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April 11, 2007

Lappas and Havener, P.A.
The Imperial Building
215 Morris Street, Suite 150
Durham, NC 27715

Attention: Mr. Grayson Baur

Subject: **Preliminary Wetland Determination**
Dry Creek Greenway
BAKER Project 110706

Dear Mr. Baur:

Baker Engineering NY, Inc. (BAKER) is pleased to submit this preliminary determination of jurisdictional waters of the U.S., including wetlands, at the approximately one-mile long subject corridor, located along the south side of Interstate Highway 40 (I-40) between Erwin Road and U.S. Highway 15/501 (US-15/501) in Chapel Hill, Orange County, North Carolina. This report documents the methodology used to assess approximate boundaries of jurisdictional waters of the U.S., the results of map and field review, and recommendations concerning potential permitting requirements under Section 404 of the Clean Water Act (33 U.S.C. 1344).

Background and Methodology

BAKER was contracted, in accordance with your authorization dated January 12, 2007, to conduct preliminary wetland mapping for planning purposes followed by wetland boundary approximation within 25 feet of one trail alignment, at the proposed location of the Dry Creek trail in Chapel Hill (Figure 1).

Jurisdictional wetlands are defined by 33 CFR 328.3(b) and are protected by Section 404 of the Clean Water Act (CWA), which is administered and enforced in North Carolina by the U.S. Army Corps of Engineers (USACE), Wilmington District. Jurisdictional wetlands are defined as areas that have positive evidence in the field of the following three environmental parameters:

- Hydrophytic vegetation (vegetation typically adapted for life in saturated soil conditions);
- Wetland hydrology (substrate that is inundated or saturated to the surface at some time during the growing season); and
- Hydric soils (soils that possess characteristics that are associated with reducing/anaerobic soil conditions).

Wetlands on the subject property were determined using the Routine On-Site Determination Method as defined in the 1987 Corps of Engineers Wetlands Delineation Manual. BAKER's Richard Darling reviewed the site on January 12, 2007 during preliminary corridor assessment with Mr. Grayson Baur and Ms. Katherine Gill of Lappas and Havener, P.A. (LHPA). Observations of the soil, vegetation, and hydrology were made on selected portions of the study area in order to make appropriate wetland/upland determinations. However, jurisdictional waters/upland boundaries were not flagged in

the field or surveyed at that time. The following references were reviewed to identify possible wetland areas, streams, and open water (collectively referred to as "waters of the U.S."):

- U.S. Geological Survey (USGS) 7.5-minute Topographic Quadrangle (Chapel Hill, NC);
- U.S. Department of Agriculture (USDA) Natural resources Conservation Service (NRCS) Soil Survey of Orange County;
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI), Chapel Hill quadrangle;
- Town of Chapel Hill color aerial photography and topographic survey provided by LHPA.

On February 23, 2007, BAKER's Dwayne Huneycutt and Chris Arrington surveyed potential trail centerline locations and the wetland/upland boundary at locations where the LHPA-identified trail was proposed to traverse potential jurisdictional wetlands and/or streams. Hand-held global positioning system (GPS) equipment was used to survey the trail centerline as identified by LHPA. The approximate boundaries of potential jurisdictional wetlands were delineated in the field and recorded with GPS within 25 feet of the trail centerline. Routine Wetland Determination Data Forms were completed at the proposed trail crossing locations consistent with the 1987 USACE Wetlands Delineation Manual. Perennial and intermittent stream channels traversed by the proposed trail were identified within 25 feet of the trail centerline. North Carolina Department of Environment and Natural Resources (NCDENR) Division of Water Quality (DWQ) Stream Determination Forms were completed to document channel status as intermittent or perennial at proposed crossing locations.

Map Review

The USGS topographic quadrangle depicts Dry Branch as perennial with adjacent swamp east and west of Erwin Road (Figure 2, enclosed). Intermittent tributaries are indicated both sides of Erwin Road. The NRCS soils survey depicts numerous intermittent and perennial tributaries to Dry Branch on the site, with potential hydric soils (Chewacla loam) mapped throughout the Dry Branch floodplain (see Figure 2). The NWI identifies the immediate floodplain of Dry Branch as palustrine, forested, broad-leaved deciduous, seasonally flooded (PFO1C) wetlands with adjacent peripheral, temporarily flooded (PFO1A) and emergent, persistent (PEM1A) wetlands where stream tributaries join the floodplain (see Figure 2).

Field Observations

The subject property includes approximately 100 acres traversed by maintained cleared overhead power and buried sewer line easements. The field and map review indicated the presence of contiguous bottomland floodplain wetlands associated with the Dry Branch stream channel along the length of the southern portion of the project study area. The stream channels (intermittent and perennial tributaries to Dry Branch) as well as the adjacent riparian wetlands may be considered jurisdictional waters of the U.S. (see Figure 2).

