CAROLINA
ECOSYSTEMS, INC.

3040 NC Hwy 42 West; Clayton, NC 27520
P:919-606-1065 – F:919-585-5570

**MEMORANDUM**

DATE: July 27, 2015

FROM: Phil May, Carolina Ecosystems, Inc.

TO: Bill Barrett, NCDOT-NES

RE: Natural Resources Technical Report Addendum
TIP project I4400/4700 – Widening of I-26 from NC-225 to I-40, Buncombe and Henderson Counties.

Carolina Ecosystems Inc. (CEI) has completed the following Natural Resources Technical Report (NRTR) addendum for TIP project I-4400/4700 in Buncombe and Henderson Counties, NC. The study area for this addendum is an approximate 1.5 mile corridor along the Blue Ridge Parkway that overlaps with the previous study area (Addendum Figures 1 and 2). This memo summarizes the findings of our background research and field review of the site. All work was conducted in accordance with the NCDOT Natural Environment Section standard operating procedures and July 2012 NRTR template. Field work was conducted on April 27 and April 28, 2015. Jurisdictional areas identified in the addendum study area have not been verified by the U.S. Army Corps of Engineers (USACE) or the North Carolina Division of Water Resources (NCDWR).

**The following NRTR sections are provided as a supplement to the August 2014 NRTR for this project. Tables include only new or updated information.**

## 4.0 BIOTIC RESOURCES

All new communities found within the expanded study area were found to be of the Montane Oak-Hickory Forest (acidic subtype).

**Addendum Table 4. Coverage of terrestrial communities in the study area**

| Community | Coverage (ac.) |
|---|---|
| Montane Oak-Hickory Forest (acidic subtype) | 700.6 |
| **Addendum Total** | **133.1** |
| **Project Total** | **2905.9** |

## 5.0 JURISDICTIONAL ISSUES

### 5.1 Clean Water Act Waters of the U.S.

No new streams were identified in the addendum study area. One stream (SFB) was extended (Addendum Table 5, below). The location of this stream is shown on Addendum Figure 3.

Six jurisdictional wetlands were identified within the addendum study area (Addendum Figure 3). Wetland classification and quality rating data are presented in Addendum Table 6, below. All wetlands in the addendum study area are within the French Broad river basin (U.S. Geological Survey [USGS] Hydrologic Unit 06010105). USACE wetland delineation forms and NCDWQ wetland rating forms for each wetland type are attached.

No additions or changes were necessary for *Table 2. Water resources in the study area* or *Table 3. Physical characteristics of water resources in the study area*.

**Addendum Table 5. Jurisdictional characteristics of water resources in the Addendum study area**

| Map ID | Length (ft.) | Classification | Compensatory Mitigation Required | River Basin Buffer |
|---|---|---|---|---|
| SFB | 368 | Perennial | Yes | Not Subject |
| **Addendum Total** | **2,829** | | | |
| **Project Total** | **106,436** | | | |

**Addendum Table 6. Jurisdictional characteristics of wetlands in the Addendum study area**

| Map ID | NCWAM Classification | Hydrologic Classification | NCDWQ Wetland Rating | Area (ac.) |
|---|---|---|---|---|
| WFG | Headwater Forest | Riparian | 24 | 0.01 |
| WFH | Headwater Forest | Riparian | 24 | 0.01 |
| WFI | Headwater Forest | Riparian | 24 | 0.02 |
| WFJ | Headwater Forest | Riparian | 28 | <0.01 |
| WFK | Headwater Forest | Riparian | 28 | 0.02 |
| WFL | Headwater Forest | Riparian | 28 | 0.03 |
| | | | **Addendum Total** | **0.43** |
| | | | **Project Total** | **44.28** |

## 5.8 Endangered Species Act Protected Species

As of April 2, 2015 the USFWS lists seventeen federally protected species for Buncombe and Henderson counties, noting that sixteen species were listed at the time of the 2014 NRTR (Table 7 of the 2014 NRTR). No individuals of the listed species have been found in the addendum study area, based on detailed surveys being performed for the Biological Evaluation for this project. Therefore, no changes to the biological conclusions in the August 2014 NRTR are required. The additional listing of the Northern long-eared bat (NLEB) as of April 2, 2015, will require a biological conclusion (Addendum Table 7, below).

