems. No Practical Alternatives Authorization Applications must be submitted prior to or at the same time as the projects Soil Erosion and Sedimentation Control Plans. All approvals for the No Practical Alternatives Authorization must be

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

received prior to submitting for Construction Plan approval from the Chatham County Planning Department.

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 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
Senior Watershed Specialist, CESSWI

Enclosures: Post USACE/Chatham County Wetland Sketch Map provided by Sage Ecological Services
Sage Stream Determination Forms
Sage Wetland Data Forms
NRCS Soil Survey Map
USGS Topographic Map
Surface Water ID Application
Agent Authorization Form
Authorization to Enter Property Form

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

NOTE: Location, shape and size of depicted features on the evaluated site are approximate and should be surveyed by a licensed NC surveyor for final site planning.

Walnut Branch Road

SC02 Start Ephemeral Stream

SC03 Start Intermittent Stream

WE11

WE10

WE01 TT Stream

SE03 Start Int. Low

WE22 TT Stream

WF18 TT Stream

WF10 TT Stream

SF01 CL 3' Intermittent

WF01 TT Stream

WF05 TT Stream

SF02 CL 4' Start Perennial

WF30 TT Stream

WF31 TT Stream

WF54A TT Stream

WF68

SF02 CL 4' Stop Perennial Start Intermittent

WF87 TT Stream

WF22 & WF32 TT WF21 CL

WF20 CL TT Stream

WF44B TT Stream

WF111 TT Stream

WF112 TT Stream

WC01 TT Stream

WC03 CL TT Stream

WF60 TT Stream

ED01 Start Eph.

SC04 CL 4' Start Perennial

WC01 CL 3'

WC04 CL 3'

WC05 CL TT Stream

WA23 TT PL

WA24 TT PL

WA34

WA100 TT Stream

WA11 TT WA17

WA107 TT Stream

WA10 TT Stream

WA05 CL 3'

WA03 CL 3'

WA304 TT WA300

WA203 & WA225 TT WA202 CL

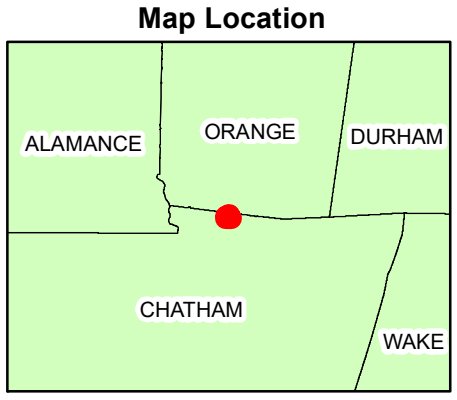
WA46 TT Stream

Legend

- Project Study Area
- Ephemeral Stream - Subject to 30-Foot Chatham County Regulated Riparian Buffer
- Intermittent Stream - Jurisdictional Waters of the U.S.; Subject to 50-Foot Chatham County Regulated Riparian Buffer
- Perennial Stream - Jurisdictional Waters of the U.S.; Subject to 100-Foot Chatham County Regulated Riparian Buffer
- Wetlands - Jurisdictional Waters of the U.S.; Subject to 50-Foot Chatham County Regulated Riparian Buffer

NC OneMap, NC Center for Geographic Information and Analysis, NC 911 Board

Map Location



Post USACE/ Chatham County Wetland Sketch Map

Jones Ferry Project
Sage Project # 2019.25

July 18, 2019

N

0 125 250 Feet

Figure 3

Drawn By:
David Gainey

Sage Ecological Services, Inc.
Office: 919-335-6757
Cell: 919-559-1537

NC DWQ Stream Identification Form Version 4.11

Stream Form B1

Date: Mar 22, 2019	**Project/Site:** Jones Ferry Road Site	**Latitude:** 35.862295
Evaluator: Sean Clark and David Gainey	**County:** Chatham	**Longitude:** -79.161304
Total Points: 15 Stream is at least intermittent if ≥19 or perennial if ≥30	**Stream Determination:** N/A	**Other:** *e.g. Quad Name*:

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

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

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

C. Biology (Subtotal = 4)	Absent	Weak	Moderate	Strong	SCORE
18. Fibrous roots in streambed	3	2	1	0	0
19. Rooted upland plants in streambed	3	2	1	0	1
20. Macrobenthos (note diversity and abundance)	0	1	2	3	0
21. Aquatic Mollusks	0	1	2	3	0
22. Fish	0	0.5	1	1.5	0
23. Crayfish	0	0.5	1	1.5	1
24. Amphibians	0	0.5	1	1.5	0.5
25. Algae	0	0.5	1	1.5	0
26. Wetland plants in streambed	FACW=0.75; OBL=1.5 Other=0				1.5

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

Notes:
This area is a large wetland within the confluence of two drainages and the floodplain of the perennial Meadow Branch. No channel or bed and bank existed within the reviewed area.