The proposed trail preferred alignment as identified in the field by LHPA on February 23, 2007 begins at the existing trailhead at Perry Creek Drive and progresses northeast along the existing gravel

footpath to an existing footbridge over Dry Branch. From there, the proposed alignment progresses southeast along the north side of the Dry Branch wetland area to Erwin Road, where there is a planned parking lot on the west side of the road. From Erwin Road, the trail parallels the existing power line easement along its north side, skirts the substation and crosses an unnamed tributary to Dry Branch (Channel #2). The trail continues along the north side of the wetlands and turns south to cross the wetland area in a direct (shortest distance) or winding route to the sewer pump station at which location this section of the trail terminates (Figure 3, enclosed). The trail crosses another unnamed tributary to Dry Branch just north of its terminus at the pump station. An additional approximately 1,000 feet of proposed trail was included running along the north side of the Eastowne Drive business park.

Field determination of wetland and stream locations and status within 25 feet of the proposed trail centerline completed on February 23, 2007 was consistent with the preliminary review completed on January 12, 2007 (see Figure 3). Dominant plant species in the wetland at the proposed trail crossing location included sweet gum (*Liquidambar styraciflua*), soft rush (*juncus* sp.), dog fennel (*Eupatorium capillifolium*) and a variety of grasses and sedges. Soils in this wetland area were of low chroma color with concretions and showed strong evidence of aquic moisture regime. Obvious indicators of wetland hydrology included saturation within the top 12 inches, water marks, drainage patterns, and large areas of inundation. Completed USACE Routine Wetland Determination Data Forms (enclosed) document potentially jurisdictional wetland and adjacent upland areas where the preferred trail alignment is proposed to cross. The potential wetland boundary in the proposed crossing vicinity, as flagged and GPS-located in the field, is depicted on Figure 3.

The preferred trail alignment contemplates two stream crossings in addition to the proposed crossing of the wetland area (which may be inclusive of one or more channels). The trail crossing of Channel #2 (see Figure 3) is located at an intermittent reach of an unnamed tributary to Dry Branch, flowing to the wetland area from the north. This channel rated 26.5 using the DWQ classification method (completed DWQ Stream Classification Forms enclosed). The proposed crossing of Channel #3 is located at a perennial reach of an unnamed tributary to Dry Branch flowing to the wetland from the south. This channel rated 32 using the DWQ classification method.

The approximate boundaries of jurisdictional waters of the U.S., including wetlands, are subject to change following verification by the USACE and DWQ. The wetland and stream estimates and the approximate location information are intended for preliminary planning purposes only.

Wetland Jurisdiction

On January 9, 2001, the U.S. Supreme Court ruled that the USACE exceeded its authority by asserting jurisdiction over abandoned, isolated gravel pits in Northern Illinois, which provided habitat to migratory birds (Solid Waste Agency of Northern Cook County v. USACE, commonly referred to as the SWANCC decision). In doing so, the Supreme Court rejected the "Migratory Bird Rule", adopted by the USACE in 1986, which the USACE had used to regulate isolated (intrastate) wetlands. In light of this ruling, the USACE Wilmington District has informally decided to make decisions on isolated

wetlands on an individual basis. Essentially, if a wetland has any drainage connectivity (any type of surface water feature) or any potential interstate commerce use (hunting, fishing, etc.) the USACE may consider it jurisdictional. In addition, the DWQ, under direction from the North Carolina Environmental Management Commission (EMC), has instituted "Temporary Isolated Wetland/Waters Permitting Rules" to regulate impacts to isolated wetlands. Therefore, if a wetland/water is not considered jurisdictional by the USACE, the DWQ will most likely assert jurisdiction over the wetland/water.

As a result of the Supreme Court decisions in United States v. Rapanos and United States v. Carabell, USACE and EPA are developing a policy that will clarify the methods that describe and document jurisdictional determinations. This policy may impact jurisdictional determinations, in cases where there are intermittent or ephemeral streams or wetlands adjacent to intermittent, ephemeral or perennial streams. In light of the pending release of formal guidance on this issue, when there are these types of waters present on a site, the Wilmington District will not issue a final determination until the final or additional interim guidance is issued by USACE headquarters. USACE has not been given a timeframe for the issuance of any formal guidance. The Wilmington District will continue to make jurisdictional calls, based on existing procedures, for waters not affected by the rulings. These include:

- Traditional navigable waters (Section 10);
- Isolated, non-navigable, intrastate (SWANCC);
- Wetlands or waters abutting Section 10 waters; and
- Natural tributaries that are relatively permanent, standing or continuously flowing, bodies of water such as streams and rivers.