**Addendum Table 7. Federally protected species listed for Buncombe and Henderson Counties.**

| Scientific Name | Common Name | Federal Status | Habitat Present | County | Biological Conclusion |
|---|---|---|---|---|---|
| *Myotis septentrionalis* | Northern long-eared bat | T | Unknown | Buncombe and Henderson | Unresolved |

T - Threatened

**Northern long-eared bat**
USFWS optimal survey window: June 1 – August 15

Habitat Description: In North Carolina, the Northern long-eared bat (NLEB) occurs in the mountains, with scattered records in the Piedmont and coastal plain. In western North Carolina, NLEB spend winter hibernating in caves and mines. Since this species is not known to be a long-distance migrant, and caves and subterranean mines are extremely rare in eastern North Carolina, it is uncertain whether or where NLEB hibernate in eastern North Carolina. During the summer, NLEB roost singly or in colonies underneath bark, in cavities, or in crevices of both live and dead trees (typically ≥3 inches dbh). Males and non-reproductive females may also roost in cooler places, like caves and mines. This bat has also been found, rarely, roosting in structures like barns and sheds, under eaves of buildings, behind window shutters, in bridges, and in bat houses. Foraging occurs on forested hillsides and ridges, and occasionally over forest clearings, over water, and along tree-lined corridors. Mature forests may be an important habitat type for foraging.

Biological Conclusion: Unresolved
The NCDOT Biological Surveys Group will be responsible for habitat assessment and, if needed, surveys for the NLEB.

The following personnel contributed to this assessment:

Investigator: Phil May
Education: B.S. Biology, 1992
Experience: Senior Scientist, Carolina Ecosystems, Inc., 2006-Present
Senior Scientist, HDR Engineering, Inc., 2001-2006
Staff Scientist, GN Richardson & Assoc. 1995-2001
Responsibilities: Wetland and stream delineation, GPS data collection, document review