Bank Height (feet)	0
Bankfull Width (feet)	0
Water Depth (inches)	0
Channel Substrate	N/A
Velocity:	N/A
Clarity:	N/A

Sketch:

NC DWQ Stream Identification Form Version 4.11

Stream Form C1

Date: Mar 22, 2019	**Project/Site:** Jones Ferry Road Site	**Latitude:** 35.864243
Evaluator: David Gainey	**County:** Chatham	**Longitude:** -79.164033
Total Points: 14.5 Stream is at least intermittent if ≥19 or perennial if ≥30	**Stream Determination:** Ephemeral	**Other:** *e.g. Quad Name*:

A. Geomorphology (Subtotal = 8.5)	Absent	Weak	Moderate	Strong	SCORE
1[a]. Continuous bed and bank	0	1	2	3	1
2. Sinuosity of channel along thalweg	0	1	2	3	1
3. In-Channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3	0
4. Particle size of stream substrate	0	1	2	3	1
5. Active/relic floodplain	0	1	2	3	1
6. Depositional bars or benches	0	1	2	3	1
7. Recent alluvial deposits	0	1	2	3	1
8. Headcuts	0	1	2	3	1
9. Grade controls	0	0.5	1	1.5	1
10. Natural valley	0	0.5	1	1.5	0.5
11. Second or greater order channel	No = 0		Yes = 3		0

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

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

C. Biology (Subtotal = 4)	Absent	Weak	Moderate	Strong	SCORE
18. Fibrous roots in streambed	3	2	1	0	1
19. Rooted upland plants in streambed	3	2	1	0	3
20. Macrobenthos (note diversity and abundance)	0	1	2	3	0
21. Aquatic Mollusks	0	1	2	3	0
22. Fish	0	0.5	1	1.5	0
23. Crayfish	0	0.5	1	1.5	0
24. Amphibians	0	0.5	1	1.5	0
25. Algae	0	0.5	1	1.5	0
26. Wetland plants in streambed	FACW=0.75; OBL=1.5 Other=0				0

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

Notes:

Bank Height (feet)	0.5-1.5
Bankfull Width (feet)	1-3
Water Depth (inches)	0
Channel Substrate	Clay
Velocity:	N/A
Clarity:	N/A

Sketch:

NC DWQ Stream Identification Form Version 4.11

Stream Form C2

Date: Mar 22, 2019	**Project/Site:** Jones Ferry Road Site	**Latitude:** 35.861848
Evaluator: David Gainey	**County:** Chatham	**Longitude:** -79.163736
Total Points: 19 Stream is at least intermittent if ≥19 or perennial if ≥30	**Stream Determination:** Intermittent	**Other:** *e.g. Quad Name*:

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

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

B. Hydrology (Subtotal = 2.5)	Absent	Weak	Moderate	Strong	SCORE
12. Presence of Baseflow	0	1	2	3	0
13. Iron oxidizing bacteria	0	1	2	3	0
14. Leaflitter	1.5	1	0.5	0	1
15. Sediment on plants or debris	0	0.5	1	1.5	0.5
16. Organic debris lines or piles	0	0.5	1	1.5	1
17. Soil-based evidence of high water table?	No = 0		Yes = 3		0

C. Biology (Subtotal = 5.5)	Absent	Weak	Moderate	Strong	SCORE
18. Fibrous roots in streambed	3	2	1	0	2
19. Rooted upland plants in streambed	3	2	1	0	3
20. Macrobenthos (note diversity and abundance)	0	1	2	3	0
21. Aquatic Mollusks	0	1	2	3	0
22. Fish	0	0.5	1	1.5	0
23. Crayfish	0	0.5	1	1.5	0
24. Amphibians	0	0.5	1	1.5	0.5
25. Algae	0	0.5	1	1.5	0
26. Wetland plants in streambed	FACW=0.75; OBL=1.5 Other=0				0

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

Notes:

Bank Height (feet)	1-2
Bankfull Width (feet)	1-3
Water Depth (inches)	0
Channel Substrate	Clay
Velocity:	N/A
Clarity:	N/A

Sketch:

NC DWQ Stream Identification Form Version 4.11

Stream Form C3

Date: Jul 10, 2019	**Project/Site:** Jones Ferry Road Site	**Latitude:** 35.862024
Evaluator: Sean Clark	**County:** Chatham	**Longitude:** -79.163118
Total Points: 34.5 Stream is at least intermittent if ≥19 or perennial if ≥30	**Stream Determination:** Perennial	**Other:** *e.g. Quad Name*:

A. Geomorphology (Subtotal = 16)	Absent	Weak	Moderate	Strong	SCORE
1[a]. Continuous bed and bank	0	1	2	3	3
2. Sinuosity of channel along thalweg	0	1	2	3	2
3. In-Channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3	3
4. Particle size of stream substrate	0	1	2	3	1
5. Active/relic floodplain	0	1	2	3	1
6. Depositional bars or benches	0	1	2	3	2
7. Recent alluvial deposits	0	1	2	3	1
8. Headcuts	0	1	2	3	1
9. Grade controls	0	0.5	1	1.5	1
10. Natural valley	0	0.5	1	1.5	1
11. Second or greater order channel	No = 0		Yes = 3		0