The pending guidance affects procedures for processing stand-alone jurisdictional determinations. The Wilmington District is continuing to process and issue permits without delay. If forthcoming guidance should change USACE jurisdiction, then permit holders can request a revised jurisdictional determination; and corresponding permit requirements, such as mitigation, may be re-visited.

Wetland Permitting

Depending on the project and the type and extent of waters of the U.S., including streams and wetlands, to be impacted by a project, Section 404 CWA permitting requirements can range from activities that are considered exempt or preauthorized, to those requiring Pre-Construction Notification (PCN) for a Nationwide Permit (NWP) or requiring a Section 404 Individual Permit (IP) from the USACE, and Section 401 Water Quality Certification (WQC) from DWQ. Wetland permitting requirements are generally based on the linear footage of intermittent and perennial stream channel and the acreage of wetland impact, however, adjacent streams that directly influence the wetlands in question are also considered.

Limited impacts to waters of the U.S., associated with the construction or expansion of recreational facilities may be authorized under NWP 42 (and WQC 3402). Examples of recreational facilities that

may be authorized by this NWP include playing fields (e.g., football fields, baseball fields), basketball courts, tennis courts, hiking trails, bike paths, golf courses, ski areas, horse paths, nature centers, and campgrounds (excluding recreational vehicle parks). This NWP also authorizes the construction or expansion of small support facilities, such as maintenance and storage buildings and stables that are directly related to the recreational activity, but it does not authorize the construction of hotels, restaurants, racetracks, stadiums, arenas, or similar facilities. The discharge must not cause the loss of greater than ½-acre of non-tidal waters of the United States, including the loss of no more than 300 linear feet of stream bed, unless for intermittent and ephemeral stream beds this 300 linear foot limit is waived in writing by the district engineer. This NWP does not authorize discharges into non-tidal wetlands adjacent to tidal waters. The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity. Additional conditions of NWP 42 include:

1. Discharges of dredged or fill material into waters of the U.S., including wetlands, within the floodway, resulting in permanent above-grade fills are not authorized by this NWP.
2. Discharges of dredged or fill material into waters of the U.S., including wetlands, within the mapped FEMA 100-year floodplain, below headwaters (i.e. <five cfs) resulting in permanent above-grade fills are not authorized by this NWP.
3. This NWP may not be used to authorize the discharges of dredged or fill material into waters of the United States that have been identified or designated by the State of North Carolina as:
   a. Outstanding Resource Waters
   b. High Quality Waters
   c. Coastal Wetlands as defined by North Carolina's Coastal Area Management Act
   d. Wetlands adjacent to these waters

Impacts allowable under NWP 42 involving greater than 1/3 acre of waters of the U.S., including wetlands, and/or greater than 150 linear feet of jurisdictional stream channel will also require notification to DWQ. In addition, where notification is required, mitigation will be required by DWQ for impacts to perennial[1] streams and/or greater than one-acre of wetlands.

All activities conducted under the NWP program must comply with the NP General Conditions. Permitting under Section 404 of the Clean Water Act may require coordination with interested agencies including, but not limited to USFWS, the North Carolina Wildlife Resources Commission, the State Historic Preservation Office, NCDENR, and the U.S. Environmental Protection Agency.

If jurisdictional areas to be impacted exceed ½ acre of wetlands and/or 300 linear feet of stream providing important aquatic function, then a Section 404 Individual Permit (IP) would likely be required for the proposed impacts. The IP process involves rigorous documentation and will require addressing protected species and cultural resources issues, an alternatives analysis, impact avoidance and minimization strategies, and compensatory wetland and/or stream mitigation. The IP process

[1] DWQ defines perennial stream channels as those that rate 30 or more using the latest version of the Stream Identification Method.

typically includes a 30-day public notice period with additional extended review by the regulatory agencies.

Recommendations

BAKER recommends that the jurisdictional boundaries of waters of the U.S., including wetlands, be verified by the USACE and DWQ prior to mechanized land clearing or impacts. The USACE and DWQ verification will provide appropriate documentation concerning the potential permitting of proposed site impacts. These recommendations do not consider floodway or floodplain fill restrictions or any other restrictions as mandated by local ordinance, State, or Federal regulation. The findings of our study are only applicable to the dates of our field review.

We appreciate the opportunity to conduct these environmental services for LHPA. Please contact Richard Darling at 919-459-9009, if you have any questions regarding this review.

Sincerely,

BAKER ENGINEERING NY, INC.