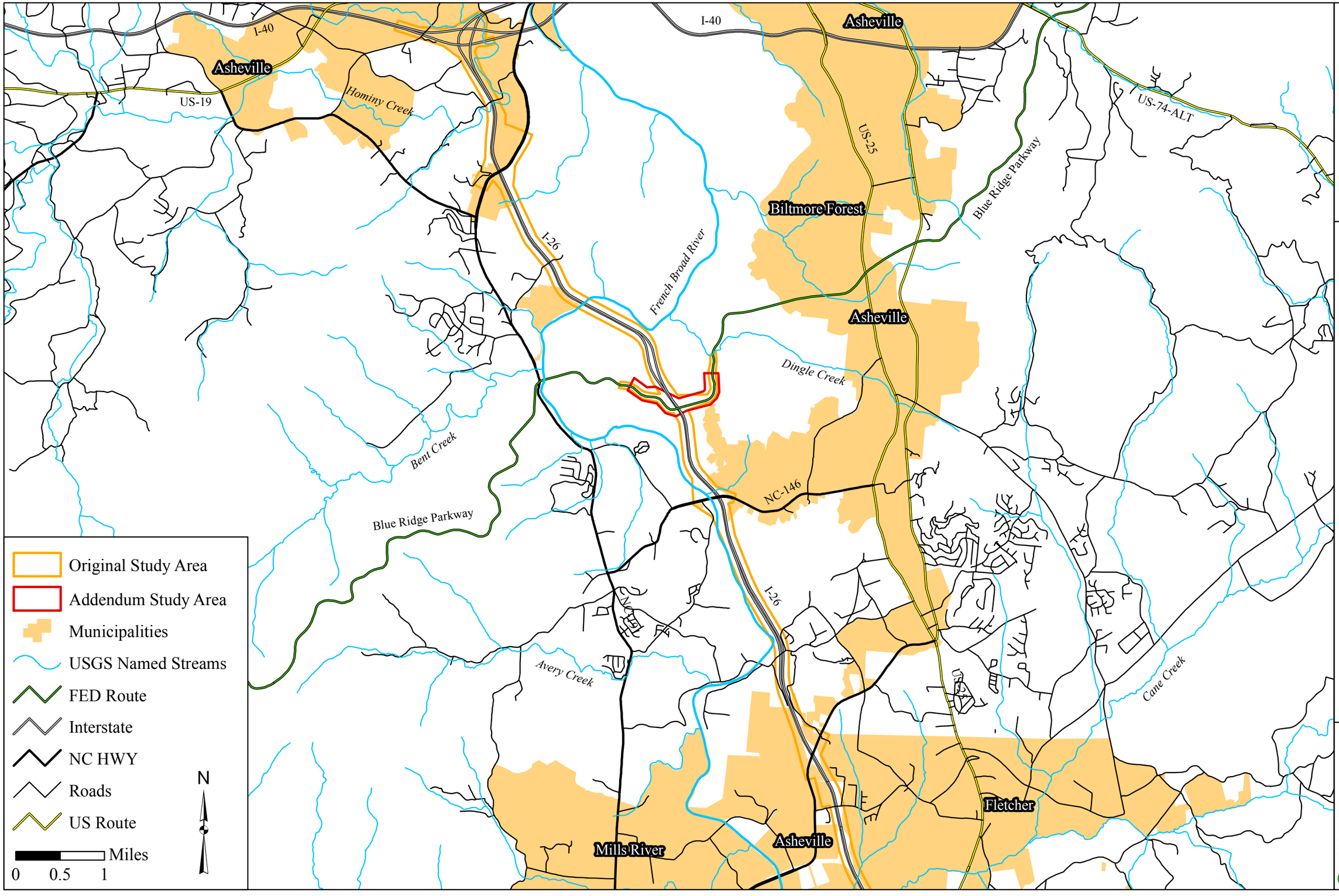
Investigator: Brian Smith, PWS
Education: B.S. Biology, 1992; M.S. Soil Science 1998
Experience: Senior Scientist, Carolina Ecosystems, Inc., 2004-Present
Environmental Scientist, Dewberry & Davis, 2003-2004
Environmental Scientist, Blue LWI, 1998-2003
Responsibilities: Wetland and stream delineation, GPS data collection, document review

Investigator: Rob Crowther
Education: B.S. Environmental Resources Management, 2014
Experience: Environmental Scientist, Carolina Ecosystems, Inc., 2015-Present
Field Assistant, Virginia Tech 2014
Responsibilities: Document preparation

Investigator: Chris Hopper
Education: B.S. Natural Resource Mgmt. & Engineering, 1997
Experience: Senior Scientist, Carolina Ecosystems, Inc. 2015-Present
Senior Scientist/Project Professional, Kleinfelder Southeast 2012-2015
Environmental Officer, Chatham County 2011-2012
Robert J. Goldstein & Assoc. 1998-2011
Responsibilities: Document preparation

If you have any questions or need additional information, please contact me at your earliest convenience at (919) 606-1065 or phil.may@carolinaeco.com.