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

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

C. Biology (Subtotal = 10)	Absent	Weak	Moderate	Strong	SCORE
18. Fibrous roots in streambed	3	2	1	0	2
19. Rooted upland plants in streambed	3	2	1	0	3
20. Macrobenthos (note diversity and abundance)	0	1	2	3	2
21. Aquatic Mollusks	0	1	2	3	0
22. Fish	0	0.5	1	1.5	0
23. Crayfish	0	0.5	1	1.5	1
24. Amphibians	0	0.5	1	1.5	1.5
25. Algae	0	0.5	1	1.5	0.5
26. Wetland plants in streambed	FACW=0.75; OBL=1.5 Other=0				0

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

Notes:
This form was completed immediately following the USACE/ Chatham County site meeting on July 10, 2019. At this time pools and slow flowing water were observed as were salamanders, frogs, and crayfish.

Bank Height (feet)	2-4
Bankfull Width (feet)	2-5
Water Depth (inches)	0.5-5
Channel Substrate	Sand
Velocity:	Slow
Clarity:	Slightly Turbid

Sketch:

NC DWQ Stream Identification Form Version 4.11

Stream Form D1

Date: Mar 22, 2019	**Project/Site:** Jones Ferry Road Site	**Latitude:** 35.863821
Evaluator: David Gainey	**County:** Chatham	**Longitude:** -79.163065
Total Points: 4.5 Stream is at least intermittent if ≥19 or perennial if ≥30	**Stream Determination:** Ephemeral	**Other:** *e.g. Quad Name*:

A. Geomorphology (Subtotal = 3.5)	Absent	Weak	Moderate	Strong	SCORE
1[a]. Continuous bed and bank	0	1	2	3	0
2. Sinuosity of channel along thalweg	0	1	2	3	0
3. In-Channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3	0
4. Particle size of stream substrate	0	1	2	3	0
5. Active/relic floodplain	0	1	2	3	1
6. Depositional bars or benches	0	1	2	3	0
7. Recent alluvial deposits	0	1	2	3	1
8. Headcuts	0	1	2	3	0
9. Grade controls	0	0.5	1	1.5	1
10. Natural valley	0	0.5	1	1.5	0.5
11. Second or greater order channel	No = 0		Yes = 3		0

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

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

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

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

Notes:

Bank Height (feet)	0
Bankfull Width (feet)	N/A
Water Depth (inches)	0
Channel Substrate	Clay
Velocity:	N/A
Clarity:	N/A

Sketch:

NC DWQ Stream Identification Form Version 4.11

Stream Form E1

Date: Mar 21, 2019	**Project/Site:** Jones Ferry Road Site	**Latitude:** 36.863836
Evaluator: Sean Clark	**County:** Chatham	**Longitude:** -79.166381
Total Points: 9 Stream is at least intermittent if ≥19 or perennial if ≥30	**Stream Determination:** N/A	**Other:** *e.g. Quad Name*:

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

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

B. Hydrology (Subtotal = 2.5)	Absent	Weak	Moderate	Strong	SCORE
12. Presence of Baseflow	0	1	2	3	0
13. Iron oxidizing bacteria	0	1	2	3	0
14. Leaflitter	1.5	1	0.5	0	1.5
15. Sediment on plants or debris	0	0.5	1	1.5	0.5
16. Organic debris lines or piles	0	0.5	1	1.5	0.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3		0

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

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

Notes:
area evaluated during and at the end of a rain event

Bank Height (feet)	0-0.5
Bankfull Width (feet)	0-5
Water Depth (inches)	2
Channel Substrate	Clay
Velocity:	Moderate
Clarity:	Turbid

Sketch:

NC DWQ Stream Identification Form Version 4.11

Stream Form E2

Date: Mar 21, 2019	**Project/Site:** Jones Ferry Road Site	**Latitude:** 36.863573
Evaluator: Sean Clark	**County:** Chatham	**Longitude:** -79.166264
Total Points: 8.5 Stream is at least intermittent if ≥19 or perennial if ≥30	**Stream Determination:** N/A	**Other:** *e.g. Quad Name*:

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

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

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

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

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

Notes:
area evaluated during and at the end of a rain event

Bank Height (feet)	0.5-1
Bankfull Width (feet)	1-3
Water Depth (inches)	2-6
Channel Substrate	Clay
Velocity:	Moderate
Clarity:	Turbid

Sketch:

NC DWQ Stream Identification Form Version 4.11

Stream Form E3

Date: Mar 21, 2019	**Project/Site:** Jones Ferry Road Site	**Latitude:** 36.86285
Evaluator: Sean Clark	**County:** Chatham	**Longitude:** -79.166013
Total Points: 21.5 Stream is at least intermittent if ≥19 or perennial if ≥30	**Stream Determination:** Intermittent	**Other:** *e.g. Quad Name*:

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

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

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

C. Biology (Subtotal = 5)	Absent	Weak	Moderate	Strong	SCORE
18. Fibrous roots in streambed	3	2	1	0	2
19. Rooted upland plants in streambed	3	2	1	0	3
20. Macrobenthos (note diversity and abundance)	0	1	2	3	0
21. Aquatic Mollusks	0	1	2	3	0
22. Fish	0	0.5	1	1.5	0
23. Crayfish	0	0.5	1	1.5	0
24. Amphibians	0	0.5	1	1.5	0
25. Algae	0	0.5	1	1.5	0
26. Wetland plants in streambed	FACW=0.75; OBL=1.5 Other=0				0

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

Notes:
area evaluated during and at the end of a rain event

Bank Height (feet)	1-2
Bankfull Width (feet)	1-3
Water Depth (inches)	2-6
Channel Substrate	Clay
Velocity:	Moderate
Clarity:	Turbid

Sketch:

NC DWQ Stream Identification Form Version 4.11

Stream Form F1

Date: Jul 10, 2019	**Project/Site:** Jones Ferry Road Site	**Latitude:** 35.862734
Evaluator: Sean Clark	**County:** Chatham	**Longitude:** -79.166927
Total Points: 25 Stream is at least intermittent if ≥19 or perennial if ≥30	**Stream Determination:** Intermittent	**Other:** *e.g. Quad Name*:

A. Geomorphology (Subtotal = 15.5)	Absent	Weak	Moderate	Strong	SCORE
1[a]. Continuous bed and bank	0	1	2	3	2
2. Sinuosity of channel along thalweg	0	1	2	3	1
3. In-Channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3	2
4. Particle size of stream substrate	0	1	2	3	2
5. Active/relic floodplain	0	1	2	3	2
6. Depositional bars or benches	0	1	2	3	1
7. Recent alluvial deposits	0	1	2	3	1
8. Headcuts	0	1	2	3	0
9. Grade controls	0	0.5	1	1.5	0
10. Natural valley	0	0.5	1	1.5	1.5
11. Second or greater order channel	No = 0		Yes = 3		3

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

B. Hydrology (Subtotal = 5.5)	Absent	Weak	Moderate	Strong	SCORE
12. Presence of Baseflow	0	1	2	3	0
13. Iron oxidizing bacteria	0	1	2	3	0
14. Leaflitter	1.5	1	0.5	0	1.5
15. Sediment on plants or debris	0	0.5	1	1.5	0.5
16. Organic debris lines or piles	0	0.5	1	1.5	0.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3		3

C. Biology (Subtotal = 4)	Absent	Weak	Moderate	Strong	SCORE
18. Fibrous roots in streambed	3	2	1	0	2
19. Rooted upland plants in streambed	3	2	1	0	2
20. Macrobenthos (note diversity and abundance)	0	1	2	3	0
21. Aquatic Mollusks	0	1	2	3	0
22. Fish	0	0.5	1	1.5	0
23. Crayfish	0	0.5	1	1.5	0
24. Amphibians	0	0.5	1	1.5	0
25. Algae	0	0.5	1	1.5	0
26. Wetland plants in streambed	FACW=0.75; OBL=1.5 Other=0				0

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

Notes:
This section of stream was evaluated in the Summer at a time when no water was present in this section of stream. There were some areas where rooted upland plants existed in the stream bed for 10' sections, but these areas did not dominate. This form was completed immediately after the USACE/Chatham Co. site mtg.

Bank Height (feet)	0.5-3
Bankfull Width (feet)	2-4
Water Depth (inches)	0
Channel Substrate	Clay
Velocity:	N/A
Clarity:	N/A

Sketch:

NC DWQ Stream Identification Form Version 4.11

Stream Form F2

Date: Jul 10, 2019	**Project/Site:** Jones Ferry Road Site	**Latitude:** 35.862747
Evaluator: Sean Clark	**County:** Chatham	**Longitude:** -79.165658
Total Points: 35 Stream is at least intermittent if ≥19 or perennial if ≥30	**Stream Determination:** Perennial	**Other:** *e.g. Quad Name*:

A. Geomorphology (Subtotal = 19.5)	Absent	Weak	Moderate	Strong	SCORE
1[a]. Continuous bed and bank	0	1	2	3	2
2. Sinuosity of channel along thalweg	0	1	2	3	2
3. In-Channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3	2
4. Particle size of stream substrate	0	1	2	3	2
5. Active/relic floodplain	0	1	2	3	3
6. Depositional bars or benches	0	1	2	3	2
7. Recent alluvial deposits	0	1	2	3	1
8. Headcuts	0	1	2	3	1
9. Grade controls	0	0.5	1	1.5	0
10. Natural valley	0	0.5	1	1.5	1.5
11. Second or greater order channel	No = 0		Yes = 3		3

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

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

C. Biology (Subtotal = 8)	Absent	Weak	Moderate	Strong	SCORE
18. Fibrous roots in streambed	3	2	1	0	2
19. Rooted upland plants in streambed	3	2	1	0	3
20. Macrobenthos (note diversity and abundance)	0	1	2	3	1
21. Aquatic Mollusks	0	1	2	3	0
22. Fish	0	0.5	1	1.5	0
23. Crayfish	0	0.5	1	1.5	0.5
24. Amphibians	0	0.5	1	1.5	1
25. Algae	0	0.5	1	1.5	0.5
26. Wetland plants in streambed	FACW=0.75; OBL=1.5 Other=0				0

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

Notes:
This section of stream was evaluated in the Summer at a time when water was present in pools and sometimes in small (3-6") trickels. This form was completed immediately after the USACE/ Chatham Co. site mtg.