Richard B. Darling, C.E.
Environmental Manager

JCA/DH/RBD:rbd

Enclosure(s) Figure 1 Location Map
Figure 2 Preliminary Wetland Map
Figure 3 Preliminary Trail Map
Completed USACE Routine Wetland Determination Data Forms
Completed DWQ Stream Classification Forms (Version 3.1)

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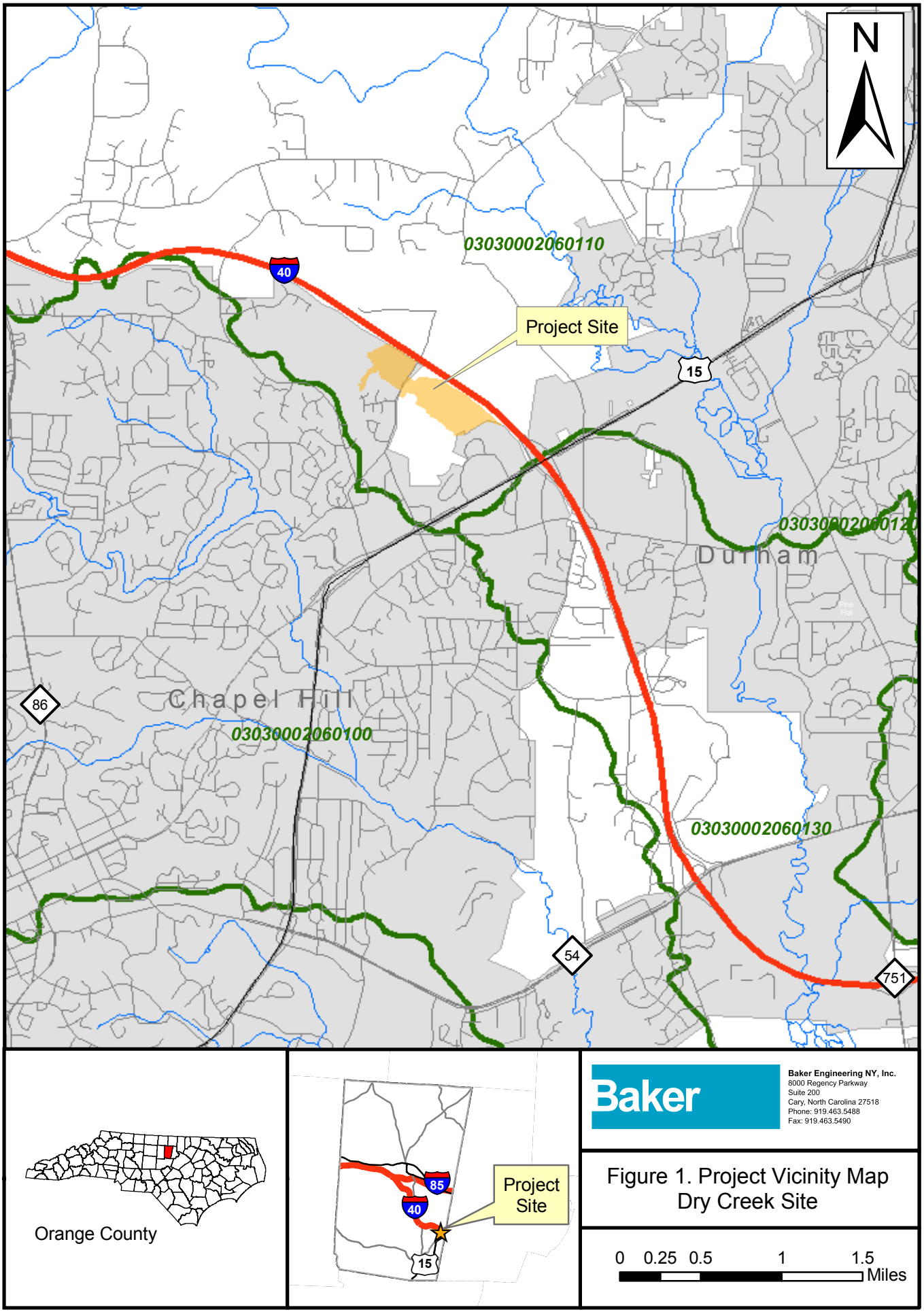

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Figure 1. Project Vicinity Map
Dry Creek Site

N

Legend

- Stream Channel (Preliminary Estimate)
- Ch - Chewacla loam (NRCS)
- Study Area
- Streams (USGS)
- Wetlands (NWI)
- Wetlands (Preliminary Estimate)
- 2 ft Contours

This Map is for preliminary planning purposes only. Potential wetland areas were approximated by Buck based on existing map sources and field review. Jurisdictional boundaries or stream channels were not marked in the field, verified by USACE or DWQ, or surveyed.