Attachments: Addendum Figure 1. Vicinity Map
Addendum Figure 2. USGS Map
Addendum Figure 3. Jurisdictional Features Map
Addendum Figure 4. Terrestrial Communities Map
Wetland Data Forms

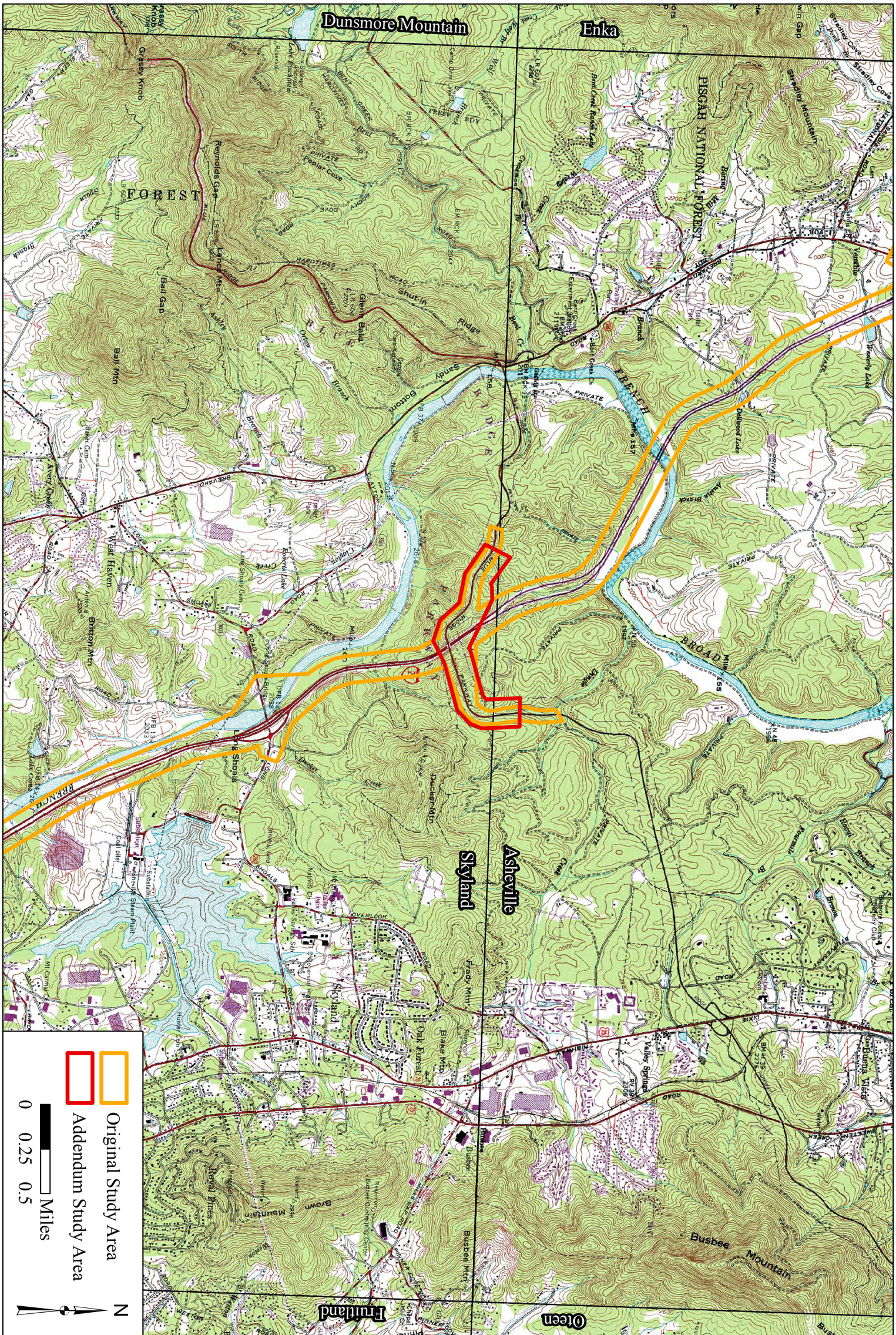



**Addendum Figure 1: Vicinity Map**

**I-4400/4700 NRTR Addendum**
**I-26 from NC-225 to I-40**
**Buncombe and Henderson Counties**

CAROLINA ECOSYSTEMS, INC.
3040 NC 42 West; Clayton, NC 27520
P: (919)-606-9145 F:(919)-585-5570