Bank Height (feet)	1-3
Bankfull Width (feet)	2-4
Water Depth (inches)	0-8
Channel Substrate	Clay
Velocity:	Slow
Clarity:	Slightly Turbid

Sketch:

NC DWQ Stream Identification Form Version 4.11

Stream Form F3

Date: Jul 10, 2019	**Project/Site:** Jones Ferry Road Site	**Latitude:** 35.861848
Evaluator: Sean Clark	**County:** Chatham	**Longitude:** -79.163736
Total Points: 27.5 Stream is at least intermittent if ≥19 or perennial if ≥30	**Stream Determination:** Intermittent	**Other:** *e.g. Quad Name*:

A. Geomorphology (Subtotal = 17.5)	Absent	Weak	Moderate	Strong	SCORE
1[a]. Continuous bed and bank	0	1	2	3	3
2. Sinuosity of channel along thalweg	0	1	2	3	2
3. In-Channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3	2
4. Particle size of stream substrate	0	1	2	3	2
5. Active/relic floodplain	0	1	2	3	2
6. Depositional bars or benches	0	1	2	3	1
7. Recent alluvial deposits	0	1	2	3	1
8. Headcuts	0	1	2	3	0
9. Grade controls	0	0.5	1	1.5	0
10. Natural valley	0	0.5	1	1.5	1.5
11. Second or greater order channel	No = 0		Yes = 3		3

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

B. Hydrology (Subtotal = 5)	Absent	Weak	Moderate	Strong	SCORE
12. Presence of Baseflow	0	1	2	3	0
13. Iron oxidizing bacteria	0	1	2	3	0
14. Leaflitter	1.5	1	0.5	0	1
15. Sediment on plants or debris	0	0.5	1	1.5	0.5
16. Organic debris lines or piles	0	0.5	1	1.5	0.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3		3

C. Biology (Subtotal = 5)	Absent	Weak	Moderate	Strong	SCORE
18. Fibrous roots in streambed	3	2	1	0	1
19. Rooted upland plants in streambed	3	2	1	0	3
20. Macrobenthos (note diversity and abundance)	0	1	2	3	0
21. Aquatic Mollusks	0	1	2	3	0
22. Fish	0	0.5	1	1.5	0
23. Crayfish	0	0.5	1	1.5	0.5
24. Amphibians	0	0.5	1	1.5	0.5
25. Algae	0	0.5	1	1.5	0
26. Wetland plants in streambed	FACW=0.75; OBL=1.5 Other=0				0

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

Notes:
This section of stream was evaluated in the Summer at a time when water was absent and the stream bed was dry. This form was completed immediately after the USACE/Chatham Co. site mtg on July 10, 2019.

Bank Height (feet)	1-3
Bankfull Width (feet)	2-4
Water Depth (inches)	0
Channel Substrate	Clay
Velocity:	N/A
Clarity:	N/A

Sketch:

WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: Jones Ferry Project/ Sage Project #: 2019.25 City/County: Chatham Sampling Date: 3/28/19

Applicant/Owner: Robert Page & Douglas Page State: NC Sampling Point: WL DP 1

Investigator(s): David Gainey Section, Township, Range:

Landform (hillside, terrace, etc.): drainage Local relief (concave, convex, none): none Slope (%): 1

Subregion (LRR or MLRA): LRR P, MLRA 136 Lat: 35.861615°N Long: 79.160523°W Datum: Nad 83

Soil Map Unit Name: Cid-Lignum NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X	No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes X	No ____	**within a Wetland?** **Yes** X **No** ____
Wetland Hydrology Present?	Yes X	No ____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- x 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)
- X 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)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 1

Wetland Hydrology Present? **Yes** X **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: WL DP 1

Tree Stratum (Plot size: 0.1 acre)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Platanus occidentalis*	40	Yes	FACW
2. *Liriodendron tulipifera*	40	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	80	=Total Cover	
50% of total cover: 40		20% of total cover: 16	
Sapling/Shrub Stratum (Plot size: 0.1 acre)			
1. *Elaeagnus angustifolia*	80	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	80	=Total Cover	
50% of total cover: 40		20% of total cover: 16	
Herb Stratum (Plot size: 0.1 acre)			
1. *Woodwardia areolata*	30	Yes	FACW
2. *Carex sp.*	10	No	FACW
3. *Saururus cernuus*	30	Yes	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	70	=Total Cover	
50% of total cover: 35		20% of total cover: 14	
Woody Vine Stratum (Plot size: 0.1 acre)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
50% of total cover:		20% of total cover:	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	80	x 2 =	160
FAC species	0	x 3 =	0
FACU species	120	x 4 =	480
UPL species	0	x 5 =	0
Column Totals:	230 (A)		670 (B)

Prevalence Index = B/A = 2.91

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 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 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.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

SOIL

Sampling Point: WL DP 1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 4/2	95	10YR 5/6	5	C	PL	Loamy/Clayey	Prominent redox concentrations

[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)
- ___ 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 Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

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)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ 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** X **No** ___

Remarks:

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: Jones Ferry Property/ Sage Project #: 2019.25 City/County: Chatham Sampling Date: 3/28/19

Applicant/Owner: Robert Page & Douglas Page State: NC Sampling Point: Up DP 2

Investigator(s): David Gainey Section, Township, Range:

Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): LRR P, MLRA 136 Lat: 35.861774°N Long: 79.160559°W Datum: NAD 83

Soil Map Unit Name: Cid-Lignum NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X	No ____	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

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 X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: Up DP 2

Tree Stratum (Plot size: 0.1 acre)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Liquidambar styraciflua*	30	Yes	FAC
2. *Liriodendron tulipifera*	30	Yes	FACU
3. *Platanus occidentalis*	30	Yes	FACW
4.			
5.			
6.			
7.			
	90	=Total Cover	
50% of total cover: 45		20% of total cover: 18	
Sapling/Shrub Stratum (Plot size: 0.1 acre)			
1. *Ligustrum sinense*	60	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	60	=Total Cover	
50% of total cover: 30		20% of total cover: 12	
Herb Stratum (Plot size: 0.1 acre)			
1. *Microstegium vimineum*	30	Yes	FAC
2. *Polystichum acrostichoides*	30	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	60	=Total Cover	
50% of total cover: 30		20% of total cover: 12	
Woody Vine Stratum (Plot size: 0.1 acre)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
50% of total cover:		20% of total cover:	

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	30	x 2 =	60
FAC species	90	x 3 =	270
FACU species	90	x 4 =	360
UPL species	0	x 5 =	0
Column Totals:	210 (A)		690 (B)

Prevalence Index = B/A = 3.29

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 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 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.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

SOIL

Sampling Point: Up DP 2

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 4/4	100					Loamy/Clayey	
2-12	10YR 4/6	100					Loamy/Clayey	

[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)
- ___ 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 Mucky Mineral (F1) **(MLRA 136)**
- ___ 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 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

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)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

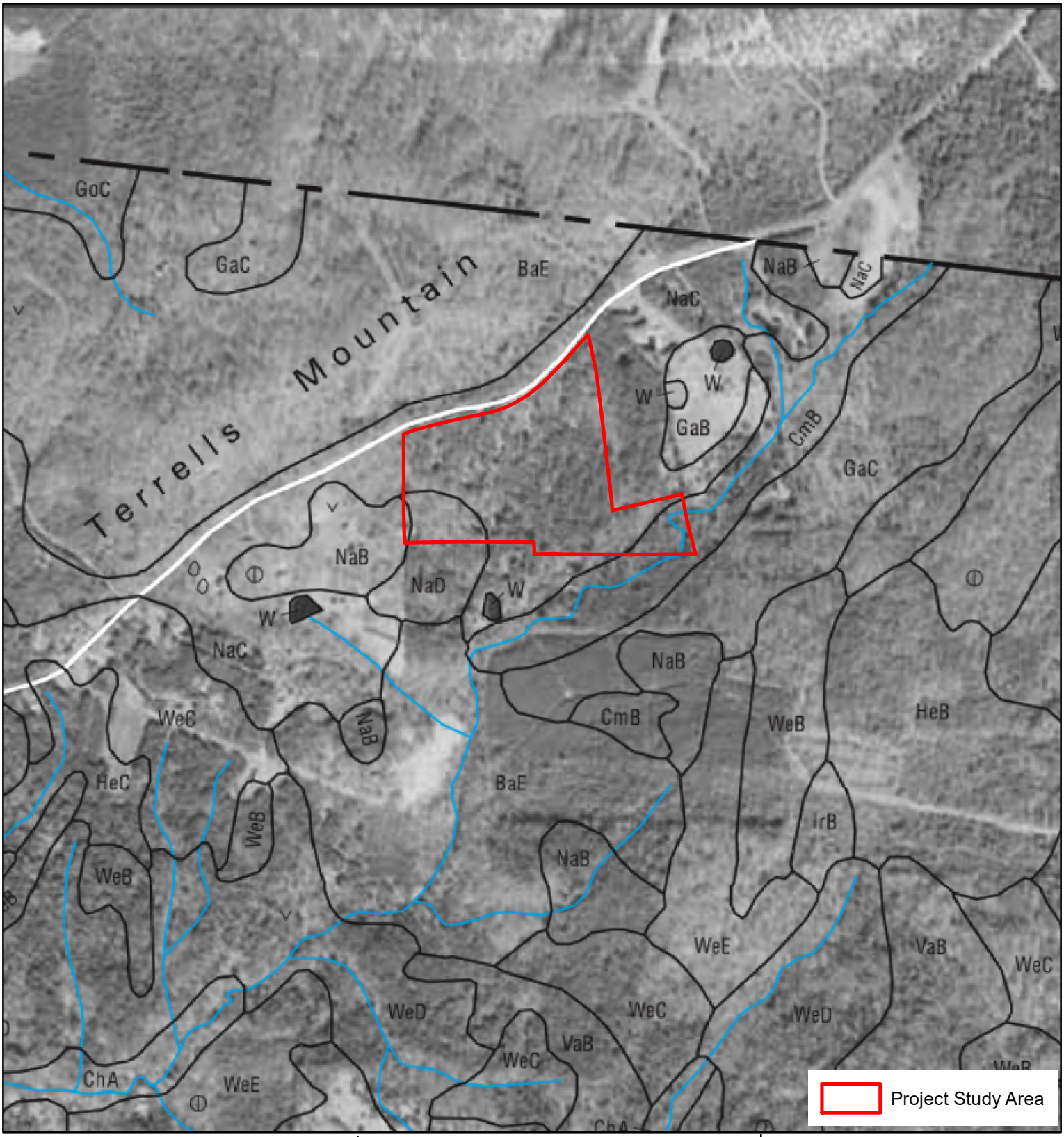
Type: _____

Depth (inches): _____

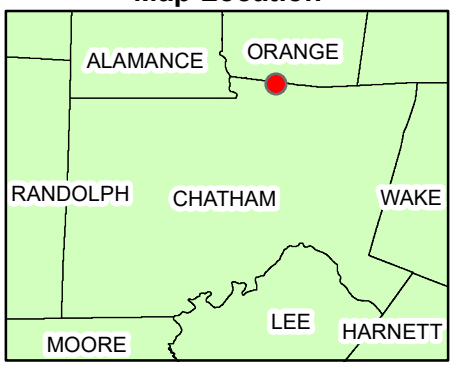
Hydric Soil Present? **Yes** ___ **No** x

Remarks:

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.



Map Location



NRCS Soils Map

Jones Ferry Road Property
Sage Project # 2019.25

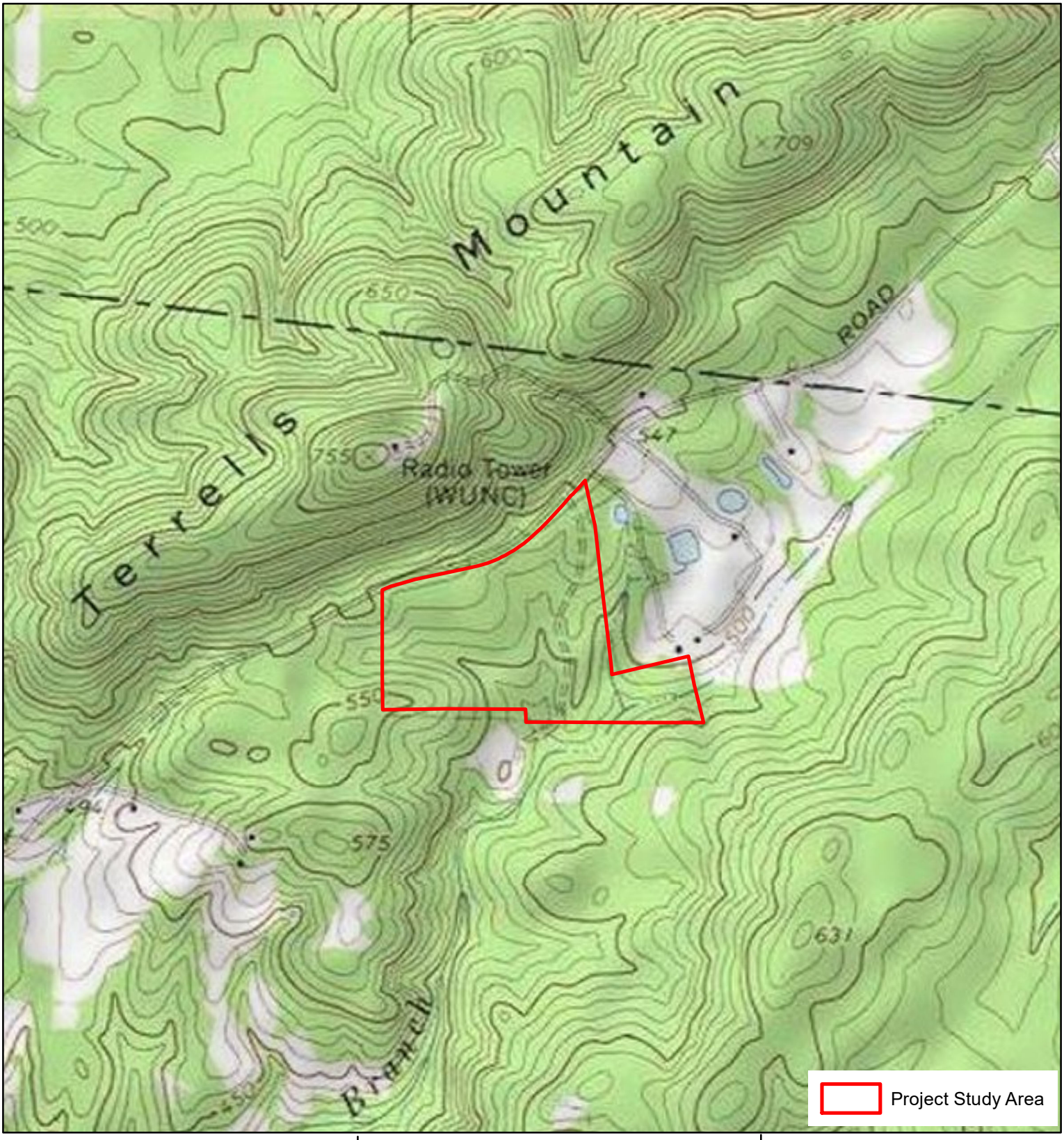
USDA Soil Survey 2006
Chatham County, NC Sheet #4
March 20, 2019

N

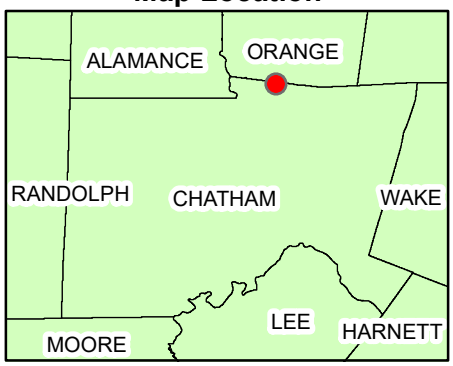
0 500 1,000 Feet

Figure 2

Sage Ecological Services, Inc.
Office: 919-335-6757
Cell: 919-559-1537



Map Location



USGS Topo Map

Jones Ferry Road Property
Sage Project # 2019.25

Bynum, NC Quadrangle
USGS Topography, December 2013
March 20, 2019

N

0 500 1,000
Feet

Figure 1

Sage Ecological Services, Inc.
Office: 919-335-6757
Cell: 919-559-1537

CHATHAM COUNTY
NORTH CAROLINA

Watershed Protection Department
Website: www.chathamnc.org

Date Received: _____ PL# _____

Riparian Buffer Review Application
Surface Water Identification Request for
Major Subdivisions

Tract Information

Parcel #: AKPAR#1439 Watershed District (and name of creek if known): WS-IV PA, Meadow Branch

Property Owner: Robert Page & Douglas Page

Location/Physical Address of Tract: 0 Jones Ferry Road

Driving Directions from Pittsboro:
15/501 North then left on Hamlets Chapel, Turn right on to Jones Ferry Road and the site is on the right just before Orange County.

Subdivision Name (if applicable): _____

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

Name: Sean Clark

Contact Phone Numbers: (h) _____ (w) 919-559-1537 (c) _____

E-mail: sclark@sageecological.com

Mailing Address: 3707 Swift Drive, Raleigh, NC 27606

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? _____

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 –

CHATHAM COUNTY
NORTH CAROLINA

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: 17 Total Paid: $1700.00

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: _____ Date: 7/29/19

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) 1439 PARCEL SIZE 50 ACRES

STREET ADDRESS: N/A

Please print:
Property Owner: ROBERT BRUCE PAGE

Property Owner: DOUGLAS PAGE

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

KIRK T. METTY (Contractor/Agent), of THE TUSCAN GROUP INC (Name of consulting firm if applicable)

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
- ✓ 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)
- ✓ Riparian Buffer Review pursuant to §304 of the Chatham County Watershed Protection Ordinance
- ___ Other: ___

Property Owner's Address (if different than property above):
1213 HEATHERBROOK DRIVE HIGH POINT NC 27265

Owner Telephone: DOUG: 336.878.7227 BRUCE: 919.771.6214 Email: dpage@hopnc.org 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: Douglas Page 251B75F72BD247A...
Owner Authorized Signature

DocuSigned by: Robert B Page EC05977854B549C...
Agent Authorized Signature

Date: 5/23/2019

Date: 5/23/2019

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) 545-8394

Website: www.chathamnc.org

Authorization to Enter Property Form

Date: 5/22/19

PARCEL No. (AKPAR) 1439

I, (print name) DOUGLAS PAGE AND ROBERT BRUCE PAGE, as owner of the property described above, or as a representative of the owner(s) do hereby convey permission to Chatham County staff to enter the property at their convenience to conduct a surface water identification (SWID) necessary to determine whether or not water features on my property are subject to the riparian buffer regulations described in Section 304 of the Chatham County Watershed Protection Ordinance. The SWID will be public record and on file at the Planning and Environmental Quality Departments, and may be requested in the future for review by interested parties.

I understand that stream delineations for the property listed above will be made by County staff only once and that if future subdivisions are proposed within this property boundary, it will require a surface water identification by a private consultant at the property owner's expense.

DOUGLAS PAGE	DocuSigned by: Douglas Page	5/23/2019
(Print Owner's Name)	(Signature of Owner)	(Date)
ROBERT BRUCE PAGE	DocuSigned by: Robert B Page ECC5977854B549C...	5/23/2019
(Print Authorized Agent Name)	(Signature of Authorized Agent)	(Date)