BRAIDED CHANNELS

PONDED, STRAIGHTED REACH

BEAVER ACTIVITY

BRAIDED CHANNELS

MULTIPLE CHANNELS

BRAIDED

MULTIPLE CHANNELS

Erwin Rd

I-40

40

Callard Run

Pebble Springs Rd

Tabscott Ln

Chippoaks Dr

Green Willow Ct

Big Meadows Pl

Big Meadows Pl

Green Willow Ct

Orchard Ln

Orchard Ln

Orchard Ln

Carriage Cir

Covington Dr

Erwin Rd

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0 250 500 1,000 Feet

Figure 2
Preliminary Wetland Map
Dry Creek Site

N

EXISTING FOOTBRIDGE

Channel #1 Ephemeral

PIPE

CULVERT

CULVERT

Channel #2 Intermittent

Channel #3 Perennial

Legend

- Trees
- Delineated Wetland Boundary
- Wetland Datapoint
- Trail (Proposed Alignment)
- Potenetial Trail Extension
- Stream Channel (Preliminary Estimate)
- Parking Lot (Proposed)
- Study Area
- Wetlands (Preliminary Estimate)

Jurisdictional boundaries or stream channels were not verified by USACE or DWQ.

0 250 500 1,000 Feet

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Figure 3
Preliminary Trail Map
Dry Creek Site

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Determination Manual)

Project / Site: Dry Creek
Applicant / Owner:
Investigator: Arrington / Honeycutt

Date: 2/23/07
County: Orange
State: NC

Do normal circumstances exist on the site? Yes X No
Is the site significantly disturbed (Atypical situation)? Yes No X
Is the area a potential problem area? Yes No X
(explain on reverse if needed)

Community ID:
Transect ID:
Plot ID: Wetland #1

VEGETATION

Dominant Plant Species	Stratum	Indicator
1. Sweetgum	Tree	FAC+
2. Cypress (sp)	Tree	FACW
3. Dog Fennel		FAC+
4. Juncus (sp)		FACW
5. Polpha angustifolia		OBL
6. Sedges		
7.		
8.		

Dominant Plant Species	Stratum	Indicator
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 100%

Remarks: Wetland Vegetation Present Based Upon Greater than 50% of the Plant Species are/are not Classified as FAC-OBL in the National List of Plant Species that Occur in Wetlands. Sample plot was taken...

>50% of plant species FAC or wetter Wetland veg present.

HYDROLOGY

___ Recorded Data (Describe In Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

___ No Recorded Data Available

Field Observations:

Depth of Surface Water: 0 (in.)

Depth to Free Water in Pit: 3 (in.)

Depth to Saturated Soil: 0 (in.)

Wetland Hydrology Indicators

Primary Indicators:
- ✓ Inundated
- ✓ Saturated in Upper 12"
- ✓ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ✓ Drainage Patterns in Wetlands

Secondary Indicators:
- ___ Oxidized Roots Channels in Upper 12"
- ✓ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks: Wetland hydrology present

SOILS

Map Unit Name
(Series and Phase): _____ Drainage Class: _____

Taxonomy (Subgroup): _____ Confirm Mapped Type? Yes___ No___

Profile Description:

Depth (Inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-1	O	organic muck			
1-6		6/2 7.5YR	6/8 7.5YR	20%	loamy clay
6+		6/2 7.5YR	6/8 7.5YR	5%	loamy clay

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- X Aquic Moisture Regime
- X Reducing Conditions
- X Gleyed or Low-Chroma Colors
- X Concretions
- ___ High Organic Content in Surface Layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed On Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: Hydric soils present

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes X No ___
Wetland Hydrology Present? Yes X No ___
Hydric Soils Present? Yes X No ___

Is the Sampling Point Within a Wetland? Yes X No ___

Remarks: Location (describe) is/is not classified as a wetland based upon the criteria set forth in the 1987 Army Corps of Engineers Wetlands Delineation Manual.

All 3 criteria met. Area is in a wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Determination Manual)

Project / Site: Dry Creek
Applicant / Owner:
Investigator: Arrington / Honeycutt

Date: 2/23/07
County: Orange
State: NC

Do normal circumstances exist on the site? Yes X No ___
Is the site significantly disturbed (Atypical situation)? Yes ___ No X
Is the area a potential problem area? Yes ___ No X
(explain on reverse if needed)

Community ID: ___
Transect ID: ___
Plot ID: Upland #1

VEGETATION

Dominant Plant Species	Stratum	Indicator
1. Pinus (loblolly)	Trees	FAC
2. American Beech	Trees	FACW
3. Oak (Red)	Trees	FACU-
4.		
5. Vine (sp)	Vine	FAC
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 50%

Remarks: Wetland Vegetation Present Based Upon Greater than 50% of the Plant Species are/are not Classified as FAC-OBL in the National List of Plant Species that Occur in Wetlands. Sample plot was taken...

Based on vegetation Criteria for wetland not met

HYDROLOGY

___ Recorded Data (Describe In Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

___ No Recorded Data Available

Field Observations:

Depth of Surface Water: — (in.)

Depth to Free Water in Pit: — (in.)

Depth to Saturated Soil: — (in.)