July 2015





**CAROLINA ECOSYSTEMS, INC.**
3040 NC 42 West; Clayton, NC 27520
P: (919)-606-9145 F:(919)-585-5570


July 2015

USGS 1:24k Quadrtangle Maps; Asheville, Dunsmore Mountain, Enka, Fruitland, Oteen, Skyland

**Addendum Figure 2: USGS Map**

**I-4400/4700 NRTR Addendum**
**I-26 from NC-225 to I-40**
**Buncombe and Henderson Counties**

WFH
WFG
SFB
WFI
WFL
WFK
WFJ

Original Study Area
Addendum Study Area
Streams (2015 Addendum)
Previously Delineated Streams (2014 NRTR)
Wetlands (2015 Addendum)
Previously Delineated Wetlands (2014 NRTR)

Feet
0 200 400

N

2010 NC Statewide Aerial Photographs

**Addendum Figure 3:**
**Jurisdictional Features Map**

**I-4400/4700 NRTR Addendum**
**I-26 from NC-225 to I-40**
**Buncombe and Henderson Counties**

CAROLINA ECOSYSTEMS, INC.
3040 NC 42 West, Clayton, NC 27520
P: (919)-606-9145 F:(919)-585-5570

July 2015

**Addendum Figure 4:**
**Terrestrial Communities Map**

**I-4400/4700 NRTR Addendum**
**I-26 from NC-225 to I-40**
**Buncombe and Henderson Counties**

2010 NC Statewide Aerial Photographs

Original Study Area
Addendum Study Area
Maintained/Disturbed
Montane Alluvial Forest (Small River Subtype)
Montane Oak-Hickory Forest (Acidic Subtype)

Feet
0 200 400

N

CAROLINA ECOSYSTEMS, INC.
3040 NC 42 West, Clayton, NC 27520
P: (919)-606-9145 F:(919)-585-5570

July 2015

WFH wet (WFG)

## WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: I-4400 Addendum City/County: Buncombe Co Sampling Date: 4/28/15

Applicant/Owner: NCDOT State: NC Sampling Point: WFH 03

Investigator(s): P. May / B. Smith Section, Township, Range: Asheville

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): concave Slope (%): <5

Subregion (LRR or MLRA): 136 Lat: 36.2503251 Long: -83.557564 Datum: NAD 83

Soil Map Unit Name: Tate Loam, 15 to 30 % slopes NWI classification: Headwaters Forest

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? No Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (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): 11" |
| Saturation Present? (includes capillary fringe) | Yes ✓ | No ___ | Depth (inches): 2" |

**Wetland Hydrology Present?** Yes ✓ No _____

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

Remarks: Small seep in pool/seep

**VEGETATION (Four Strata) – Use scientific names of plants.** Sampling Point: WFH wet

| Tree Stratum (Plot size: Entire) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Carpinus caroliniana | 25 | ✓ | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | 25 = Total Cover | | |

50% of total cover: 12.5 20% of total cover: 5

| Sapling/Shrub Stratum (Plot size: Entire) | | | |
|---|---|---|---|
| 1. Carpinus caroliniana | 10 | ✓ | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| | 10 = Total Cover | | |

50% of total cover: 5 20% of total cover: 2

| Herb Stratum (Plot size: 5'r) | | | |
|---|---|---|---|
| 1. Carex spp | 5 | ✓ | FACW |
| 2. Osmundastrum regalis | 10 | ✓ | FACW |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 15 = Total Cover | | |

50% of total cover: 7.5 20% of total cover: 3

| Woody Vine Stratum (Plot size: Entire) | | | |
|---|---|---|---|
| 1. NONE | | | |
| 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: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (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 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 ✓ No _____

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

Primarily unvegetated seep. 2 carpinus w/ little else.