Wetland Hydrology Indicators

Primary Indicators:
- ___ Inundated
- ___ Saturated in Upper 12"
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns In Wetlands

Secondary Indicators:
- ___ Oxidized Roots Channels in Upper 12"
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:

No hydrology present

SOILS

Map Unit Name
(Series and Phase):_____ Drainage Class:_____

Taxonomy (Subgroup):_____ Confirm Mapped Type? Yes___ No___

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-5		4/4 7.5 yr			Sandy clay
5-12		5/4 7.5 yr	4/3 7.5 yr	< 5%	Sandy clay
12+		5/6 7.5 yr			clay

Hydric Soil Indicators:

___Histosol
___Histic Epipedon
___Sulfidic Odor
___Aquic Moisture Regime
___Reducing Conditions
___Gleyed or Low-Chroma Colors
___Concretions
___High Organic Content in Surface Layer in Sandy Soils
___Organic Streaking in Sandy Soils
___Listed On Local Hydric Soils List
___Listed on National Hydric Soils List
___Other (Explain in Remarks)

Remarks:
No hydric indicators or soil stress

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes___ No X
Wetland Hydrology Present? Yes___ No X
Hydric Soils Present? Yes___ No X

Is the Sampling Point Within a Wetland? Yes___ No X

Remarks: Location (describe) is/is not classified as a wetland based upon the criteria set forth in the 1987 Army Corps of Engineers Wetlands Delineation Manual.

Area not a wetland. Upland to wetland along trail

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Determination Manual)

Project / Site: Dry Creek
Applicant / Owner:
Investigator: Arrington / Hunsucker

Date: 2/23/07
County: Orange
State: NC

Do normal circumstances exist on the site? Yes X No ___
Is the site significantly disturbed (Atypical situation)? Yes ___ No X
Is the area a potential problem area? Yes ___ No X
(explain on reverse if needed)

Community ID: ___
Transect ID: ___
Plot ID: Wetland #2

VEGETATION

Dominant Plant Species	Stratum	Indicator
1. Sweet gum	Tree	Fac +
2. Cog Panel		Fac +
3. Sedges		FACW
4. Tall grasses/Sedges		-
5.		
6.		
7.		
8.		

Dominant Plant Species	Stratum	Indicator
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). >75%

Remarks: Wetland Vegetation Present Based Upon Greater than 50% of the Plant Species are/are not Classified as FAC-OBL in the National List of Plant Species that Occur in Wetlands. Sample plot was taken...

>50% of plants are Fac or wetter Wetland vegetation is present.

HYDROLOGY

___ Recorded Data (Describe In Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

___ No Recorded Data Available

Field Observations:

Depth of Surface Water: 0 (in.)

Depth to Free Water in Pit: 4-5 (in.)

Depth to Saturated Soil: 0 (in.)

Wetland Hydrology Indicators

Primary Indicators:
- ___ Inundated
- ✓ Saturated in Upper 12"
- ✓ Water Marks
- ✓ Drift Lines
- ___ Sediment Deposits
- ✓ Drainage Patterns in Wetlands

Secondary Indicators:
- ___ Oxidized Roots Channels in Upper 12"
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:

Wetland hydrology is present

SOILS

Map Unit Name
(Series and Phase): _____ Drainage Class: _____

Taxonomy (Subgroup): _____ Confirm Mapped Type? Yes___ No___

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-2		4/4 7.5yr	4/2 7.5yr	15%	clay
2-8		4/2 7.5yr	4/1&5/6 7.5yr	10/c	clay
8+		4/4 7.5yr	4/6 7.5yr	>5%	Sandy clay

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- X Sulfidic Odor
- X Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- X Concretions
- ___ High Organic Content in Surface Layer in Sandy Soils
- X Organic Streaking in Sandy Soils
- ___ Listed On Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks:

Wetland soils are present

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes X	No ___	Is the Sampling Point
Wetland Hydrology Present?	Yes X	No ___	Within a Wetland? Yes X No ___
Hydric Soils Present?	Yes X	No ___	

Remarks: Location (describe) is/is not classified as a wetland based upon the criteria set forth in the 1987 Army Corps of Engineers Wetlands Delineation Manual.

All necessary requirements met for point to be considered a wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Determination Manual)

Project / Site: Dry Creek Applicant / Owner: Investigator: Arrington / Honeycutt	Date: 2/23/07 County: Orange State: NC
Do normal circumstances exist on the site? Yes X No ___ Is the site significantly disturbed (Atypical situation)? Yes ___ No X Is the area a potential problem area? Yes ___ No X (explain on reverse if needed)	Community ID: ___ Transect ID: ___ Plot ID: Upland #2

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Sweet gum	Tree	Fac +	9.		
2. Red maple	Tree	Fac	10.		
3. Pine (sp)	Tree	Fac	11.		
4. ground moss	ground cover		12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 75%

Remarks: Wetland Vegetation Present Based Upon Greater than 50% of the Plant Species are/are not Classified as FAC-OBL in the National List of Plant Species that Occur in Wetlands. Sample plot was taken...

75% of plants are FAC or wetter. Wetland plants / vegetation is present.

HYDROLOGY

___ Recorded Data (Describe In Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

___ No Recorded Data Available

Field Observations:

Depth of Surface Water: ___ (in.)

Depth to Free Water in Pit: ___ (in.)

Depth to Saturated Soil: ___ (in.)

Wetland Hydrology Indicators

Primary Indicators:
- ___ Inundated
- ___ Saturated In Upper 12"
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators:
- ___ Oxidized Roots Channels in Upper 12"
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks: No hydrology present to indicate a wetland

SOILS

Map Unit Name
(Series and Phase): _____ Drainage Class: _____

Taxonomy (Subgroup): _____ Confirm Mapped Type? Yes___ No___

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-4		4/4 7.5yr			Sandy clay
4-8		4/6 7.5yr			Sandy clay
8+		3/4 7.5yr		>5% 5/6 7.5yr	Clay Concretion at this depth

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- X Concretions (at depth)
- ___ High Organic Content in Surface Layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed On Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: Soil is non hydric

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes X No ___
Wetland Hydrology Present? Yes ___ No X
Hydric Soils Present? Yes ___ No X

Is the Sampling Point Within a Wetland? Yes ___ No X

Remarks: Location (describe) is/is not classified as a wetland based upon the criteria set forth in the 1987 Army Corps of Engineers Wetlands Delineation Manual.

Area is not a wetland

North Carolina Division of Water Quality – Stream Identification Form; Version 3.1

Date: 2-23-07	**Project:** Dan Creek	**Latitude:**
Evaluator: D. Hungerford	**Site:** Stream 1	**Longitude:**
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30* 8.5	**County:** Orange	**Other** *e.g. Quad Name:*

A. Geomorphology (Subtotal = 3.5)	Absent	Weak	Moderate	Strong
1[a]. Continuous bed and bank	(0)	1	2	3
2. Sinuosity	0	(1)	2	3
3. In-channel structure: riffle-pool sequence	(0)	1	2	3
4. Soil texture or stream substrate sorting	(0)	1	2	3
5. Active/relic floodplain	0	(1)	2	3
6. Depositional bars or benches	(0)	1	2	3
7. Braided channel	0	1	(2)	3
8. Recent alluvial deposits	(0)	1	2	3
9[a] Natural levees	(0)	1	2	3
10. Headcuts	(0)	1	2	3
11. Grade controls	(0)	0.5	1	1.5
12. Natural valley or drainageway	0	(0.5)	1	1.5
13. Second or greater order channel on existing USGS or NRCS map or other documented evidence.	No = (0)		Yes = 3	

[a] Man-made ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 1)				
14. Groundwater flow/discharge	(0)	1	2	3
15. Water in channel and > 48 hrs since rain, **or** Water in channel -- dry or growing season	0	(1)	2	3
16. Leaflitter	1.5	1	0.5	(0)
17. Sediment on plants or debris	(0)	0.5	1	1.5
18. Organic debris lines or piles (Wrack lines)	(0)	0.5	1	1.5
19. Hydric soils (redoximorphic features) present?	No = (0)		Yes = 1.5	

C. Biology (Subtotal = 4)				
20[b]. Fibrous roots in channel	3	(2)	1	0
21[b]. Rooted plants in channel	3	(2)	1	0
22. Crayfish	(0)	0.5	1	1.5
23. Bivalves	(0)	1	2	3
24. Fish	(0)	0.5	1	1.5
25. Amphibians	(0)	0.5	1	1.5
26. Macrobenthos (note diversity and abundance)	(0)	0.5	1	1.5
27. Filamentous algae; periphyton	(0)	1	2	3
28. Iron oxidizing bacteria/fungus.	(0)	0.5	1	1.5
29[b]. Wetland plants in streambed	FAC = 0.5; FACW = 0.75; OBL = 1.5 SAV = 2.0; Other = (0)			

[b] Items 20 and 21 focus on the presence of upland plants, Item 29 focuses on the presence of aquatic or wetland plants.

Notes: (use back side of this form for additional notes.)