**SOIL** Sampling Point: WFH wet

**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 |
|---|---|---|---|---|---|---|---|---|
| 0-2 | 10YR 2/2 | 100 | N/A | — | — | — | Loam | |
| 2-10 | 10YR 3/1 | 90 | 10YR 4/4 | 10% | C | M | Loam | |
| 10-12+ | 10YR 3/1 | 100 | — | — | — | — | Sa lm | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[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)
- X 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:

WFH-4

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: I-4400 NRTR Addendum City/County: Buncombe Co Sampling Date: 4/28/13

Applicant/Owner: NCDOT State: NC Sampling Point: WFH D3

Investigator(s): B. Smith + P May Section, Township, Range: Asheville

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): ~~Concave~~ Slope (%): 5

Subregion (LRR or MLRA): 136 Lat: 36.250301 Long: -83.557420 Datum: NAD83

Soil Map Unit Name: Tate Loam, 15 to 30% slopes NWI classification: Headwater Forest

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? NO Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? NO (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 X | **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: WFH up

| Tree Stratum (Plot size: 30' r) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Quercus alba | 60 | ✓ | FACU |
| 2. Cornus florida | 15 | | FACU |
| 3. Oxydendrum arboreum | 10 | | UPL |
| 4. Pinus strobus | 5 | | FACU |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | 90 | = Total Cover | |
| 50% of total cover: 45 | 20% of total cover: 18 | | |

| Sapling/Shrub Stratum (Plot size: 15' r) | | | |
|---|---|---|---|
| 1. Pinus strobus | 60 | ✓ | FACU |
| 2. Carpinus caroliniana | 25 | ✓ | FAC |
| 3. Ilex opaca | 5 | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| | 90 | = Total Cover | |
| 50% of total cover: 45 | 20% of total cover: 18 | | |

| Herb Stratum (Plot size: 5' r) | | | |
|---|---|---|---|
| 1. Ilex opaca | 10 | ✓ | FACU |
| 2. Hexastylis sp. | 2 | | FAC |
| 3. Maianthemum racemosum | 2 | | FACU |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 14 | = Total Cover | |
| 50% of total cover: 7 | 20% of total cover: 2.8 | | |

| Woody Vine Stratum (Plot size: 30' r) | | | |
|---|---|---|---|
| 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: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25% (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 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 ____ No X

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

**SOIL** Sampling Point: WFH up

**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 |
|---|---|---|---|---|---|---|---|---|
| 0-4 | 10YR 3/4 | 100 | — | | | | L | |
| 4-12+ | 7.5YR 4/6 | 100 | — | | | | 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 X

Remarks:

WFH

# WETLAND RATING WORKSHEET Fourth Version

Project Name I4400 Addendum Nearest Road Blue Ridge Pkwy

County Buncombe Co Wetland area .01 acres Wetland width 15 feet

Name of evaluator P May / B Smith Date 4/28/15

**Wetland location**
- ___ on pond or lake
- X on perennial stream
- ___ on intermittent stream
- ___ within interstream divide
- ___ other: _____

**Adjacent land use**
(within ½ mile upstream, upslope, or radius)
- X forested/natural vegetation 100%
- ___ agriculture, urban/suburban ___%
- ___ impervious surface ___%

**Soil series:** _____
- ___ predominantly organic - humus, muck, or peat
- X predominantly mineral - non-sandy
- ___ predominantly sandy

**Dominant vegetation**
(1) Carpinus
(2) Royal fern
(3) _____

**Hydraulic factors**
- ___ steep topography
- ___ ditched or channelized
- ___ total wetland width ≥ 100 feet

**Flooding and wetness**
- ___ semipermanently to permanently flooded or inundated
- ___ seasonally flooded or inundated
- ___ intermittently flooded or temporary surface water
- X no evidence of flooding or surface water

**Wetland type (select one)***
- ___ Bottomland hardwood forest
- ✓ Headwater forest
- ___ Swamp forest
- ___ Wet flat
- ___ Pocosin
- ___ Bog forest
- ___ Pine savanna
- ___ Freshwater marsh
- ___ Bog/fen
- ___ Ephemeral wetland
- ___ Carolina bay
- ___ Other: _____

* The rating system cannot be applied to salt or brackish marshes or stream channels

| | | | | |
|---|---|---|---|---|
| *R* | Water storage | 1 | x 4.00 = | 4 |
| *A* | Bank/Shoreline stabilization | 1 | x 4.00 = | 4 |
| *T* | Pollutant removal | 1 ** | x 5.00 = | 5 |
| *I* | Wildlife habitat | 1 | x 2.00 = | 2 |
| *N* | Aquatic life value | 2 | x 4.00 = | 8 |
| *G* | Recreation/Education | 1 | x 1.00 = | 1 |

**Wetland rating** 24

** Add 1 point if in sensitive watershed and >10% nonpoint source disturbance within ½ mile upstream, upslope, or radius

WFL wet

## WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: I-4400 BE City/County: Buncombe Sampling Date: 4/28/15

Applicant/Owner: NCDOT State: NC Sampling Point:

Investigator(s): B. Smith & P. May Section, Township, Range: Asheville

Landform (hillslope, terrace, etc.): crenulations Local relief (concave, convex, none): _____ Slope (%): 2-5

Subregion (LRR or MLRA): 136 Lat: 36.2419909 Long: -83.5627681 Datum: NAD83

Soil Map Unit Name: Evard-Cowee Complex NWI classification: Headwaters Forest

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? NO Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? NO (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 X No _____ |
| Hydric Soil Present? | 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)

- X Surface Water (A1)
- X 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)
- ___ 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)
- X 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 X No _____ Depth (inches): 1"

Water Table Present? Yes X No _____ Depth (inches): 9

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 0

**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: WFL wet

| Tree Stratum (Plot size: entire) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Liriodendron tulipifera | 30 | ✓ | FACU |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | 30 = Total Cover | | |

50% of total cover: 15 20% of total cover: 6

| Sapling/Shrub Stratum (Plot size: entire) | | | |
|---|---|---|---|
| 1. ~~—~~ | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| | = Total Cover | | |

50% of total cover: 20% of total cover:

| Herb Stratum (Plot size: 5'r) | | | |
|---|---|---|---|
| 1. Impatiens capensis | 20 | ✓ | FACW |
| 2. Lonicera japonica | 15 | ✓ | FAC |
| 3. Osmunda cinnamomea | 5 | | FACW |
| 4. Carex sp. | 5 | | FACW |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 45 = Total Cover | | |

50% of total cover: 22.5 20% of total cover: 9

| Woody Vine Stratum (Plot size: entire) | | | |
|---|---|---|---|
| 1. Celastrus orbiculatus | 20 | ✓ | FACU |
| 2. Lonicera japonica | 10 | ✓ | FAC |
| 3. | | | |
| 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: 3 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 60% (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 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: WFL wet

**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 |
|---|---|---|---|---|---|---|---|---|
| 0-6 | 10YR 3/2 | 95 | 7.5YR 5/8 | 5 | C | M | SiL | |
| Rock below | | | | | | | | |

[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)
- X 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 X No _____

Remarks:

WFL up

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: I-4400 NRTR Addendum City/County: Buncombe Sampling Date: 4/28/15

Applicant/Owner: NCDOT State: NC Sampling Point: WFL up

Investigator(s): B. Smith & P. May Section, Township, Range: Asheville

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): (C) Slope (%): 2-5

Subregion (LRR or MLRA): 136 Lat: 36.2419757 Long: -83.5627187 Datum: NAD83

Soil Map Unit Name: Evard-Cowee Complex 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? NO Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? NO (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 X | **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: WFL up

| | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| **Tree Stratum** (Plot size: 30'r) | | | |
| 1. Prunus serotina | 60 | ✓ | FACU |
| 2. Liriodendron tulipifera | 25 | ✓ | FACU |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | 85 = Total Cover | | |
| 50% of total cover: 42.5 | 20% of total cover: 17 | | |
| **Sapling/Shrub Stratum** (Plot size: 15'r) | | | |
| 1. Prunus serotina | 10 | ✓ | FACU |
| 2. Platanus occidentalis | 5 | ✓ | FACW |
| 3. Rubus sp. | 5 | ✓ | FACU |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| | 20 = Total Cover | | |
| 50% of total cover: 10 | 20% of total cover: 4 | | |
| **Herb Stratum** (Plot size: 5'r) | | | |
| 1. Podophyllum sp. | 40 | ✓ | FACU |
| 2. Polystichum acrostichoides | 20 | ✓ | FACU |
| 3. Osmunda cinnamomea | 20 | ✓ | FACW |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 80 = Total Cover | | |
| 50% of total cover: 40 | 20% of total cover: 16 | | |
| **Woody Vine Stratum** (Plot size: 30'r) | | | |
| 1. Celastrus orbiculatus | 30 | ✓ | FACU |
| 2. | | | |
| 3. | | | |
| 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: 2 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 22% (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 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 ___ No X

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

## SOIL

Sampling Point: WFL up

**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 |
|---|---|---|---|---|---|---|---|---|
| 0-4 | 7.5YR 3/4 | 100 | — | | | | L | |
| 4-12+ | 7.5YR 4/6 | 100 | — | | | | 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 X

Remarks:

WFL

# WETLAND RATING WORKSHEET Fourth Version

Project Name I-4400 NRTR Addendum Nearest Road Blue Ridge Pkwy

County Buncombe Wetland area .03 acres Wetland width 40 feet

Name of evaluator B. Smith & P. May Date 4/28/15

**Wetland location**
___ on pond or lake
___ on perennial stream
___ on intermittent stream
___ within interstream divide
X other: crenulation

**Adjacent land use**
(within ½ mile upstream, upslope, or radius)
X forested/natural vegetation 95 %
___ agriculture, urban/suburban ___ %
X impervious surface 5 %

**Soil series:** ___
___ predominantly organic - humus, muck, or peat
X predominantly mineral - non-sandy
___ predominantly sandy

**Dominant vegetation**
(1) Oriental B. Hersweet
(2) Tulip poplar
(3) ___

**Hydraulic factors**
X steep topography
___ ditched or channelized
___ total wetland width ≥ 100 feet

**Flooding and wetness**
___ semipermanently to permanently flooded or inundated
___ seasonally flooded or inundated
X intermittently flooded or temporary surface water
___ no evidence of flooding or surface water

**Wetland type (select one)***
___ Bottomland hardwood forest
X Headwater forest
___ Swamp forest
___ Wet flat
___ Pocosin
___ Bog forest
___ Pine savanna
___ Freshwater marsh
___ Bog/fen
___ Ephemeral wetland
___ Carolina bay
___ Other: ___

* The rating system cannot be applied to salt or brackish marshes or stream channels

| | | | | |
|---|---|---|---|---|
| *R* | Water storage | 1 | x 4.00 = | 4 |
| *A* | Bank/Shoreline stabilization | 1 | x 4.00 = | 4 |
| *T* | Pollutant removal | 1 ** | x 5.00 = | 5 |
| *I* | Wildlife habitat | 2 | x 2.00 = | 4 |
| *N* | Aquatic life value | 2 | x 4.00 = | 8 |
| *G* | Recreation/Education | 3 | x 1.00 = | 3 |

**Wetland rating** 28

** Add 1 point if in sensitive watershed and >10% nonpoint source disturbance within ½ mile upstream, upslope, or radius