Sketch:

North Carolina Division of Water Quality – Stream Identification Form; Version 3.1

Date: 2-23-07	**Project:** Dru Creek	**Latitude:**	
Evaluator: D. Honeycutt	**Site:** Stream 2	**Longitude:**	
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30* 26.5	**County:** Orange	**Other** *e.g. Quad Name:*	

A. Geomorphology (Subtotal = 11.5)	Absent	Weak	Moderate	Strong
1[a]. Continuous bed and bank	0	1	(2)	3
2. Sinuosity	0	(1)	2	3
3. In-channel structure: riffle-pool sequence	0	1	(2)	3
4. Soil texture or stream substrate sorting	0	(1)	2	3
5. Active/relic floodplain	0	1	(2)	3
6. Depositional bars or benches	(0)	1	2	3
7. Braided channel	(0)	1	2	3
8. Recent alluvial deposits	0	1	(2)	3
9[a] Natural levees	(0)	1	2	3
10. Headcuts	(0)	1	2	3
11. Grade controls	0	0.5	(1)	1.5
12. Natural valley or drainageway	0	(0.5)	1	1.5
13. Second or greater order channel on existing USGS or NRCS map or other documented evidence.	No = (0)		Yes = 3	

[a] Man-made ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 7.5)				
14. Groundwater flow/discharge	0	1	2	(3)
15. Water in channel and > 48 hrs since rain, **or** Water in channel -- dry or growing season	0	1	(2)	3
16. Leaflitter	1.5	(1)	0.5	0
17. Sediment on plants or debris	(0)	0.5	1	1.5
18. Organic debris lines or piles (Wrack lines)	0	0.5	1	(1.5)
19. Hydric soils (redoximorphic features) present?	No = (0)		Yes = 1.5	

C. Biology (Subtotal = 7.5)				
20[b]. Fibrous roots in channel	3	(2)	1	0
21[b]. Rooted plants in channel	3	(2)	1	0
22. Crayfish	0	(0.5)	1	1.5
23. Bivalves	(0)	1	2	3
24. Fish	(0)	0.5	1	1.5
25. Amphibians	0	0.5	(1)	1.5
26. Macrobenthos (note diversity and abundance)	(0)	0.5	1	1.5
27. Filamentous algae; periphyton	0	1	(2)	3
28. Iron oxidizing bacteria/fungus.	0	(0.5)	1	1.5
29[b]. Wetland plants in streambed	FAC = 0.5; FACW = 0.75; OBL = 1.5 SAV = 2.0; Other = (0)			

[b] Items 20 and 21 focus on the presence of upland plants, Item 29 focuses on the presence of aquatic or wetland plants.

Notes: (use back side of this form for additional notes.)

Sketch:

North Carolina Division of Water Quality – Stream Identification Form; Version 3.1

Date: 2-23-07	**Project:** Dry Creek		**Latitude:**
Evaluator: D. Huneycutt	**Site:** Stream 3		**Longitude:**
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30* 32	**County:** Orange		**Other** *e.g. Quad Name:*

A. Geomorphology (Subtotal = 13.5)	Absent	Weak	Moderate	Strong
1[a]. Continuous bed and bank	0	1	2	(3)
2. Sinuosity	0	(1)	2	3
3. In-channel structure: riffle-pool sequence	0	(1)	2	3
4. Soil texture or stream substrate sorting	0	(1)	2	3
5. Active/relic floodplain	0	1	2	(3)
6. Depositional bars or benches	0	(1)	2	3
7. Braided channel	(0)	1	2	3
8. Recent alluvial deposits	0	1	(2)	3
9[a] Natural levees	(0)	1	2	3
10. Headcuts	(0)	1	2	3
11. Grade controls	0	0.5	(1)	1.5
12. Natural valley or drainageway	0	(0.5)	1	1.5
13. Second or greater order channel on existing USGS or NRCS map or other documented evidence.	No = (0)		Yes = 3	

[a] Man-made ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 8.5)				
14. Groundwater flow/discharge	0	1	(2)	3
15. Water in channel and > 48 hrs since rain, **or** Water in channel -- dry or growing season	0	1	2	(3)
16. Leaflitter	(1.5)	1	0.5	0
17. Sediment on plants or debris	0	(0.5)	1	1.5
18. Organic debris lines or piles (Wrack lines)	0	0.5	1	(1.5)
19. Hydric soils (redoximorphic features) present?	No = (0)		Yes = 1.5	

C. Biology (Subtotal = 10)				
20[b]. Fibrous roots in channel	(3)	2	1	0
21[b]. Rooted plants in channel	(3)	2	1	0
22. Crayfish	0	(0.5)	1	1.5
23. Bivalves	(0)	1	2	3
24. Fish	(0)	0.5	1	1.5
25. Amphibians	(0)	0.5	1	1.5
26. Macrobenthos (note diversity and abundance)	0	(0.5)	1	1.5
27. Filamentous algae; periphyton	0	1	2	(3)
28. Iron oxidizing bacteria/fungus.	(0)	0.5	1	1.5
29[b]. Wetland plants in streambed	FAC = 0.5; FACW = 0.75; OBL = 1.5 SAV = 2.0; Other = (0)			

[b] Items 20 and 21 focus on the presence of upland plants, Item 29 focuses on the presence of aquatic or wetland plants.

Notes: (use back side of this form for additional notes.)

Sketch: