



APPENDIX C

Wetlands Impacts





Legend

-  Project Area
-  Streams
-  Pond (Non-Jurisdictional)
-  Wetland Area

0 500 1,000 Feet



**U.S. ARMY CORPS OF ENGINEERS
WILMINGTON DISTRICT**

Action Id. 2017-02065 County: Wake U.S.G.S. Quad: NC- Cary

NOTIFICATION OF JURISDICTIONAL DETERMINATION

Requestor: Raleigh-Durham Airport Authority
Michael J. Landguth
Address: 1000 Trade Drive, P.O. Box 80001
RDU Airport, NC 27623
Telephone Number: 919-840-7702
E-mail: Michael.Landguth@rdu.com

Size (acres) +381 of 4,790.07
Nearest Waterway Haleys Branch
USGS HUC 03020201

Nearest Town Cary
River Basin Neuse
Coordinates Latitude: 35.851719
Longitude: -78.789846

Location description: The project is located at RDU International Airport, National Guard Drive. The project area is a portion of PIN 0767324317, for the RDU Park Economy 3 Expansion Project.

Indicate Which of the Following Apply:

A. Preliminary Determination

- There appear to be waters, including wetlands on the above described project area/property, that may be subject to Section 404 of the Clean Water Act (CWA)(33 USC § 1344) and/or Section 10 of the Rivers and Harbors Act (RHA) (33 USC § 403). The waters, including wetlands have been delineated, and the delineation has been verified by the Corps to be sufficiently accurate and reliable. The approximate boundaries of these waters are shown on the enclosed delineation map dated DATE. Therefore this preliminary jurisdiction determination may be used in the permit evaluation process, including determining compensatory mitigation. For purposes of computation of impacts, compensatory mitigation requirements, and other resource protection measures, a permit decision made on the basis of a preliminary JD will treat all waters and wetlands that would be affected in any way by the permitted activity on the site as if they are jurisdictional waters of the U.S. This preliminary determination is not an appealable action under the Regulatory Program Administrative Appeal Process (Reference 33 CFR Part 331). However, you may request an approved JD, which is an appealable action, by contacting the Corps district for further instruction.
- There appear to be waters, including wetlands on the above described project area/property, that may be subject to Section 404 of the Clean Water Act (CWA)(33 USC § 1344) and/or Section 10 of the Rivers and Harbors Act (RHA) (33 USC § 403). However, since the waters, including wetlands have not been properly delineated, this preliminary jurisdiction determination may not be used in the permit evaluation process. Without a verified wetland delineation, this preliminary determination is merely an effective presumption of CWA/RHA jurisdiction over all of the waters, including wetlands at the project area, which is not sufficiently accurate and reliable to support an enforceable permit decision. We recommend that you have the waters, including wetlands on your project area/property delineated. As the Corps may not be able to accomplish this wetland delineation in a timely manner, you may wish to obtain a consultant to conduct a delineation that can be verified by the Corps.

B. Approved Determination

- There are Navigable Waters of the United States within the above described project area/property subject to the permit requirements of Section 10 of the Rivers and Harbors Act (RHA) (33 USC § 403) and Section 404 of the Clean Water Act (CWA)(33 USC § 1344). Unless there is a change in law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- There are waters, including wetlands on the above described project area/property subject to the permit requirements of Section 404 of the Clean Water Act (CWA) (33 USC § 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- We recommend you have the waters, including wetlands on your project area/property delineated. As the Corps may not be able to accomplish this wetland delineation in a timely manner, you may wish to obtain a consultant to conduct a delineation that can be verified by the Corps.

2017-02065

- The waters, including wetlands on your project area/property have been delineated and the delineation has been verified by the Corps. The approximate boundaries of these waters are shown on the enclosed delineation map dated DATE. We strongly suggest you have this delineation surveyed. Upon completion, this survey should be reviewed and verified by the Corps. Once verified, this survey will provide an accurate depiction of all areas subject to CWA jurisdiction on your property which, provided there is no change in the law or our published regulations, may be relied upon for a period not to exceed five years.
- The waters, including wetlands have been delineated and surveyed dated October 10, 2017 and are accurately depicted on the plat signed by the Corps Regulatory Official identified below on 2/13/2019. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- There are no waters of the U.S., to include wetlands, present on the above described project area/property which are subject to the permit requirements of Section 404 of the Clean Water Act (33 USC 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- The property is located in one of the 20 Coastal Counties subject to regulation under the Coastal Area Management Act (CAMA). You should contact the Division of Coastal Management in Morehead City, NC, at (252) 808-2808 to determine their requirements.

Placement of dredged or fill material within waters of the US, including wetlands, without a Department of the Army permit may constitute a violation of Section 301 of the Clean Water Act (33 USC § 1311). Placement of dredged or fill material, construction or placement of structures, or work within navigable waters of the United States without a Department of the Army permit may constitute a violation of Sections 9 and/or 10 of the Rivers and Harbors Act (33 USC § 401 and/or 403). If you have any questions regarding this determination and/or the Corps regulatory program, please contact Tasha Alexander at 919-554-4884, ext. 35 or Tasha.L.Alexander@usace.army.mil.

C. Basis For Determination: See the approved jurisdictional determination forms dated 02/13/2019. The survey dated October 10, 2017, sheets 1-12, accurately depict the boundaries of waters of the U.S.

D. Remarks: Site visit conducted on October 17, 2017.

E. Attention USDA Program Participants

This delineation/determination has been conducted to identify the limits of Corps' Clean Water Act jurisdiction for the particular site identified in this request. The delineation/determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA Program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

F. Appeals Information (This information applies only to approved jurisdictional determinations as indicated in B. above)

This correspondence constitutes an approved jurisdictional determination for the above described site. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and request for appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the following address:

US Army Corps of Engineers
South Atlantic Division
Attn: Jason Steele, Review Officer
60 Forsyth Street SW, Room 10M15
Atlanta, Georgia 30303-8801

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by 04/14/2019.

****It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this correspondence.****

Corps Regulatory Official



Date of JD: 02/13/2019 Expiration Date of JD: 02/12/2024

2017-02065

The Wilmington District is committed to providing the highest level of support to the public. To help us ensure we continue to do so, please complete the Customer Satisfaction Survey located at http://corpsmapu.usace.army.mil/cm_apex/f?p=136:4:0

Copy furnished:

Agent: Soil and Environmental Consultants, PA
Bob Zarzecki
Address: 8412 Falls of Neuse Road
Raleigh, NC 27615
Telephone Number: 919-846-5900
E-mail: bzarzecki@sandec.com

NOTICE OF SECTION II ADMINISTRATIVE APPEAL OF DECISIONS AND PROCEDURES AND
 REGULATIONS FOR THE

Applicant: **Raleigh-Durham Airport Authority, Michael J. Landguth** File Number: **2017-02065** Date: **02/13/2019**

Attached is:	See Section below
<input type="checkbox"/> INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
<input type="checkbox"/> PROFFERED PERMIT (Standard Permit or Letter of permission)	B
<input type="checkbox"/> PERMIT DENIAL	C
<input checked="" type="checkbox"/> APPROVED JURISDICTIONAL DETERMINATION	D
<input type="checkbox"/> PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION II: The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at or <http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits.asp> or the Corps regulations at 33 CFR Part 330.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **OBJECT:** If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the district engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION

If you have questions regarding this decision and/or the appeal process you may contact:
District Engineer, Wilmington Regulatory Division
Attn: Tasha Alexander
Raleigh Regulatory Office
U.S Army Corps of Engineers
3331 Heritage Trade Drive, Suite 105
Wake Forest, North Carolina 27587

If you only have questions regarding the appeal process you may also contact:
Mr. Jason Steele, Administrative Appeal Review Officer
CESAD-PDO
U.S. Army Corps of Engineers, South Atlantic Division
60 Forsyth Street, Room 10M15
Atlanta, Georgia 30303-8801
Phone: (404) 562-5137

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

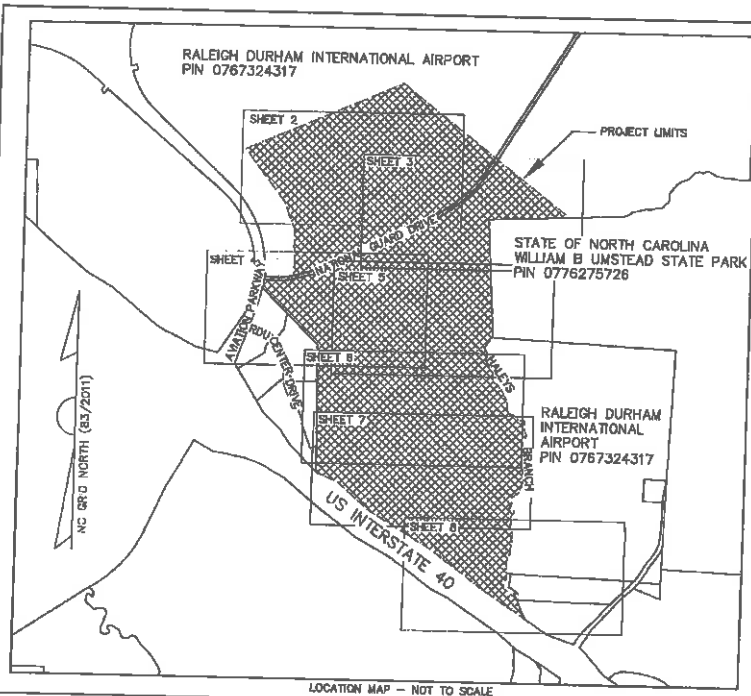
Signature of appellant or agent. _____	Date:	Telephone number:
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For appeals on Initial Proffered Permits send this form to:

District Engineer, Wilmington Regulatory Division, Attn: Tasha Alexander, 69 Darlington Avenue, Wilmington, North Carolina 28403

For Permit denials, Proffered Permits and Approved Jurisdictional Determinations send this form to:

Division Engineer, Commander, U.S. Army Engineer Division, South Atlantic, Attn: Mr. Jason Steele, Administrative Appeal Officer, CESAD-PDO, 60 Forsyth Street, Room 10M15, Atlanta, Georgia 30303-8801
Phone: (404) 562-5137



I certify that this map was drawn under my supervision from an actual survey made under my supervision, that the boundaries not surveyed are drawn from Wake County GIS; that the ratio of precision or positional accuracy is ± 1 meter, and that this map meets the requirements of The Standards of Practice for Land Surveying in North Carolina (21 NCAC 56, 1600), This 25th day of October 2017.

Seal *Mark A. Smith*
 Mark A. Smith - Professional Land Surveyor

- NOTES:**
1. WETLANDS AND US REGULATED WATERS DELINEATION BY SOIL AND ENVIRONMENTAL CONSULTANTS, PA 11010 RAVEN RIDGE ROAD, RALEIGH NC 27614
 2. LONGITUDE AND LATITUDE SHOWN HEREON ARE REFERENCED HORIZONTALLY TO THE NORTH AMERICAN DATUM OF 1983 USING THE 2011 ADJUSTMENT (NA83-2011).
 3. THIS IS A WETLANDS AND US REGULATED WATERS SURVEY REFERENCED TO PROPERTY LINES TAKEN FROM WAKE COUNTY GIS DATA.
 4. THIS SURVEY MEETS THE HORIZONTAL ACCURACY STANDARDS FOR A CLASS B L/S/GIS SURVEY (SUB-METRE) AS SET FORTH BY THE NC BOARD FOR ENGINEERS AND SURVEYORS IN 21 NCAC 56.1608.
 5. FIELD SURVEY CONDUCTED USING TOPCON GHS-1 L/L2 (GPS + GLD/MSS) RECEIVER USING THE NCGS CONS RTK CORRECTION SYSTEM.

WETLANDS AND REGULATED WATERS AREAS AND LENGTHS

WETLANDS = 1.777 ACRES
 LINEAR WETLANDS = 0.024 ACRES
 PERENNIAL STREAMS = 2.025 ACRES, 9566 FEET
 INTERMITTENT STREAMS = 0.465 ACRES, 5,709 FEET
 NON-JURISDICTIONAL PONDS BY HIGH GROUND = 1.128 ACRES
 LAKE CRAWTREE/OPEN WATER = 0.569 ACRES

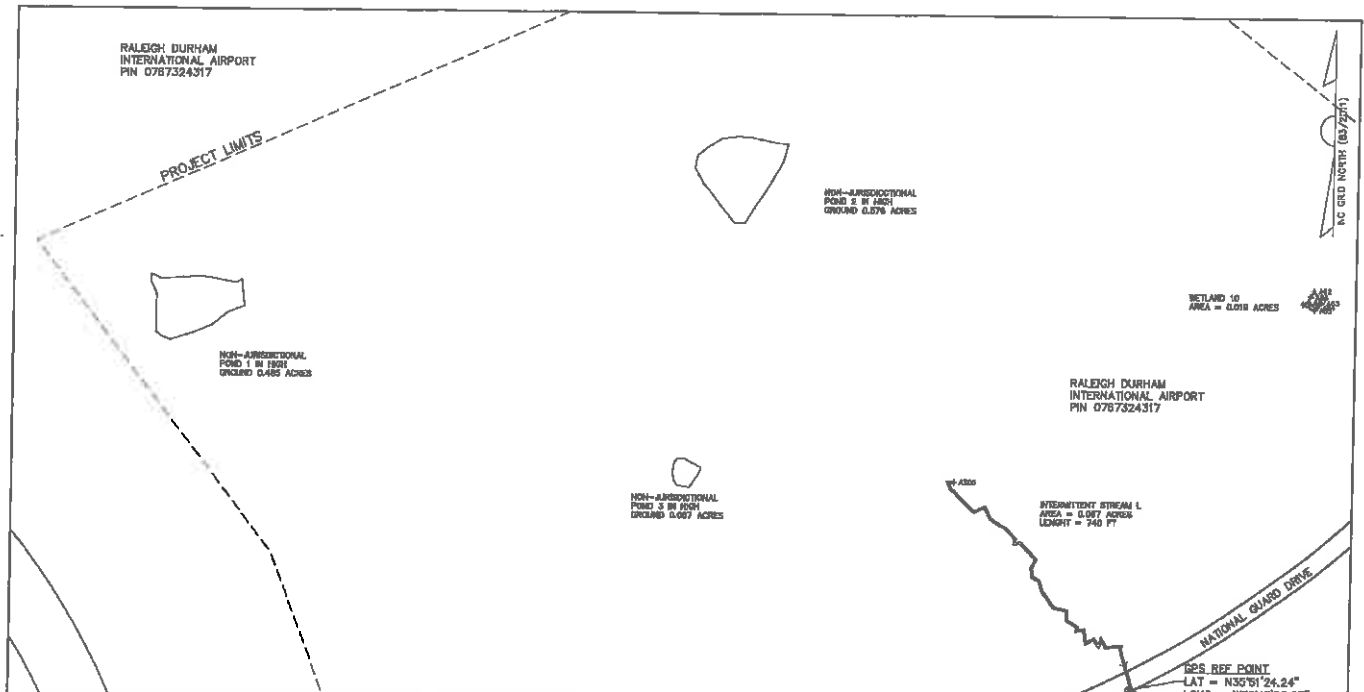
"This certifies that this copy of this plat accurately depicts the boundary of the jurisdiction of the Section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is change in the law or our published regulations, this determination of Section 404 jurisdiction may be relied upon for a period not to exceed five years from this date. The undersigned completed this determination utilizing the appropriate Regional Supplement to the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual, 38 C.F.R. part 328 and other U.S. Army Corps of Engineers guidance."

Regulatory Official: *Nona R. Davidson*
 Title: *Regulatory Specialist*
 Date: *2-13-2019*
 USACE Action ID: *2017-02205*

WETLAND AND REGULATED WATERS SURVEY PLAT
 RS&H ARCHITECTS-ENGINEERS-PLANNERS, INC.
 PROPERTY OF THE RALEIGH DURHAM INTERNATIONAL AIRPORT
 CEDAR FORKS TOWNSHIP WAKE COUNTY NORTH CAROLINA
 OCTOBER 10, 2017 SCALE: AS SHOWN

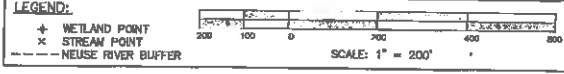


SHEET: 1 OF 12



This certifies that this copy of this plat accurately depicts the boundary of the jurisdiction of the Section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is change in the law or our published regulations, this determination of Section 404 jurisdiction may be relied upon for a period not to exceed five years from this date. The undersigned completed this determination utilizing the appropriate Regional Supplement to the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual, 33 C.F.R. part 328 and other U.S. Army Corps of Engineers guidance.

Regulatory Official: *Joshua Alexander*
 Title: *Regulatory Specialist*
 Date: *2-13-2019*
 USACE Action ID: *2017-0200KS*

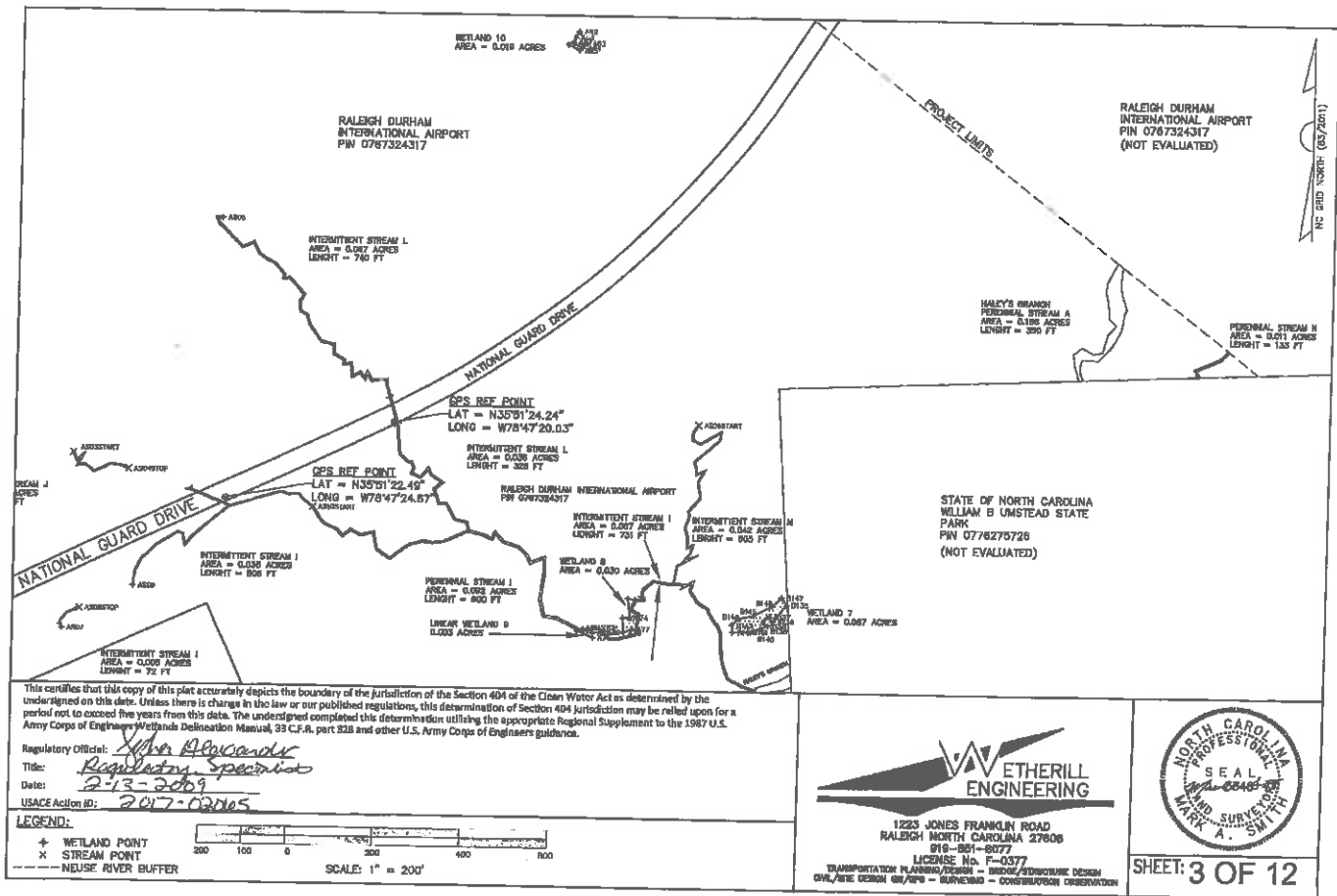


ETHERILL ENGINEERING

1223 JONES FRANKLIN ROAD
 RALEIGH NORTH CAROLINA 27606
 919-851-8077
 LICENSE No. F-0377
 TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN GE/SPS - SURVEYING - CONSTRUCTION OBSERVATION

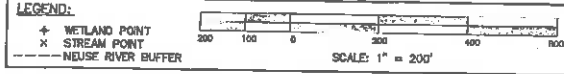


SHEET: 2 OF 12



This certifies that this copy of this plat accurately depicts the boundary of the jurisdiction of the Section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is change in the law or our published regulations, this determination of Section 404 jurisdiction may be relied upon for a period not to exceed five years from this date. The undersigned completed this determination utilizing the appropriate Regional Supplement to the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual, 35 C.F.R. part 328 and other U.S. Army Corps of Engineers guidance.

Regulatory Official: *John Alexander*
 Title: *Regulatory Specialist*
 Date: *2-13-2009*
 USACE Action ID: *2007-02065*

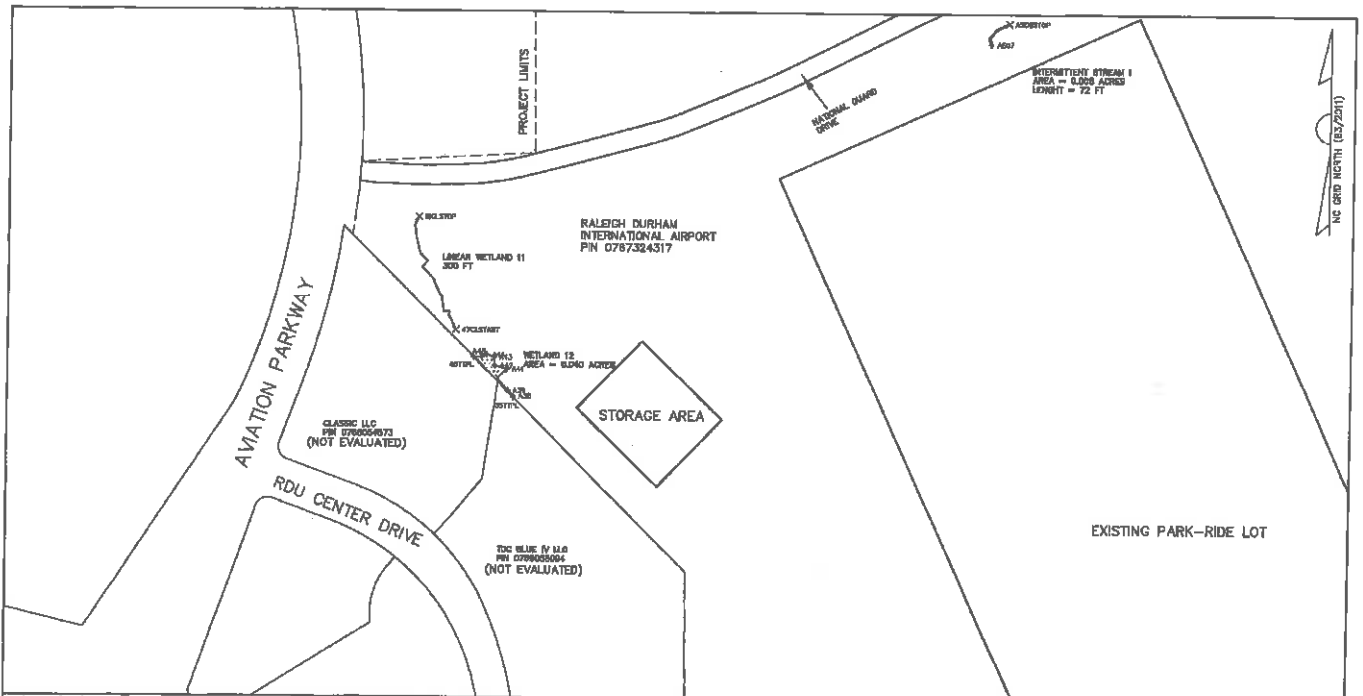


WETHERILL ENGINEERING
 1223 JONES FRANKLIN ROAD
 RALEIGH NORTH CAROLINA 27608
 919-851-8077
 LICENSE No. F-0377
 TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SEE DESIGN OR/SEE - SURVEYING - CONSTRUCTION OBSERVATION



SHEET: 3 OF 12

NC GRID NORTH: (03/2001)



This certifies that this copy of this plat accurately depicts the boundary of the jurisdiction of the Section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is change in the law or our published regulations, this determination of Section 404 jurisdiction may be relied upon for a period not to exceed five years from this date. The undersigned completed this determination utilizing the appropriate Regional Supplement to the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual, 33 CFR, part 328 and other U.S. Army Corps of Engineers guidance.

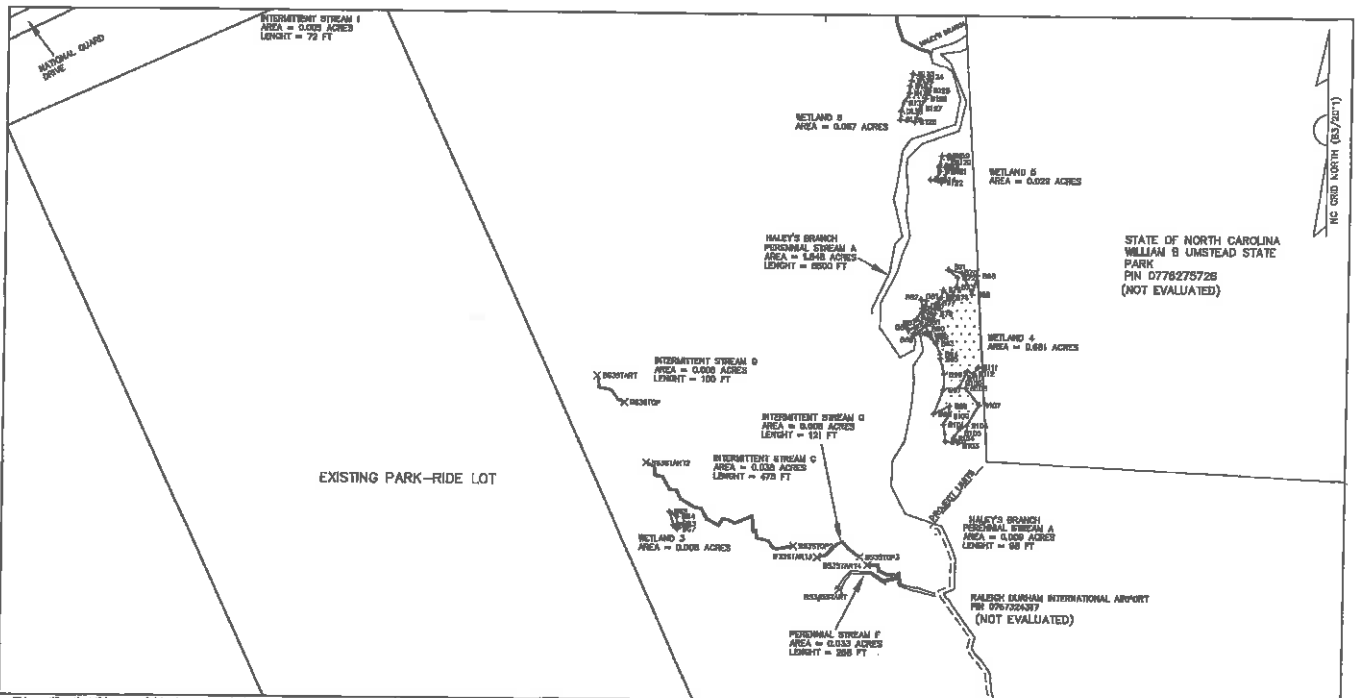
Regulatory Official: *Robu Alexander*
 Title: *Regulatory Specialist*
 Date: *2-13-10*
 USACE Action ID: *2017-02065*



WETHERILL ENGINEERING
 1223 JONES FRANKLIN ROAD
 RALEIGH NORTH CAROLINA 27608
 919-801-6077
 LICENSE NO. F-0377
 TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CHAL/SITE DESIGN GS/SPS - SURVEYING - CONSTRUCTION OBSERVATION



SHEET: 4 OF 12



This certifies that this copy of this plat accurately depicts the boundary of the jurisdiction of the Section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is change in the law or our published regulations, this determination of Section 404 jurisdiction may be relied upon for a period not to exceed five years from this date. The undersigned completed this determination utilizing the appropriate Regional Supplement to the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual, 33 C.F.R. part 328 and other U.S. Army Corps of Engineers guidance.

Regulatory Official: *April Alexander*
 Title: *Regulatory Specialist*
 Date: *5-12-2019*
 USACE Action ID: *2017-04105*

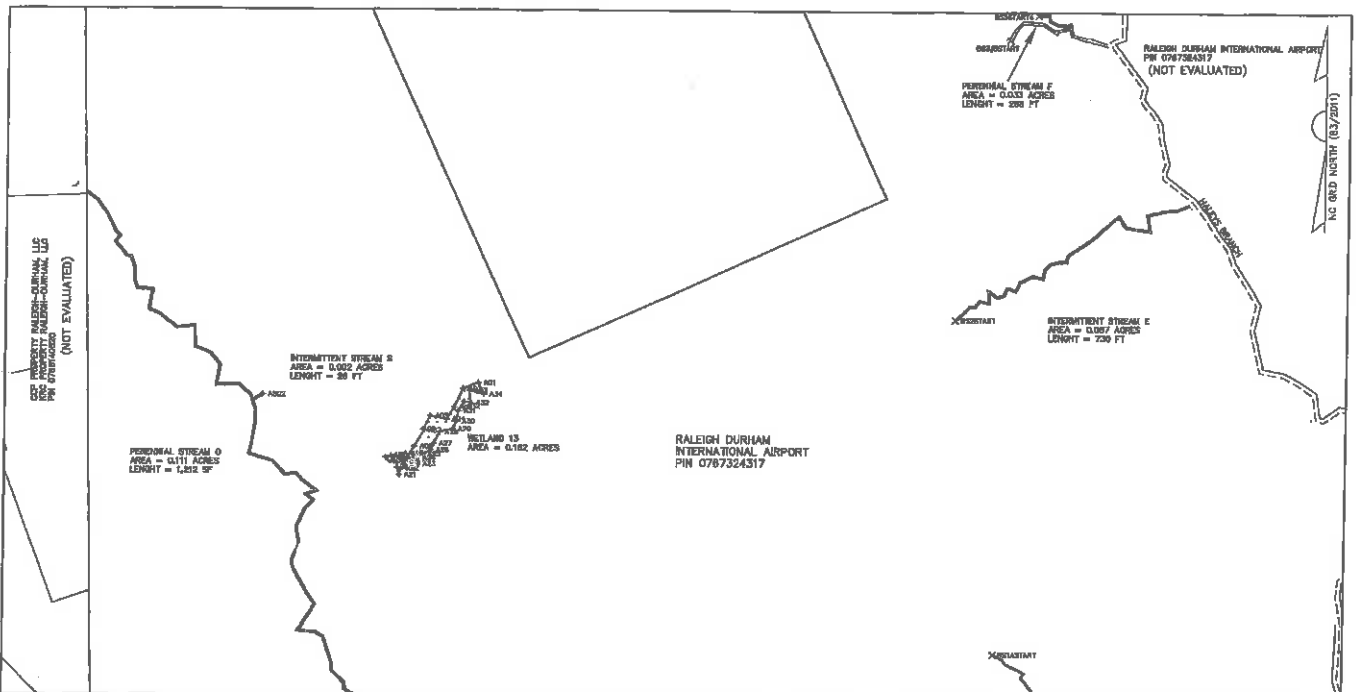


WETHERILL ENGINEERING

1223 JONES FRANKLIN ROAD
 RALEIGH NORTH CAROLINA 27608
 919-891-8077
 LICENSE No. F-0377
 TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/MECH DESIGN GRD/CPG - SURVEYING - CONSTRUCTION OBSERVATION

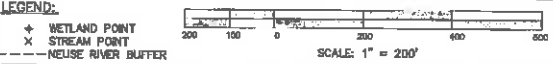


SHEET: 5 OF 12



This certifies that this copy of this plat accurately depicts the boundary of the jurisdiction of the Section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is change in the law or our published regulations, this determination of Section 404 jurisdiction may be relied upon for a period not to exceed five years from this date. The undersigned completed this determination utilizing the appropriate Regional Supplement to the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual, 33 C.F.R. part 328 and other U.S. Army Corps of Engineers guidance.

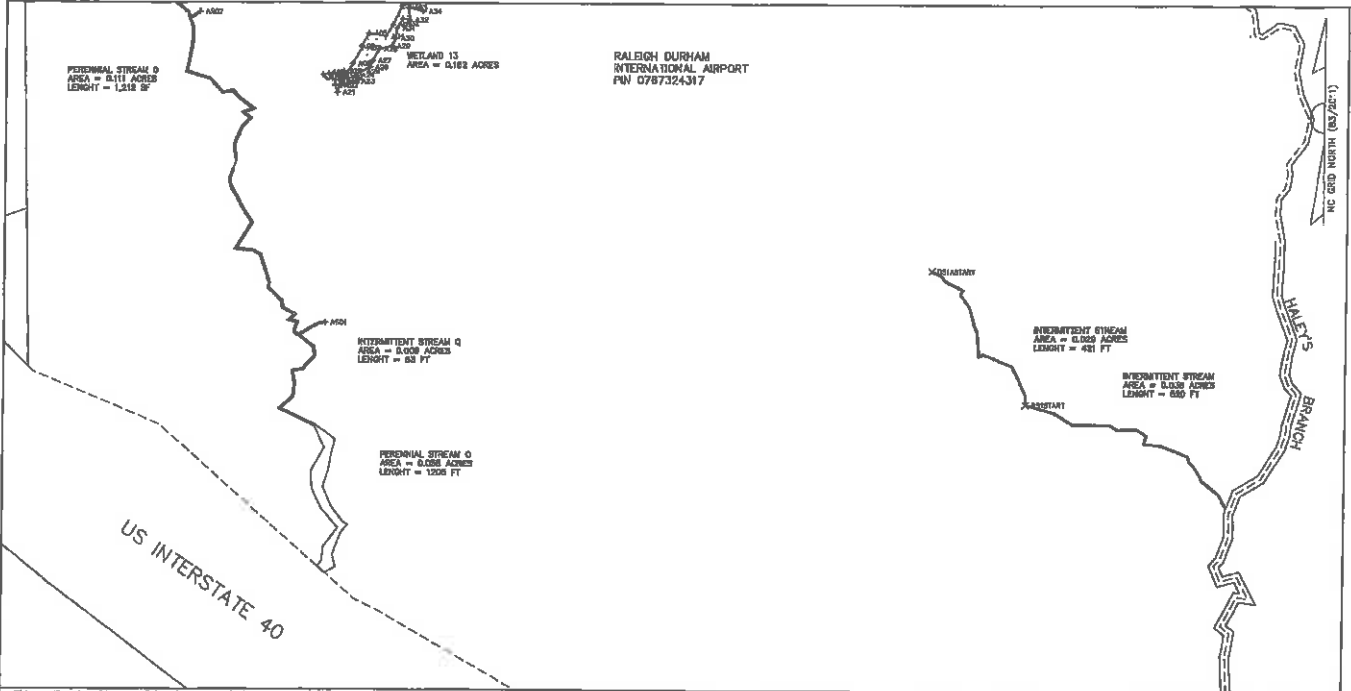
Regulatory Official: *Robin Alexander*
 Title: *Regulatory Specialist*
 Date: *2-15-2019*
 USACE Action ID: *2017-020125*



WETHERILL ENGINEERING
 1223 JONES FRANKLIN ROAD
 RALEIGH NORTH CAROLINA 27606
 919-851-8077
 LICENSE No. F-0377
 TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURAL DESIGN
 CIVIL/SITE DESIGN GEOTECH - SURVEYING - CONSTRUCTION OBSERVATION



SHEET: 6 OF 12



This certifies that this copy of this plat accurately depicts the boundary of the jurisdiction of the Section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is change in the law or our published regulations, this determination of Section 404 jurisdiction may be relied upon for a period not to exceed five years from this date. The undersigned completed this determination utilizing the appropriate Regional Supplement to the 1987 U.S. Army Corps of Engineers (Wetlands Delineation Manual), 33 C.F.R. part 328 and other U.S. Army Corps of Engineers guidance.

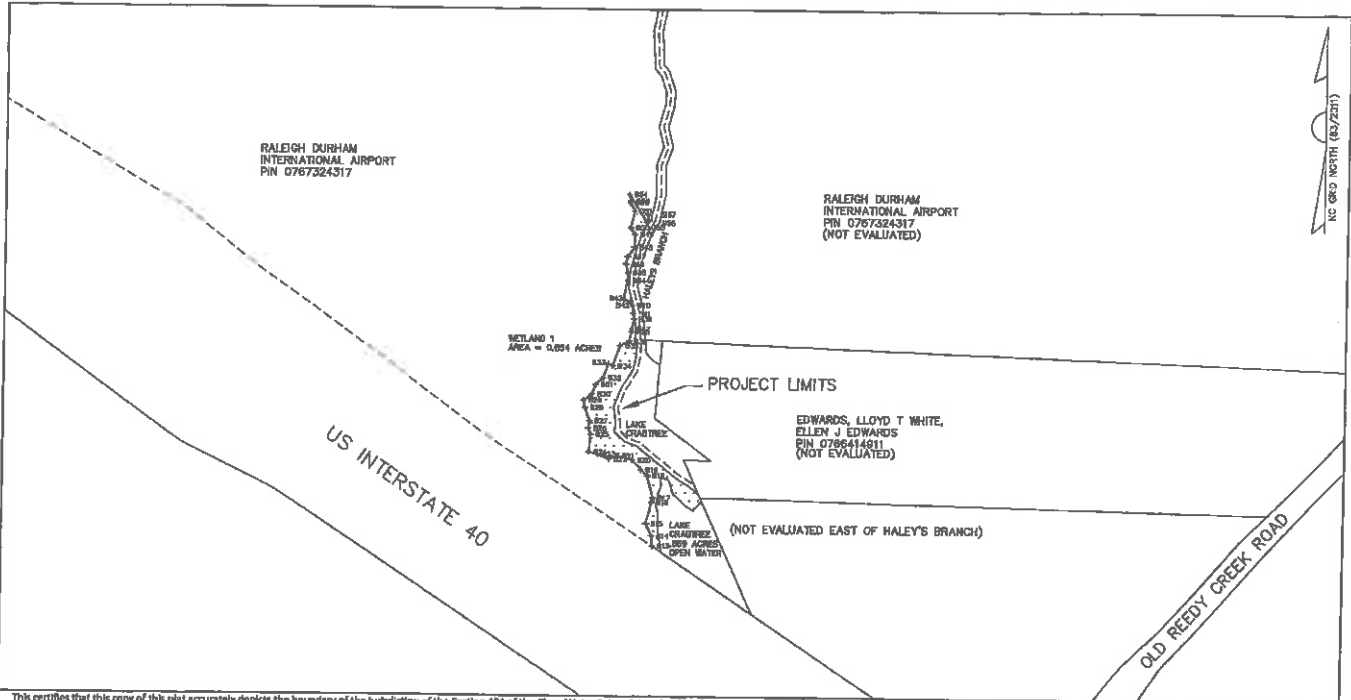
Regulatory Official: *Spoke Alvarado*
 Title: *Regulatory Specialist*
 Date: *2-13-2019*
 USACE Action ID: *2017-020105*



WETHERILL ENGINEERING
 1223 JONES FRANKLIN ROAD
 RALEIGH NORTH CAROLINA 27606
 919-851-8077
 LICENSE No. F-0577
 TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/MECH DESIGN GR/PS - SURVEYING - CONSTRUCTION OBSERVATION



SHEET: 7 OF 12



This certifies that this copy of this plan accurately depicts the boundary of the jurisdiction of the Section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is change in the law or our published regulations, this determination of Section 404 jurisdiction may be relied upon for a period not to exceed five years from this date. The undersigned completed this determination utilizing the appropriate Regional Supplement to the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual, 33 C.F.R. part 328 and other U.S. Army Corps of Engineers guidance.

Regulatory Official: *[Signature]*
 Title: *Regulatory Specialist*
 Date: *2-13-2019*
 USACE Action ID: *2017-022065*



WETHERILL ENGINEERING
 1223 JONES FRANKLIN ROAD
 RALEIGH NORTH CAROLINA 27606
 919-851-9077
 LICENSE No. F-0577
 TRANSPORTATION PLANNING/DESIGN - GEOTECHNICAL DESIGN
 CIVIL/SITE DESIGN SURVEYING - SURVEYING - CONSTRUCTION OBSERVATION



SHEET: 8 OF 12

Point Table		
FLAG #	Northing	Easting
35TTPL	N35° 51' 11.64"	W78° 47' 41.99"
46TTPL	N35° 51' 12.52"	W78° 47' 43.07"
A01	N35° 50' 58.75"	W78° 47' 26.45"
A02	N35° 50' 58.61"	W78° 47' 26.86"
A03	N35° 50' 58.20"	W78° 47' 27.10"
A04	N35° 50' 57.94"	W78° 47' 27.30"
A05	N35° 50' 58.01"	W78° 47' 27.75"
A06	N35° 50' 57.71"	W78° 47' 27.95"
A07	N35° 50' 57.70"	W78° 47' 27.91"
A08	N35° 50' 57.33"	W78° 47' 28.18"
A09	N35° 50' 57.03"	W78° 47' 28.41"
A10	N35° 50' 56.95"	W78° 47' 28.48"
A11	N35° 50' 57.04"	W78° 47' 28.54"
A12	N35° 50' 57.07"	W78° 47' 28.52"
A13	N35° 50' 57.17"	W78° 47' 28.42"
A14	N35° 50' 57.13"	W78° 47' 28.49"
A15	N35° 50' 57.09"	W78° 47' 28.75"
A16	N35° 50' 57.11"	W78° 47' 28.61"
A17	N35° 50' 57.09"	W78° 47' 28.96"
A18	N35° 50' 57.01"	W78° 47' 28.73"
A19	N35° 50' 56.97"	W78° 47' 28.64"
A20	N35° 50' 56.86"	W78° 47' 28.64"

Point Table		
FLAG #	Northing	Easting
A21	N35° 50' 56.70"	W78° 47' 28.58"
A22	N35° 50' 56.65"	W78° 47' 28.54"
A23	N35° 50' 56.94"	W78° 47' 28.09"
A24	N35° 50' 57.08"	W78° 47' 28.09"
A25	N35° 50' 57.16"	W78° 47' 27.95"
A26	N35° 50' 57.25"	W78° 47' 27.72"
A27	N35° 50' 57.40"	W78° 47' 27.65"
A28	N35° 50' 57.65"	W78° 47' 27.48"
A29	N35° 50' 57.72"	W78° 47' 27.13"
A30	N35° 50' 57.88"	W78° 47' 27.03"
A31	N35° 50' 58.12"	W78° 47' 26.98"
A32	N35° 50' 58.30"	W78° 47' 26.65"
A32	N35° 50' 58.33"	W78° 47' 26.63"
A33	N35° 50' 58.58"	W78° 47' 26.69"
A34	N35° 50' 58.49"	W78° 47' 26.29"
A38	N35° 51' 11.67"	W78° 47' 41.99"
A39	N35° 51' 11.79"	W78° 47' 42.15"
A41	N35° 51' 12.26"	W78° 47' 42.17"
A42	N35° 51' 12.33"	W78° 47' 42.50"
A43	N35° 51' 12.52"	W78° 47' 42.52"
A44	N35° 51' 12.58"	W78° 47' 42.72"
A45	N35° 51' 12.53"	W78° 47' 42.86"

Point Table		
FLAG #	Northing	Easting
A62	N35° 51' 33.11"	W78° 47' 15.16"
A63	N35° 51' 32.84"	W78° 47' 14.94"
A64	N35° 51' 32.74"	W78° 47' 15.06"
A65	N35° 51' 32.68"	W78° 47' 15.15"
A66	N35° 51' 32.82"	W78° 47' 15.46"
A67	N35° 51' 32.87"	W78° 47' 16.31"
A68	N35° 51' 32.98"	W78° 47' 15.25"
A69	N35° 51' 19.55"	W78° 47' 14.15"
A70	N35° 51' 19.54"	W78° 47' 14.43"
A71	N35° 51' 19.43"	W78° 47' 14.42"
A72	N35° 51' 19.58"	W78° 47' 14.85"
A73	N35° 51' 20.32"	W78° 47' 13.47"
A74	N35° 51' 19.89"	W78° 47' 13.39"
A75	N35° 51' 19.88"	W78° 47' 13.60"
A76	N35° 51' 19.56"	W78° 47' 13.57"
A77	N35° 51' 19.84"	W78° 47' 13.34"
AS01	N35° 50' 51.61"	W78° 47' 28.85"
AS02	N35° 50' 58.48"	W78° 47' 32.31"
AS05	N35° 51' 28.81"	W78° 47' 24.90"
AS07	N35° 51' 19.51"	W78° 47' 29.14"
AS09	N35° 51' 20.46"	W78° 47' 27.18"
B13	N35° 50' 32.84"	W78° 47' 04.32"

This certifies that this copy of this plat accurately depicts the boundary of the jurisdiction of the Section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is change in the law or our published regulations, this determination of Section 404 jurisdiction may be relied upon for a period not to exceed five years from this date. The undersigned completed this determination utilizing the appropriate Regional Supplement to the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual, 33 C.F.R. part 328 and other U.S. Army Corps of Engineers guidance.

Regulatory Official: *[Signature]*
 Title: *Regulatory Specialist*
 Date: *2-15-2019*
 USACE Action ID: *2017-020105*



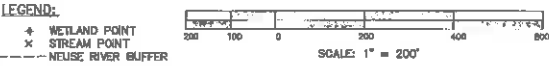

1223 JONES FRANKLIN ROAD
 RALEIGH NORTH CAROLINA 27606
 919-801-8077
 LICENSE No. F-0377
 TRANSPORTATION PLANNING/DESIGN - EROSION/STRUCTURE DESIGN
 CIVIL/SITE DESIGN GIS/GPS - SURVEYING - CONSTRUCTION OBSERVATION



Point Table			Point Table			Point Table		
FLAG #	Northing	Easting	FLAG #	Northing	Easting	FLAG #	Northing	Easting
B14	N35° 50' 33.06"	W78° 47' 04.34"	B36	N35° 50' 37.37"	W78° 47' 05.03"	B63	N35° 51' 07.81"	W78° 47' 16.52"
B15	N35° 50' 33.33"	W78° 47' 04.50"	B37	N35° 50' 37.64"	W78° 47' 04.97"	B64	N35° 51' 07.96"	W78° 47' 16.54"
B16	N35° 50' 33.80"	W78° 47' 04.36"	B38	N35° 50' 37.58"	W78° 47' 04.97"	B65	N35° 51' 08.08"	W78° 47' 16.75"
B17	N35° 50' 33.90"	W78° 47' 04.32"	B39	N35° 50' 37.86"	W78° 47' 04.91"	B66	N35° 51' 07.77"	W78° 47' 16.63"
B18	N35° 50' 34.40"	W78° 47' 04.48"	B40	N35° 50' 38.17"	W78° 47' 04.97"	B67	N35° 51' 07.69"	W78° 47' 16.52"
B19	N35° 50' 34.53"	W78° 47' 04.66"	B41	N35° 50' 37.99"	W78° 47' 04.93"	B68	N35° 51' 13.34"	W78° 47' 08.61"
B20	N35° 50' 34.74"	W78° 47' 04.90"	B42	N35° 50' 38.24"	W78° 47' 05.02"	B69	N35° 51' 12.93"	W78° 47' 08.64"
B21	N35° 50' 34.83"	W78° 47' 05.31"	B43	N35° 50' 38.31"	W78° 47' 05.20"	B70	N35° 51' 13.40"	W78° 47' 08.93"
B22	N35° 50' 34.76"	W78° 47' 05.53"	B44	N35° 50' 38.72"	W78° 47' 05.10"	B71	N35° 51' 13.47"	W78° 47' 09.30"
B23	N35° 50' 34.87"	W78° 47' 05.84"	B45	N35° 50' 38.89"	W78° 47' 05.10"	B72	N35° 51' 13.30"	W78° 47' 09.05"
B24	N35° 50' 34.92"	W78° 47' 06.07"	B46	N35° 50' 39.08"	W78° 47' 05.15"	B73	N35° 51' 13.10"	W78° 47' 09.07"
B25	N35° 50' 35.31"	W78° 47' 06.03"	B47	N35° 50' 39.25"	W78° 47' 05.10"	B74	N35° 51' 12.86"	W78° 47' 09.22"
B26	N35° 50' 35.44"	W78° 47' 06.10"	B48	N35° 50' 39.45"	W78° 47' 04.93"	B75	N35° 51' 13.03"	W78° 47' 09.43"
B27	N35° 50' 35.61"	W78° 47' 06.07"	B49	N35° 50' 39.74"	W78° 47' 04.91"	B76	N35° 51' 12.86"	W78° 47' 09.49"
B28	N35° 50' 35.90"	W78° 47' 06.19"	B50	N35° 50' 39.89"	W78° 47' 05.04"	B77	N35° 51' 12.75"	W78° 47' 09.59"
B29	N35° 50' 36.06"	W78° 47' 06.24"	B51	N35° 50' 40.26"	W78° 47' 04.94"	B78	N35° 51' 12.50"	W78° 47' 09.66"
B30	N35° 50' 36.20"	W78° 47' 06.01"	B52	N35° 50' 40.44"	W78° 47' 05.06"	B79	N35° 51' 12.59"	W78° 47' 09.92"
B31	N35° 50' 36.41"	W78° 47' 05.91"	B53	N35° 50' 40.48"	W78° 47' 05.04"	B80	N35° 51' 12.67"	W78° 47' 09.92"
B32	N35° 50' 36.56"	W78° 47' 05.72"	B54	N35° 50' 40.62"	W78° 47' 05.06"	B81	N35° 51' 12.78"	W78° 47' 09.90"
B33	N35° 50' 36.86"	W78° 47' 05.59"	B55	N35° 50' 40.01"	W78° 47' 04.81"	B82	N35° 51' 12.81"	W78° 47' 10.04"
B34	N35° 50' 36.83"	W78° 47' 05.46"	B56	N35° 50' 40.03"	W78° 47' 04.55"	B83	N35° 51' 12.61"	W78° 47' 09.89"
B35	N35° 50' 37.27"	W78° 47' 05.27"	B57	N35° 50' 40.18"	W78° 47' 04.58"	B84	N35° 51' 12.38"	W78° 47' 10.15"

This certifies that this copy of this plat accurately depicts the boundary of the jurisdiction of the Section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is change in the law or our published regulations, this determination of Section 404 Jurisdiction may be relied upon for a period not to exceed five years from this date. The undersigned completed this determination utilizing the appropriate Regional Supplement to the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual, 33 CFR, part 328 and other U.S. Army Corps of Engineers guidance.

Regulatory Official: *Saba Alexander*
 Title: *Regulatory Specialist*
 Date: *013-2019*
 USACE Action ID: *2017-02005*



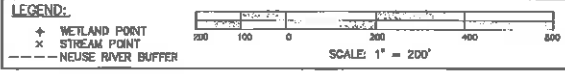

1223 JONES FRANKLIN ROAD
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 919-881-9077
 LICENSE No. F-0377
 TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/MECH DESIGN SURVEYING - SURVEYING - CONSTRUCTION OBSERVATION



Point Table				Point Table				Point Table			
FLAG #	Northing	Easting		FLAG #	Northing	Easting		FLAG #	Northing	Easting	
B85	N35° 51' 12.31"	W78° 47' 10.00"		B107	N35° 51' 10.48"	W78° 47' 08.40"		B129	N35° 51' 16.79"	W78° 47' 10.68"	
B86	N35° 51' 12.13"	W78° 47' 10.36"		B108	N35° 51' 10.85"	W78° 47' 08.77"		B130	N35° 51' 16.97"	W78° 47' 10.86"	
B87	N35° 51' 12.21"	W78° 47' 10.13"		B109	N35° 51' 10.87"	W78° 47' 08.96"		B131	N35° 51' 17.16"	W78° 47' 10.60"	
B88	N35° 51' 12.06"	W78° 47' 10.22"		B110	N35° 51' 11.23"	W78° 47' 08.73"		B132	N35° 51' 17.38"	W78° 47' 10.44"	
B89	N35° 51' 12.01"	W78° 47' 10.24"		B111	N35° 51' 11.32"	W78° 47' 08.44"		B133	N35° 51' 17.54"	W78° 47' 10.43"	
B90	N35° 51' 12.23"	W78° 47' 09.90"		B112	N35° 51' 11.18"	W78° 47' 08.57"		B134	N35° 51' 17.85"	W78° 47' 10.39"	
B91	N35° 51' 12.03"	W78° 47' 09.80"		B113	N35° 51' 15.48"	W78° 47' 09.84"		B135	N35° 51' 20.23"	W78° 47' 09.05"	
B92	N35° 51' 11.99"	W78° 47' 09.77"		B114	N35° 51' 15.47"	W78° 47' 09.71"		B136	N35° 51' 19.84"	W78° 47' 09.42"	
B93	N35° 51' 11.84"	W78° 47' 09.61"		B115	N35° 51' 15.65"	W78° 47' 09.58"		B137	N35° 51' 19.98"	W78° 47' 09.52"	
B94	N35° 51' 11.61"	W78° 47' 09.49"		B116	N35° 51' 15.74"	W78° 47' 09.61"		B138	N35° 51' 19.83"	W78° 47' 09.69"	
B95	N35° 51' 11.50"	W78° 47' 09.48"		B117	N35° 51' 15.77"	W78° 47' 09.60"		B139	N35° 51' 19.75"	W78° 47' 09.55"	
B96	N35° 51' 11.16"	W78° 47' 09.37"		B118	N35° 51' 15.99"	W78° 47' 08.53"		B140	N35° 51' 19.89"	W78° 47' 09.75"	
B97	N35° 51' 10.82"	W78° 47' 09.39"		B119	N35° 51' 16.00"	W78° 47' 08.33"		B141	N35° 51' 19.61"	W78° 47' 10.10"	
B98	N35° 51' 10.28"	W78° 47' 09.65"		B120	N35° 51' 15.91"	W78° 47' 09.23"		B142	N35° 51' 19.59"	W78° 47' 10.53"	
B99	N35° 51' 10.46"	W78° 47' 08.21"		B121	N35° 51' 15.74"	W78° 47' 09.31"		B143	N35° 51' 19.76"	W78° 47' 10.55"	
B100	N35° 51' 10.24"	W78° 47' 09.25"		B122	N35° 51' 15.40"	W78° 47' 09.54"		B144	N35° 51' 19.90"	W78° 47' 10.37"	
B101	N35° 51' 10.05"	W78° 47' 09.37"		B123	N35° 51' 17.81"	W78° 47' 10.36"		B145	N35° 51' 19.98"	W78° 47' 09.96"	
B102	N35° 51' 09.68"	W78° 47' 09.31"		B124	N35° 51' 17.74"	W78° 47' 10.11"		B146	N35° 51' 20.20"	W78° 47' 09.44"	
B103	N35° 51' 09.64"	W78° 47' 08.97"		B125	N35° 51' 17.44"	W78° 47' 08.94"		B147	N35° 51' 20.39"	W78° 47' 09.18"	
B104	N35° 51' 09.74"	W78° 47' 09.10"		B126	N35° 51' 17.26"	W78° 47' 10.01"					
B105	N35° 51' 09.96"	W78° 47' 08.91"		B127	N35° 51' 17.04"	W78° 47' 10.14"					
B106	N35° 51' 10.02"	W78° 47' 08.73"		B128	N35° 51' 16.75"	W78° 47' 10.29"					

This certifies that this copy of this plat accurately depicts the boundary of the jurisdiction of the Section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is change in the law or our published regulations, this determination of Section 404 jurisdiction may be relied upon for a period not to exceed five years from this date. The undersigned completed this determination utilizing the appropriate Regional Supplement to the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual, 35 C.F.R. part 328 and other U.S. Army Corps of Engineers guidance.

Regulatory Official: *John Alexander*
 Title: *Regulatory Specialist*
 Date: *2-13-2019*
 USACE Action ID: *B017-02065*




1223 JONES FRANKLIN ROAD
 RALEIGH NORTH CAROLINA 27608
 919-881-9077
 LICENSE No. F-0377
 TRANSPORTATION PLANNING/DESIGN - ENGINEERING DESIGN
 CIVIL/ME DESIGN SERVICES - SURVEYING - CONSTRUCTION OBSERVATION



APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): February 13, 2019

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: CE SAW RG-R 2017-02065; RDU PE3 Area

C. PROJECT LOCATION AND BACKGROUND INFORMATION: A,C,C1,E,F,G,I,L,M,N,W1,W2,W3,W4,W7,W8,W9,P2,P3,P4
State: North Carolina County/parish/borough: Wake City: Raleigh (RDU)
Center coordinates of site (lat/long in degree decimal format): Lat. 35.851719° N Long. -078.789846° W
Universal Transverse Mercator:

Name of nearest waterbody: Háley's Branch

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Neuse (C;NSW)

Name of watershed or Hydrologic Unit Code (HUC): 03020201

Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

Office (Desk) Determination. Date:

Field Determination. Date(s): August 28, 2017 and USACE confirmation October 17, 2017

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There ~~are~~ **no** "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

Waters subject to the ebb and flow of the tide.

Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There ~~are~~ **no** "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

1. Waters of the U.S.

a. Indicate presence of waters of U.S. in review area (check all that apply):¹

TNWs, including territorial seas

Wetlands adjacent to TNWs

Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs

Non-RPWs that flow directly or indirectly into TNWs

Wetlands directly abutting RPWs that flow directly or indirectly into TNWs

Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs

Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs

Impoundments of jurisdictional waters

Isolated (interstate or intrastate) waters, including isolated wetlands

b. Identify (estimate) size of waters of the U.S. in the review area:

Non-wetland waters: 11,718 linear feet; 4 width (ft) and/or 1.127 acres.

Wetlands: 2.152 acres.

c. Limits (boundaries) of jurisdiction based on: Established by OHWM

Elevation of established OHWM (if known):

2. Non-regulated waters/wetlands (check if applicable):³

Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.

Explain:

¹ Boxes checked below shall be supported by completing the appropriate sections in Section III below.

² For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

³ Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW

Identify TNW:

Summarize rationale supporting determination:

2. Wetland adjacent to TNW

Summarize rationale supporting conclusion that wetland is "adjacent":

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:

Watershed size: 975 acres

Drainage area: 975 acres

Average annual rainfall: 48 inches

Average annual snowfall: 4 inches

(ii) Physical Characteristics:

(a) Relationship with TNW:

Tributary flows directly into TNW.

Tributary flows through 2 tributaries before entering TNW.

Project waters are 1 (or less) river miles from TNW.

Project waters are 1 (or less) river miles from RPW.

Project waters are 1 (or less) aerial (straight) miles from TNW.

Project waters are 1 (or less) aerial (straight) miles from RPW.

Project waters cross or serve as state boundaries. Explain:

Identify flow route to TNW⁵: Haley's Branch flows directly into Lake Crabtree to the south below Interstate 40.

Tributary stream order, if known:

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: Natural
 Artificial (man-made). Explain: .
 Manipulated (man-altered). Explain: Spill way from pond on property contributes flow to RPW.

Tributary properties with respect to top of bank (estimate):

Average width: 4 feet
Average depth: .25 feet
Average side slopes: 3:1

Primary tributary substrate composition (check all that apply):

Silts Sands Concrete
 Cobbles Gravel Muck
 Bedrock Vegetation. Type/% cover:
 Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: Stable.

Presence of run/riffle/pool complexes. Explain: Yes.

Tributary geometry: Relatively straight

Tributary gradient (approximate average slope): 3 %

(c) Flow:

Tributary provides for: Seasonal flow

Estimate average number of flow events in review area/year: 20 (or greater)

Describe flow regime: Perennial/Intermittent

Other information on duration and volume:

Surface flow is: Discrete. Characteristics:

Subsurface flow: Unknown. Explain findings:

Dye (or other) test performed:

Tributary has (check all that apply):

Bed and banks
 OHWM⁶ (check all indicators that apply):
 clear, natural line impressed on the bank the presence of litter and debris
 changes in the character of soil destruction of terrestrial vegetation
 shelving the presence of wrack line
 vegetation matted down, bent, or absent sediment sorting
 leaf litter disturbed or washed away scour
 sediment deposition multiple observed or predicted flow events
 water staining abrupt change in plant community
 other (list):
 Discontinuous OHWM.⁷ Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

High Tide Line indicated by: Mean High Water Mark indicated by:
 oil or scum line along shore objects survey to available datum;
 fine shell or debris deposits (foreshore) physical markings;
 physical markings/characteristics vegetation lines/changes in vegetation types.
 tidal gauges
 other (list):

(iii) Chemical Characteristics:

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).

Explain:

Identify specific pollutants, if known:

⁶A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

⁷Ibid.

(iv) **Biological Characteristics. Channel supports (check all that apply):**

- Riparian corridor. Characteristics (type, average width):
- Wetland fringe. Characteristics:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings:

2. **Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW**

(f) **Physical Characteristics:**

(a) General Wetland Characteristics:

Properties:

Wetland size: 2.152 acres

Wetland type. Explain: Headwater Forest/ Bottomland Hardwood Forest.

Wetland quality. Explain:

Project wetlands cross or serve as state boundaries. Explain:

(b) General Flow Relationship with Non-TNW:

Flow is: Perennial flow. Explain:

Surface flow is: Discrete

Characteristics:

Subsurface flow: Unknown. Explain findings:

Dye (or other) test performed:

(c) Wetland Adjacency Determination with Non-TNW:

Directly abutting

Not directly abutting

Discrete wetland hydrologic connection. Explain:

Ecological connection. Explain:

Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW

Project wetlands are 1 (or less) river miles from TNW.

Project waters are 1 (or less) aerial (straight) miles from TNW.

Flow is from: Wetland to navigable waters.

Estimate approximate location of wetland as within the 100, 500-year floodplain.

(ii) **Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain:

Identify specific pollutants, if known:

(iii) **Biological Characteristics. Wetland supports (check all that apply):**

- Riparian buffer. Characteristics (type, average width):
- Vegetation type/percent cover. Explain:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings:

3. **Characteristics of all wetlands adjacent to the tributary (if any)**

All wetland(s) being considered in the cumulative analysis: 7

Approximately (2.152) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)

Size (in acres)

Directly abuts? (Y/N)

Size (in acres)

-See Aquatic Resource Table Attached

Summarize overall biological, chemical and physical functions being performed:

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs. Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D:
2. Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs. Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:
3. Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW. Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:

TNWs: linear feet width (ft), Or, acres.
 Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**

Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial:

Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally:

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: 11,718 linear feet 4 width (ft).
- Other non-wetland waters: 1.127 acres.

Identify type(s) of waters: Ponds.

3. Non-RPWs⁸ that flow directly or indirectly into TNWs.

- Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

- Tributary waters: linear feet width (ft).
- Other non-wetland waters: acres.

Identify type(s) of waters:

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.

- Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
- Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:

- Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:

Provide acreage estimates for jurisdictional wetlands in the review area: 2.152 acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.

- Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

- Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.⁹

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

- Demonstrate that impoundment was created from "waters of the U.S.," or
- Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
- Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):¹⁰

- which are or could be used by interstate or foreign travelers for recreational or other purposes.
- from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- which are or could be used for industrial purposes by industries in interstate commerce.
- Interstate isolated waters. Explain:
- Other factors. Explain:

⁸See Footnote # 3.

⁹To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

¹⁰Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following Rapanos.

Identify water body and summarize rationale supporting determination:

Provide estimates for jurisdictional waters in the review area (check all that apply):

Tributary waters: linear feet width (ft).

Other non-wetland waters: acres.

Identify type(s) of waters:

Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.

Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.

Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).

Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain:

Other: (explain, if not covered above):

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

Non-wetland waters (i.e., rivers, streams): linear feet width (ft).

Lakes/ponds: acres.

Other non-wetland waters: acres. List type of aquatic resource:

Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).

Lakes/ponds: acres.

Other non-wetland waters: acres. List type of aquatic resource:

Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:

Data sheets prepared/submitted by or on behalf of the applicant/consultant.

Office concurs with data sheets/delineation report.

Office does not concur with data sheets/delineation report.

Data sheets prepared by the Corps:

Corps navigable waters' study:

U.S. Geological Survey Hydrologic Atlas:

USGS NHD data.

USGS 8 and 12 digit HUC maps.

U.S. Geological Survey map(s). Cite scale & quad name: Cary Quadrangle.

USDA Natural Resources Conservation Service Soil Survey. Citation: Soil Sheet 36,37.

National wetlands inventory map(s). Cite name:

State/Local wetland inventory map(s):

FEMA/FIRM maps:

100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)

Photographs: Aerial (Name & Date):

or Other (Name & Date):

Previous determination(s). File no. and date of response letter:

Applicable/supporting case law:

Applicable/supporting scientific literature:

Other information (please specify):

B. ADDITIONAL COMMENTS TO SUPPORT JD:

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): February 13, 2019

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: CE SAW RG-R 2017-02065; RDU PE3 Area

C. PROJECT LOCATION AND BACKGROUND INFORMATION: W3, W5, W6, W10

State: North Carolina County/parish/borough: Wake City: Raleigh (RDU)

Center coordinates of site (lat/long in degree decimal format): Lat. 35.851719° N Long. -078.789846° W

Universal Transverse Mercator:

Name of nearest waterbody: Haley's Branch

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Neuse (C;NSW)

Name of watershed or Hydrologic Unit Code (HUC): 03020201

Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

Office (Desk) Determination. Date:

Field Determination. Date(s): August 28, 2017 and USACE confirmation October 17, 2017

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There ~~are~~ no "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

Waters subject to the ebb and flow of the tide.

Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There ~~are~~ "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

1. Waters of the U.S.

a. Indicate presence of waters of U.S. in review area (check all that apply):¹

TNWs, including territorial seas

Wetlands adjacent to TNWs

Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs

Non-RPWs that flow directly or indirectly into TNWs

Wetlands directly abutting RPWs that flow directly or indirectly into TNWs

Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs

Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs

Impoundments of jurisdictional waters

Isolated (interstate or intrastate) waters, including isolated wetlands

b. Identify (estimate) size of waters of the U.S. in the review area:

Non-wetland waters: linear feet: width (ft) and/or acres.

Wetlands: 0.223 acres.

c. Limits (boundaries) of jurisdiction based on: Established by OHWM

Elevation of established OHWM (if known):

2. Non-regulated waters/wetlands (check if applicable):³

Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.
Explain:

¹ Boxes checked below shall be supported by completing the appropriate sections in Section III below.

² For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

³ Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW: _____

Summarize rationale supporting determination: _____
2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent": _____

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:

Watershed size: Pick List
Drainage area: Pick List
Average annual rainfall: _____ inches
Average annual snowfall: _____ inches

(ii) Physical Characteristics:

(a) Relationship with TNW:

- Tributary flows directly into TNW.
- Tributary flows through Pick List tributaries before entering TNW.

Project waters are Pick List river miles from TNW.
Project waters are Pick List river miles from RPW.
Project waters are Pick List aerial (straight) miles from TNW.
Project waters are Pick List aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: _____

Identify flow route to TNW⁵: _____
Tributary stream order, if known: _____

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

- Tributary is: Natural
 Artificial (man-made). Explain:
 Manipulated (man-altered). Explain: Spill way from pond on property contributes flow to RPW.

Tributary properties with respect to top of bank (estimate):

Average width: feet
Average depth: feet
Average side slopes: Pick List

Primary tributary substrate composition (check all that apply):

- | | | |
|--|--|-----------------------------------|
| <input type="checkbox"/> Silts | <input type="checkbox"/> Sands | <input type="checkbox"/> Concrete |
| <input type="checkbox"/> Cobbles | <input type="checkbox"/> Gravel | <input type="checkbox"/> Muck |
| <input type="checkbox"/> Bedrock | <input type="checkbox"/> Vegetation. Type/% cover: | |
| <input type="checkbox"/> Other. Explain: | | |

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain:

Presence of run/riffle/pool complexes. Explain:

Tributary geometry: Pick List

Tributary gradient (approximate average slope): %

(c) Flow:

Tributary provides for: Pick List

Estimate average number of flow events in review area/year: Pick List

Describe flow regime:

Other information on duration and volume:

Surface flow is: Pick List. Characteristics:

Subsurface flow: Pick List. Explain findings:

Dye (or other) test performed:

Tributary has (check all that apply):

- | | |
|---|---|
| <input type="checkbox"/> Bed and banks | |
| <input type="checkbox"/> OHWM ⁶ (check all indicators that apply): | |
| <input type="checkbox"/> clear, natural line impressed on the bank | <input type="checkbox"/> the presence of litter and debris |
| <input type="checkbox"/> changes in the character of soil | <input type="checkbox"/> destruction of terrestrial vegetation |
| <input type="checkbox"/> shelving | <input type="checkbox"/> the presence of wrack line |
| <input type="checkbox"/> vegetation matted down, bent, or absent | <input type="checkbox"/> sediment sorting |
| <input type="checkbox"/> leaf litter disturbed or washed away | <input type="checkbox"/> scour |
| <input type="checkbox"/> sediment deposition | <input type="checkbox"/> multiple observed or predicted flow events |
| <input type="checkbox"/> water staining | <input type="checkbox"/> abrupt change in plant community |
| <input type="checkbox"/> other (list): | |
| <input type="checkbox"/> Discontinuous OHWM. ⁷ Explain: | |

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

- | | |
|--|--|
| <input checked="" type="checkbox"/> High Tide Line indicated by: | <input checked="" type="checkbox"/> Mean High Water Mark indicated by: |
| <input type="checkbox"/> oil or scum line along shore objects | <input type="checkbox"/> survey to available datum; |
| <input type="checkbox"/> fine shell or debris deposits (foreshore) | <input type="checkbox"/> physical markings; |
| <input type="checkbox"/> physical markings/characteristics | <input type="checkbox"/> vegetation lines/changes in vegetation types. |
| <input type="checkbox"/> tidal gauges | |
| <input type="checkbox"/> other (list): | |

(iii) Chemical Characteristics:

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).

Explain:

Identify specific pollutants, if known:

⁶A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

⁷Ibid.

(iv) **Biological Characteristics. Channel supports (check all that apply):**

- Riparian corridor. Characteristics (type, average width):
- Wetland fringe. Characteristics:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings:

2. **Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW**

(i) **Physical Characteristics:**

(a) **General Wetland Characteristics:**

Properties:

Wetland size: 0.223 acres

Wetland type. Explain: Headwater Forest/Bottomland Hardwood.

Wetland quality. Explain:

Project wetlands cross or serve as state boundaries. Explain:

(b) **General Flow Relationship with Non-TNW:**

Flow is: Perennial flow. Explain:

Surface flow is: Discrete

Characteristics:

Subsurface flow: Unknown. Explain findings:

Dye (or other) test performed:

(c) **Wetland Adjacency Determination with Non-TNW:**

Directly abutting

Not directly abutting

Discrete wetland hydrologic connection. Explain: Drainage Patterns (Ephemeral) .

Ecological connection. Explain:

Separated by berm/barrier. Explain:

(d) **Proximity (Relationship) to TNW**

Project wetlands are 1 (or less) river miles from TNW.

Project waters are 1 (or less) aerial (straight) miles from TNW.

Flow is from: Wetland to navigable waters.

Estimate approximate location of wetland as within the 100-500-year floodplain.

(ii) **Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain:

Identify specific pollutants, if known:

(iii) **Biological Characteristics. Wetland supports (check all that apply):**

Riparian buffer. Characteristics (type, average width):

Vegetation type/percent cover. Explain:

Habitat for:

Federally Listed species. Explain findings:

Fish/spawn areas. Explain findings:

Other environmentally-sensitive species. Explain findings:

Aquatic/wildlife diversity. Explain findings:

3. **Characteristics of all wetlands adjacent to the tributary (if any)**

All wetland(s) being considered in the cumulative analysis: 4

Approximately (0.223) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)

Size (in acres)

Directly abuts? (Y/N)

Size (in acres)

-See Aquatic Resource Table Attached

Summarize overall biological, chemical and physical functions being performed:

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs. Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D:
2. Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs. Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:
3. Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW. Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
 TNWs: linear feet width (ft), Or, acres.
 Wetlands adjacent to TNWs: acres.
2. **RPWs that flow directly or indirectly into TNWs.**
 Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial:
 Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally:

Provide estimates for jurisdictional waters in the review area (check all that apply):

Tributary waters: linear feet width (ft).

Other non-wetland waters: acres.

Identify type(s) of waters: .

3. **Non-RPWs⁸ that flow directly or indirectly into TNWs.**

Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

Tributary waters: linear feet width (ft).

Other non-wetland waters: acres.

Identify type(s) of waters: .

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**

Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.

Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**

Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: 0.223 acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**

Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.⁹**

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

Demonstrate that impoundment was created from "waters of the U.S.," or

Demonstrate that water meets the criteria for one of the categories presented above (1-6), or

Demonstrate that water is isolated with a nexus to commerce (see B below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):¹⁰

which are or could be used by interstate or foreign travelers for recreational or other purposes.

from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.

which are or could be used for industrial purposes by industries in interstate commerce.

Interstate isolated waters. Explain: .

Other factors. Explain: .

⁸See Footnote # 3.

⁹To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

¹⁰Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following Rapanos.

Identify water body and summarize rationale supporting determination:

Provide estimates for jurisdictional waters in the review area (check all that apply):

Tributary waters: linear feet width (ft).

Other non-wetland waters: acres.

Identify type(s) of waters:

Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.

Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.

Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).

Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain:

Other: (explain, if not covered above):

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

Non-wetland waters (i.e., rivers, streams): linear feet width (ft).

Lakes/ponds: acres.

Other non-wetland waters: acres. List type of aquatic resource:

Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).

Lakes/ponds: acres.

Other non-wetland waters: acres. List type of aquatic resource:

Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:

Data sheets prepared/submitted by or on behalf of the applicant/consultant:

Office concurs with data sheets/delineation report.

Office does not concur with data sheets/delineation report.

Data sheets prepared by the Corps:

Corps navigable waters' study:

U.S. Geological Survey Hydrologic Atlas:

USGS NHD data.

USGS 8 and 12 digit HUC maps.

U.S. Geological Survey map(s). Cite scale & quad name: Cary Quad.

USDA Natural Resources Conservation Service Soil Survey. Citation: Soil Sheets 36/37.

National wetlands inventory map(s). Cite name:

State/Local wetland inventory map(s):

FEMA/FIRM maps:

100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)

Photographs: Aerial (Name & Date):

or Other (Name & Date):

Previous determination(s). File no. and date of response letter:

Applicable/supporting case law:

Applicable/supporting scientific literature:

Other information (please specify):

B. ADDITIONAL COMMENTS TO SUPPORT JD:

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): February 13, 2019

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: CE SAW RG-R 2017-02065; RDU PE3 Area

C. PROJECT LOCATION AND BACKGROUND INFORMATION: O,S,Q,W11,W12,W13,Pond1
State: North Carolina County/parish/borough: Wake City: Raleigh (RDU)
Center coordinates of site (lat/long in degree decimal format): Lat. 35.851719° N Long. -078.789846° W
Universal Transverse Mercator:

Name of nearest waterbody: Haley's Branch

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Neuse (C;NSW)

Name of watershed or Hydrologic Unit Code (HUC): 03020201

Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

Office (Desk) Determination. Date:

Field Determination. Date(s): August 28, 2017 and USACE confirmation October 17, 2017

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There *are* "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

Waters subject to the ebb and flow of the tide.

Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There *are* "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

1. Waters of the U.S.

a. Indicate presence of waters of U.S. in review area (check all that apply):¹

TNWs, including territorial seas

Wetlands adjacent to TNWs

Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs

Non-RPWs that flow directly or indirectly into TNWs

Wetlands directly abutting RPWs that flow directly or indirectly into TNWs

Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs

Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs

Impoundments of jurisdictional waters

Isolated (interstate or intrastate) waters, including isolated wetlands

b. Identify (estimate) size of waters of the U.S. in the review area:

Non-wetland waters: 2,204 linear feet: 4 width (ft) and/or 0.378 acres.

Wetlands: 0.224 acres.

c. Limits (boundaries) of jurisdiction based on: Established by OHWM

Elevation of established OHWM (if known):

2. Non-regulated waters/wetlands (check if applicable):³

Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.

Explain:

¹ Boxes checked below shall be supported by completing the appropriate sections in Section III below.

² For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

³ Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW:

Summarize rationale supporting determination:

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent":

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:

Watershed size: 85 acres
Drainage area: 85 acres
Average annual rainfall: 48 inches
Average annual snowfall: 4 inches

(ii) Physical Characteristics:

(a) Relationship with TNW:

- Tributary flows directly into TNW.
 Tributary flows through 2 tributaries before entering TNW.

Project waters are 1 (or less) river miles from TNW.
Project waters are 1 (or less) river miles from RPW.
Project waters are 1 (or less) aerial (straight) miles from TNW.
Project waters are 1 (or less) aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain:

Identify flow route to TNW⁵: Trib flows south into Lake Crabtree.
Tributary stream order, if known:

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: Natural
 Artificial (man-made). Explain: .
 Manipulated (man-altered). Explain: Spill way from pond on property contributes flow to RPW.

Tributary properties with respect to top of bank (estimate):

Average width: 4 feet
Average depth: .25 feet
Average side slopes: 3:1

Primary tributary substrate composition (check all that apply):

Silts Sands Concrete
 Cobbles Gravel Muck
 Bedrock Vegetation. Type/% cover:
 Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: Stable.

Presence of run/riffle/pool complexes. Explain: Yes.

Tributary geometry: Relatively straight

Tributary gradient (approximate average slope): 3 %

(c) Flow:

Tributary provides for: Seasonal flow

Estimate average number of flow events in review area/year: 20 (or greater)

Describe flow regime: Perennial/Intermittent.

Other information on duration and volume:

Surface flow is: Discrete. Characteristics:

Subsurface flow: Unknown. Explain findings:

Dye (or other) test performed:

Tributary has (check all that apply):

Bed and banks
 OHWM⁶ (check all indicators that apply):
 clear, natural line impressed on the bank the presence of litter and debris
 changes in the character of soil destruction of terrestrial vegetation
 shelving the presence of wrack line
 vegetation matted down, bent, or absent sediment sorting
 leaf litter disturbed or washed away scour
 sediment deposition multiple observed or predicted flow events
 water staining abrupt change in plant community
 other (list):
 Discontinuous OHWM.⁷ Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

High Tide Line indicated by: Mean High Water Mark indicated by:
 oil or scum line along shore objects survey to available datum;
 fine shell or debris deposits (foreshore) physical markings;
 physical markings/characteristics vegetation lines/changes in vegetation types.
 tidal gauges
 other (list):

(iii) Chemical Characteristics:

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).

Explain:

Identify specific pollutants, if known:

⁶A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

⁷Ibid.

(iv) **Biological Characteristics. Channel supports (check all that apply):**

- Riparian corridor. Characteristics (type, average width):
- Wetland fringe. Characteristics:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings:

2. **Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW**

(i) **Physical Characteristics:**

(a) **General Wetland Characteristics:**

Properties:

Wetland size: 0.224 acres

Wetland type. Explain: Bottomland Hardwood/Headwater Forest.

Wetland quality. Explain:

Project wetlands cross or serve as state boundaries. Explain:

(b) **General Flow Relationship with Non-TNW:**

Flow is: Intermittent flow. Explain:

Surface flow is: Discrete

Characteristics:

Subsurface flow: Unknown. Explain findings:

Dye (or other) test performed:

(c) **Wetland Adjacency Determination with Non-TNW:**

Directly abutting

Not directly abutting

Discrete wetland hydrologic connection. Explain:

Ecological connection. Explain:

Separated by berm/barrier. Explain:

(d) **Proximity (Relationship) to TNW**

Project wetlands are 1 (or less) river miles from TNW.

Project waters are 1 (or less) aerial (straight) miles from TNW.

Flow is from: Wetland to navigable waters.

Estimate approximate location of wetland as within the 100-500-year floodplain.

(ii) **Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain:

Identify specific pollutants, if known:

(iii) **Biological Characteristics. Wetland supports (check all that apply):**

- Riparian buffer. Characteristics (type, average width):
- Vegetation type/percent cover. Explain:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings:

3. **Characteristics of all wetlands adjacent to the tributary (if any)**

All wetland(s) being considered in the cumulative analysis: 3

Approximately (0.224) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)

Size (in acres)

Directly abuts? (Y/N)

Size (in acres)

-See Attached Aquatic Resource Table

Summarize overall biological, chemical and physical functions being performed:

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs. Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D:
2. Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs. Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:
3. Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW. Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
 TNWs: linear feet width (ft), Or, acres.
 Wetlands adjacent to TNWs: acres.
2. **RPWs that flow directly or indirectly into TNWs.**
 Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial:
 Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally:

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: 2,204 linear feet 4 width (ft).
 - Other non-wetland waters: 0.378 acres.
- Identify type(s) of waters: Ponds.

3. Non-RPWs⁸ that flow directly or indirectly into TNWs.

- Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

- Tributary waters: linear feet width (ft).
 - Other non-wetland waters: acres.
- Identify type(s) of waters: .

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.

- Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
- Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

- Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.

- Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: 0.224 acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

- Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.⁹

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

- Demonstrate that impoundment was created from "waters of the U.S.," or
- Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
- Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY).¹⁰

- which are or could be used by interstate or foreign travelers for recreational or other purposes.
- from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- which are or could be used for industrial purposes by industries in interstate commerce.
- Interstate isolated waters. Explain: .
- Other factors. Explain: .

⁸See Footnote # 3.

⁹To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

¹⁰Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following Rapanos.

Identify water body and summarize rationale supporting determination:

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet width (ft).
- Other non-wetland waters: acres.
Identify type(s) of waters: .
- Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

- If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
 - Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
- Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- Lakes/ponds: acres.
- Other non-wetland waters: acres. List type of aquatic resource: .
- Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
- Lakes/ponds: acres.
- Other non-wetland waters: acres. List type of aquatic resource: .
- Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:
- Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 - Office concurs with data sheets/delineation report.
 - Office does not concur with data sheets/delineation report.
- Data sheets prepared by the Corps:
- Corps navigable waters' study:
- U.S. Geological Survey Hydrologic Atlas:
 - USGS NHD data.
 - USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite scale & quad name: Cary Quad.
- USDA Natural Resources Conservation Service Soil Survey. Citation: Soil Sheets 36/37.
- National wetlands inventory map(s). Cite name: .
- State/Local wetland inventory map(s): .
- FEMA/FIRM maps: .
- 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)
- Photographs: Aerial (Name & Date): .
or Other (Name & Date): .
- Previous determination(s). File no. and date of response letter: .
- Applicable/supporting case law: .
- Applicable/supporting scientific literature: .
- Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD:



Soil & Environmental Consultants, PA

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sandec.com

September 1, 2017
S&EC Project No.: 13254.W1

To: Raleigh Durham Airport Authority
Attn: Victor Malcolm
1000 Trade Drive
PO Box 80001
RDU Airport, NC 27623

RS&H
Attn: Tarryn Little
8601 Six Forks Road
Suite 260
Raleigh, NC 27615

Re: Wetland Delineation and Stream Evaluation
RDU Park Economy 3 Expansion
Wake County, NC

Mr. Malcolm and Mr. Little:

On August 28, 2017, S&EC personnel completed the wetland delineation and stream evaluation on the RDU Park Economy 3 Expansion Site in Wake County, NC. You will find the attached report detailing our findings. Maps that further document the wetland and stream related site characteristics are also attached.

The next step in the wetland and stream verification process is to visit the site with the Army Corps of Engineers' agent for Wake County as well as a representative from the NCDWR. S&EC will schedule this site visit at your request.

As you move forward in planning your development, S&EC personnel are available for site plan review and permit consultation services. Please contact S&EC if you have any questions related to wetland and stream regulations or if you need clarification of the attached report.

Sincerely,
SOIL & ENVIRONMENTAL CONSULTANTS, PA

Bob Zarzecki
Wetlands Department Manager

Attachments:

1. Wetland, Stream & Neuse Buffer Delineation Report
2. USGS site vicinity map
3. NRCS Soil Survey
4. Wetland & Stream Sketch Map



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WETLAND, STREAM & NEUSE RIVER BUFFER DELINEATION FOR THE RDU PARK ECONOMY 3 EXPANSION PROJECT

On August 28, 2017, S&EC personnel completed a wetland, stream and Neuse River Buffer delineation within the Raleigh-Durham International Airport (RDU), Park Economy 3 Expansion project area (±381 acres). The project area is located around the existing Park Economy 3 lot both north and south of National Guard Drive and entirely on RDU property located within Wake County, NC. Figures 1 and 2 show the location of the project area on a USGS topographic quadrangle map and NRCS County Soil Survey map, respectively.

EXECUTIVE SUMMARY

We have determined that wetlands, streams and ponds generally account for the jurisdictional waters observed within the project area. Neuse River Buffers also exist around some of these surface waters. The attached wetland sketch map depicts the approximate locations of features identified during our delineation. Please refer to the sketch map and the results and recommendations section below for more detailed information.

SCOPE OF WORK

Our delineation consisted of traversing the project area to examine soils, vegetation, and hydrology across the project area in search of areas that meet the criteria for jurisdictional wetlands as described by the procedures set forth in the *Corps of Engineers Wetlands Delineation Manual (January 1987 – Final Report)*, and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0, April 2012)*.

Areas on the project area with positive indicators of hydric soils, evidence of wetland hydrology, and presence of hydrophytic vegetation were flagged with sequentially numbered, pink flagging. Proof of wetland hydrology would be the existence of hydric soils with oxidized root channels in the upper 12 inches of the soil profile, water borne deposits, drift lines, scour marks, drainage patterns, regional indicators of soil saturation, etc.

Surface waters such as intermittent and perennial stream channels and ponds, which are also subject to regulation by the US Army Corps of Engineers (USACE) as Waters of the US (WoUS), were also identified. These surface waters may also be referred to as jurisdictional waters to indicate that they are within the jurisdiction of the USACE.

It is important to note that wetlands are also classified as WoUS and regulated by the USACE under authority of the Clean Water Act (33 USC 1344).

RESULTS & RECOMMENDATIONS

The results of the delineation are discussed below.

Wetlands and Jurisdictional Waters:

We have determined that jurisdictional WoUS (i.e., streams, ponds and wetlands) exist on the project area. Please refer to the attached "Wetland Sketch Map" for specific flag numbers and approximate locations.

Jurisdictional streams, ponds and wetlands were observed during the project area evaluation; the approximate locations of each are illustrated on the attached wetland sketch map. Features identified on-site are described below:

- **Feature A** (Haley's Branch) is perennial along the eastern project area boundary.
- **Feature B** (Unnamed Tributary (UT) to Haley's Branch) is believed to be ephemeral and non-jurisdictional.
- **Feature C** (UT to Haley's Branch) begins at flag B-S1 Start and flows into Haley's Branch. This feature is thought to be considered intermittent. An ephemeral stream exists above the B-S1 start flag that we believe to be non-jurisdictional.
- **Feature C1** (UT to Haley's Branch) begins at flag B-S1A Start and flows into Feature C. This feature is believed to be considered intermittent.
- **Feature D** (UT to Haley's Branch) is believed to be ephemeral and non-jurisdictional. *Note on the map that other floodplain channels exist within the floodplain, parallel to Haley's Branch, south of features D and E that are believed to be non-jurisdictional. However, the USACE may determine that all or portions of these floodplain channels are jurisdictional. These floodplain channels will be reviewed in detail with the USACE agent during the field verification meeting.*
- **Feature E** (UT to Haley's Branch) begins at flag B-S2 Start and flows into Haley's Branch. This Feature will likely be considered intermittent. Ephemeral streams channels exist above the B-S2 start flag that we believe to be non-jurisdictional.
- **Feature F** (UT to Haley's Branch) begins at flag B-S3 #5 Start and flows into Haley's Branch. This feature will likely be considered perennial. The start of this stream is immediately below the flared end section (FES) of the stormwater pond outlet culvert.
- **Feature G** (UT to Haley's Branch) begins at flag B-S3 Start and flows to B-S3 Stop. Feature G then begins again at flag B-S3 #2 Start and flows to B-S3 #2 Stop. Feature G then begins again at flag B-S3 #3 Start and flows to B-S3 #3 Stop. Finally Feature G starts again at flag B-S4 #4 Start and flows into Feature F. Feature G will likely be considered intermittent. Ephemeral stream sections existing between the start and stop flags, that are believed to be non-jurisdictional. Another tributary ephemeral stream, believed to be non-jurisdictional, flows into Feature G shortly below the B-S3 #2 Start flag.

- **Feature H** (UT to Haley's Branch) is believed to be ephemeral and non-jurisdictional. This feature receives excessive stormwater runoff from the PE3 parking lot. However, we do not believe that it receives any groundwater input and does not have an Ordinary High Water Mark (OHWM) to be considered jurisdictional. Confirmation from both the USACE and DWR will be needed and it will be reviewed in detail during the field verification and on-site determination meetings.
- **Feature I** (UT to Haley's Branch) begins at flag A-S07 Start and flows to flag A-S08 Stop. Feature I then begins again at flag A-S09 Start and flows into Haley's Branch. This feature is believed to be intermittent from flags A-S07 Start to A-S08 Stop, A-S09 Start to A-S10 Start and from A-S11 Stop to the confluence with Haley's Branch. Feature I is believed to contain a perennial stream section between flag A-S10 Start to flag to A-S11 Stop. An ephemeral, non-jurisdictional section of stream is believed to exist between flags A-S08 Stop and A-S09 Start. *Note that this feature includes the riprap section along National Guard Drive.*
- **Feature J** (UT to Haley's Branch) likely begins at flag A-S03 Start and flows to flag A-S04 Stop. This feature will likely be considered intermittent. An ephemeral, non-jurisdictional section is believed to exist between flag A-S04 Stop and the culvert under National Guard Drive.
- **Feature K** (UT to Haley's Branch) is believed to be ephemeral and non-jurisdictional. *See note regarding Pond 3 below.*
- **Feature L** (UT to Haley's Branch) begins at flag A-S05 Start and flows southeast under National Guard Drive into Feature I. This feature is believed to be considered intermittent. An ephemeral stream also exists above flag A-S05 Start that is not believed to be jurisdictional. *See note regarding Pond 2 below.*
- **Feature M** (UT to Haley's Branch) begins at flag A-S06 Start and flows south into Feature I. This feature is believed to be intermittent. An ephemeral stream channel exists above flag A-S06 that is believed to be ephemeral and non-jurisdictional. *Note that a jurisdictional wetland also exists in this drainage (flags A62 tie to A68).*
- **Feature N** (UT to Haley's Branch) begins east of the project area and flows southwest into Haley's Branch (Feature A). This Feature will likely be considered perennial.
- **Feature O** (UT to Haley's Branch) begins outside of the project area and flows through the southwestern project area corner before leaving the project area again to the south. This feature will likely be considered perennial.
- **Feature P** (UT to Haley's Branch) is believed to be ephemeral and non-jurisdictional.
- **Feature Q** (UT to Haley's Branch) begins at flag A-S01 and flows southwest into Feature O. This feature is believed to be considered intermittent. An ephemeral stream exists above flag A-S01 that is believed to be non-jurisdictional.
- **Feature R** (UT to Haley's Branch) is believed to be ephemeral and non-jurisdictional. *Note that a jurisdictional wetland also exists in this drainage (flags A01 tie to A34).*
- **Feature S** (UT to Haley's Branch) begins at flag A-S02 and flows southwest into Feature O. This feature is believed to be considered intermittent. An ephemeral stream exists above flag A-S02 that is believed to be non-jurisdictional. *Note that this feature was determined to be jurisdictional and subject to the Neuse Buffers several years ago (prior to 2008 delineation), which resulted in significant design changes to the PE3 lot to avoid this feature. As such and as we now believe it to be non-jurisdictional and non-buffered*

above flag A-S02, we are anticipating a detailed evaluation of this feature with the USACE and DWR during the field verification and on-site determination meetings.

- **Feature T** (UT to Haley's Branch) is believed to be ephemeral and non-jurisdictional.
- **Feature U** (UT to Haley's Branch) is believed to be ephemeral and non-jurisdictional.
- **Feature V** (UT to Haley's Branch) is not present in the field. *Note that wetlands exist both above and below this feature.*
- **Feature W** (UT to Haley's Branch) is not present in the field and therefore non-jurisdictional.
- **Pond 1** should be considered to be a pond in high ground (upland) and non-jurisdictional.
- **Pond 2** should be considered to be a pond in high ground (upland) and non-jurisdictional.
- **Pond 3** should be considered to be a pond in high ground (upland) and non-jurisdictional.
- **Pond 4** is located within the drainage of Feature A (Haley's Branch) and therefore is believed to be jurisdictional. *Note this feature may actually not be a stand-alone pond, but rather the result of backwater conditions of Lake Crabtree as the result of the culvert connection under Interstate 40. If so the water level will rise and fall in direction association with the water level of Lake Crabtree.*
- **Pond 5** is not present in the field and therefore non-jurisdictional.
- **Wetlands 1 through 13** were determined to be jurisdictional.

Surface waters in the project area flow into Haley's Branch and tributaries in the Neuse River Basin, which has been classified in "Classification and NC DWQ Standards Applicable to Surface Waters and Wetlands of North Carolina" as C;NSW.

The wetlands onsite were identified as being both Bottomland Hardwood and Headwater Forest wetland types as outlined in the publication ¹"NCWAM Manual." These wetland types are common throughout the piedmont region of North Carolina.

Neuse River Riparian Buffers:

The surface waters within the project area potentially subject to the Neuse River Buffers include **Features A through W** and **Ponds 1 through 5**. The only Features S&EC believe will be subject to the Neuse River Buffers include **Features A, C, E, F, G, I, J, L, M, N, O, S, T** and **Pond 4**. An on-site determination meeting with a representative from the NCDWR will be necessary to confirm our stream buffer determinations. S&EC will schedule this on-site determination meeting at your request.

The following table presents the assigned label (i.e. A, B, C,1,2,3, etc.) for each stream and pond located in the field and on the USGS map and Soil Survey. Information is also presented regarding the DWR determinations of the features as described in the 2008 Neuse Buffer Determination (NBRRO#08-137 dated July 18, 2008, since expired). The 50' buffers are measured from the "top of bank", landward on each side of the stream.

¹North Carolina Wetland Assessment Method

Table 1: Surface water features, classifications, and riparian buffer widths.

Feature	USGS	Soil Survey	Classified in Field (Needs USACE Confirmation)	50' Neuse Buffers (Needs DWR Confirmation)	2008 Labels	2008 DWR Neuse Buffer Determination	Notes
A (Haley's Branch)	Yes	Yes	Perennial	Subject	Y/BB	Subject	The 2008 maps extended Haley's Branch up different features on USGS vs. Soil Survey.
B	No	Yes	Ephemeral	Not Subject	B	Subject	
C	No	Yes	Intermittent	Subject	C	Subject	
C1	No	No	Intermittent	Not Subject	N/A	N/A	
D	No	Yes	Ephemeral	Not Subject	N	Subject	
E	No	Yes	Intermittent	Subject	O	Subject	
F	No	Yes	Perennial	Subject	R	Subject	
G	No	Yes	Intermittent	Subject	S	Subject	
H	No	Yes	Ephemeral	Not Subject	T	Subject	
I	No	Yes	Intermittent/ Perennial	Subject	V	Subject	
J	No	Yes	Intermittent	Subject	W	Not Subject	
K	No	Yes	Ephemeral	Not Subject	U	Subject	This feature is mislabeled as two different features in the 2008 determination.
L	Yes	No	Intermittent	Subject	U	Subject	This feature is mislabeled as two different features in the 2008 determination.
M	No	Yes	Intermittent	Subject	Y	Subject	This feature is mislabeled as Haley's Branch in the 2008 determination.
N	Yes	Yes	Perennial	Subject	Z	Subject	
O	Yes	Yes	Perennial	Subject	Not Evaluated	Not Evaluated	
P	No	Yes	Ephemeral	Not Subject	RR	Not Subject	
Q	No	No	Intermittent	Not Subject	N/A	N/A	
R	No	Yes	Ephemeral	Not Subject	SS	Not Subject	
S	No	Yes	Intermittent	Subject	TT	Not Subject	
T	No	Yes	Intermittent	Subject	UU	Not Subject	
U	No	Yes	Ephemeral	Not Subject	Not Evaluated	Not Evaluated	
V	Yes	Yes	Not Present	Not Subject	VV	Subject	
W	Yes	No	Not Present	Not Subject	N/A	N/A	
Pond 1	Yes	No	Present	Not Subject	Pond 3	Not Subject	
Pond 2	Yes	No	Present	Not Subject	Pond 2	Not Subject	
Pond 3	No	Yes	Present	Not Subject	N/A	N/A	
Pond 4	No	No	Present	Subject	N/A	N/A	
Pond 5	Yes	No	Not Present	Not Subject	Pond 23	Not Subject	

USACE & DWR Verification:

All S&EC flags comprising the wetland and jurisdictional waters delineation should be surveyed and a Wetland Survey Plat Map generated for use in site planning and USACE verification and permitting. The entire length of each stream feature was not flagged, but will need to be survey located by the project surveyor. S&EC has met with the project surveyor on site to discuss their location of the streams and wetlands. The Wetland Survey Plat Map should include all of the information listed on the attached "***Obtaining a Jurisdictional Determination – Submitting a Plat for Corps Verification.***" S&EC delineation flag numbers should be shown on the wetland survey.

Our delineation must be verified by the USACE and DWR. S&EC is prepared to submit the USACE and DWR requests to verify our delineation. Please let us know when we are authorized to submit these requests.

Regulations

A general list of regulations that apply to jurisdictional wetlands and waters present on the site are discussed below. Please be aware that other local, state, and federal regulations not included in this list may also apply. S&EC personnel are available to discuss these regulations as they apply to your project.

Neuse River Buffer Rules:

The Neuse River Basin: Nutrient Sensitive Waters Management Strategy: Protection and Maintenance of Riparian Areas with Existing Forest Vegetation (15A NCAC 2B.0233) rules apply 50-foot wide riparian buffers directly adjacent to surface waters in the Neuse River Basin (intermittent streams, perennial streams, lakes, ponds, and estuaries), excluding wetlands. The rule defines surface waters as features approximately shown on either the most recent version of the soil survey map prepared by the Natural Resource Conservation Service (NRCS) of the US Department of Agriculture (USDA) or the 7.5-minute quadrangle topographic maps prepared by the US Geologic Survey (USGS). Surface waters that appear on these maps are not subject only if an on-site determination by the NC Division of Water Resources / Water Quality Programs (DWR/WQP) shows that they fall into one of the following categories:

- 1) Ditches and manmade conveyances other than modified natural streams;
- 2) Manmade ponds and lakes that are located outside natural drainage ways; or
- 3) Ephemeral (stormwater) streams.

Impacts to Neuse Buffers fall under "uses" classified as "exempt", "allowable", or "allowable w/ mitigation". We can assist RDU in obtain Authorization Certificates from NCDWR for any such uses (e.g., road crossings, utility crossings, etc.). Any other uses (to include parking lots, etc.) that do not fall under one of the listed uses is considered "prohibited" and requires a variance. Minor Variances (Zone 2 only) are approved by NCDWR staff. Major Variances (Zone 1), including parking lots, requires approval from the Water Quality Committee (WQC) of the N.C. Environmental Management Commission (EMC).

Wetland Permitting:

Any impacts (fill, etc.) to jurisdictional WoUS require a permit verification from the USACE (unless otherwise exempted) and the NCDWR.

The current Nationwide Permits were issued by the USACE on March 18, 2017. The USACE Wilmington District issued revised Regional Conditions for the 2017 Nationwide Permits.

Generally, wetland impact permits are issued on a per-project basis as determined by the USACE. The USACE has determined that impacts on parcels sub-divided from larger tracts are sometimes considered to be cumulative to existing impacts for the large tract. If this is the case, then thresholds for notification may not apply to your project and impacts to streams/wetlands must be considered in light of existing permits.

Our assumption is that given past permits issued for RDU, that any impacts resulting in permanent loss of WoUS will require an Individual Permit (IP) from the USACE.

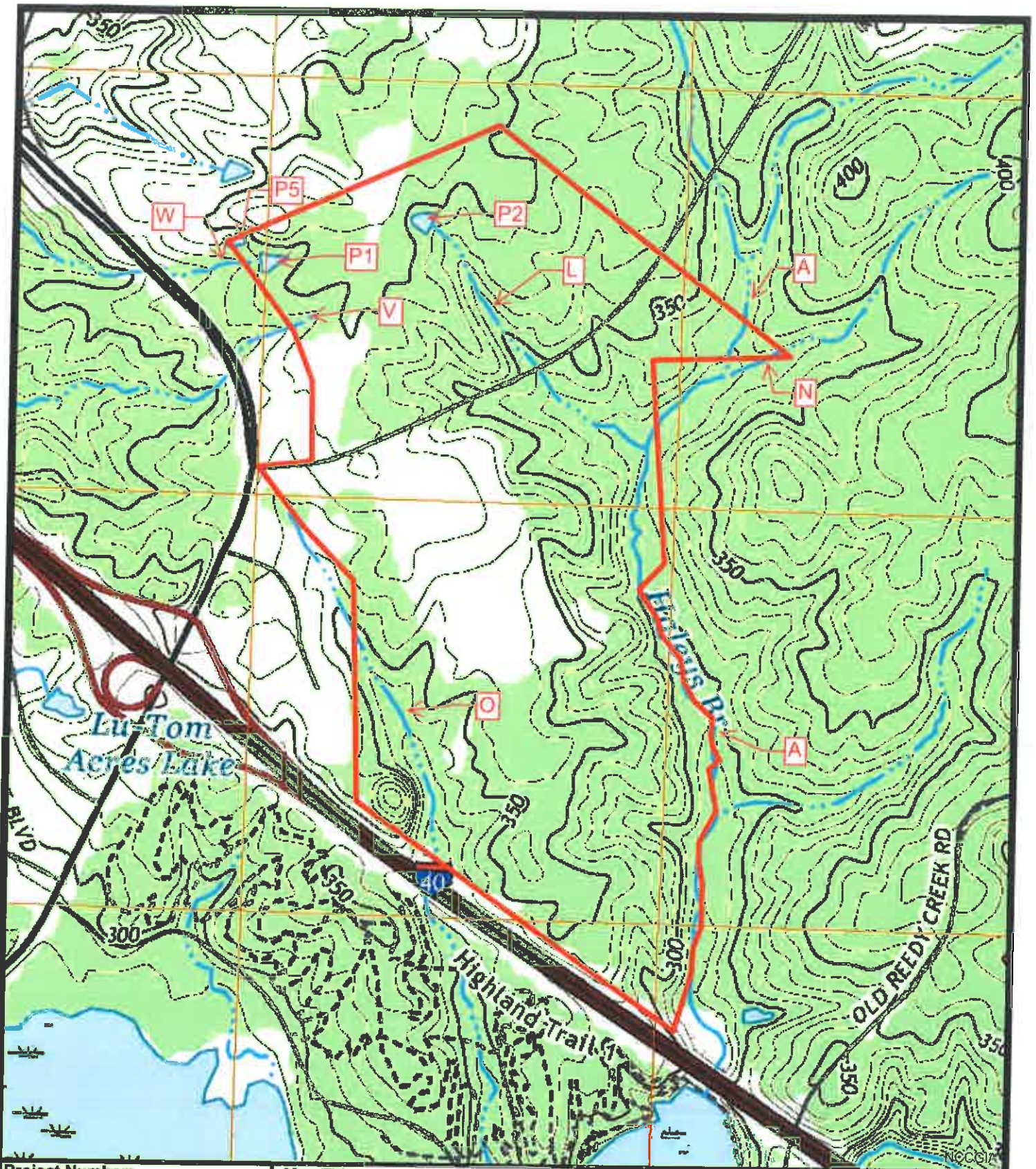
We recommend you forward a conceptual site plan to our office for review by one of our permitting specialist, who can best advise you of the specific permitting needs as you progress through the planning process.

Limitations

Our evaluations, conclusions, and recommendations are based on project and site information available to us at the time of this report and may require modification if there are any changes in the project or site conditions, or if additional data about the project or site becomes available in the future. This report is intended for use by RDU Authority and RS&H on this project. These findings are not intended or recommended to be suitable for reuse on extensions of the project or on any other project. Reuse on extensions of this project or on any other project shall be done only after written verification or adaptation by SOIL & ENVIRONMENTAL CONSULTANTS, PA, for the specific purpose intended.

CONCLUSION

The wetland and stream delineation for the RDU Park Economy 3 Expansion project was completed by S&EC on August 28, 2017. This project area contains jurisdictional streams, ponds and wetland areas that may require preconstruction authorization for impacts, depending on the size and nature of the impact (i.e. road construction, lot fill, stormwater pond construction, etc.). USACE and DWR/WQP verification of our site assessment should be obtained.



Project Number: **13254.W1**

Project Manager: **SB**

Scale: **1" = 1000'**

Date: **8/25/17**

Map Title: **Figure 1 - USGS Map**

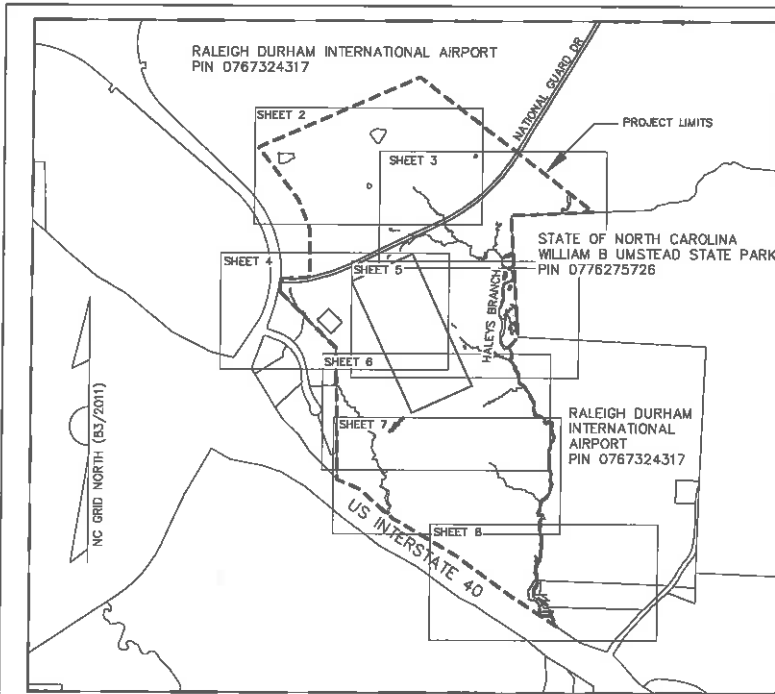
RDU
Wake County, NC

Source: **NC USGS**
Cary Quadrangle

0 1,000 2,000
Feet

S&EC
Soil & Environmental Consultants, PA
4412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615 • Phone: (919) 846-5900 • Fax: (919) 846-9417
sandec.com

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LOCATION MAP - NOT TO SCALE

I certify that this map was drawn under my supervision from an actual survey made under my supervision, that the boundaries not surveyed are drawn from Wake County GIS; that the ratio of precision or positional accuracy is ± 1 meter, and that this map meets the requirements of The Standards of Practice for Land Surveying in North Carolina (21 NCAC 56.1600). This 25th day of October 2017.

Seal: 
 Mark A. Smith - Professional Land Surveyor

NOTES:

1. WETLANDS AND US REGULATED WATERS DELINEATION BY SOIL AND ENVIRONMENTAL CONSULTANTS, PA 11030 RAVEN RIDGE ROAD, RALEIGH NC 27614
2. LONGITUDE AND LATITUDE SHOWN HEREIN ARE REFERENCED HORIZONTALLY TO THE NORTH AMERICAN DATUM OF 1983 USING THE 2011 ADJUSTMENT (NAD83-2011).
3. THIS IS A WETLANDS AND US REGULATED WATERS SURVEY REFERENCED TO PROPERTY LINES TAKEN FROM WAKE COUNTY GIS DATA.
4. THIS SURVEY MEETS THE HORIZONTAL ACCURACY STANDARDS FOR A CLASS B US/GIS SURVEY (SUB-METER) AS SET FORTH BY THE NC BOARD FOR ENGINEERS AND SURVEYORS IN 21 NCAC 56.1600.
5. FIELD SURVEY CONDUCTED USING TOPCON GRS-1 L1/L2 (GPS + GLONASS) RECEIVER USING THE NCGS CORS RTK CORRECTION SYSTEM.

WETLANDS AND REGULATED WATERS AREAS AND LENGTHS

WETLANDS = 1.777 ACRES
 LINEAR WETLANDS = 0.024 ACRES
 PERENNIAL STREAMS = 2.025 ACRES, 9666 FEET
 INTERMITTENT STREAMS = 0.465 ACRES, 5,709 FEET
 NON-JURISDICTIONAL PONDS IN HIGH GROUND = 1.128 ACRES
 LAKE CRABTREE/OPEN WATER = 0.569 ACRES

"This certifies that this copy of this plan accurately depicts the boundary of the jurisdiction of the Section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is change in the law or our published regulations, this determination of Section 404 jurisdiction may be relied upon for a period not to exceed five years from this date. The undersigned completed this determination utilizing the appropriate Regional Supplement to the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual, 33 C.F.R. part 328 and other U.S. Army Corps of Engineers guidance."

Regulatory Official: _____
 Title: _____
 Date: _____
 USACE Action ID: _____

SHEETS 2-8: SURVEY
 SHEETS 9-25: DATA TABLES

WETLAND AND REGULATED WATERS SURVEY PLAT
 RS&H ARCHITECTS-ENGINEERS-PLANNERS, INC.
 PROPERTY OF THE RALEIGH DURHAM INTERNATIONAL AIRPORT
 CEDAR FORKS TOWNSHIP WAKE COUNTY NORTH CAROLINA
 OCTOBER 10, 2017 SCALE: AS SHOWN
 REVISED: 02-07-2018

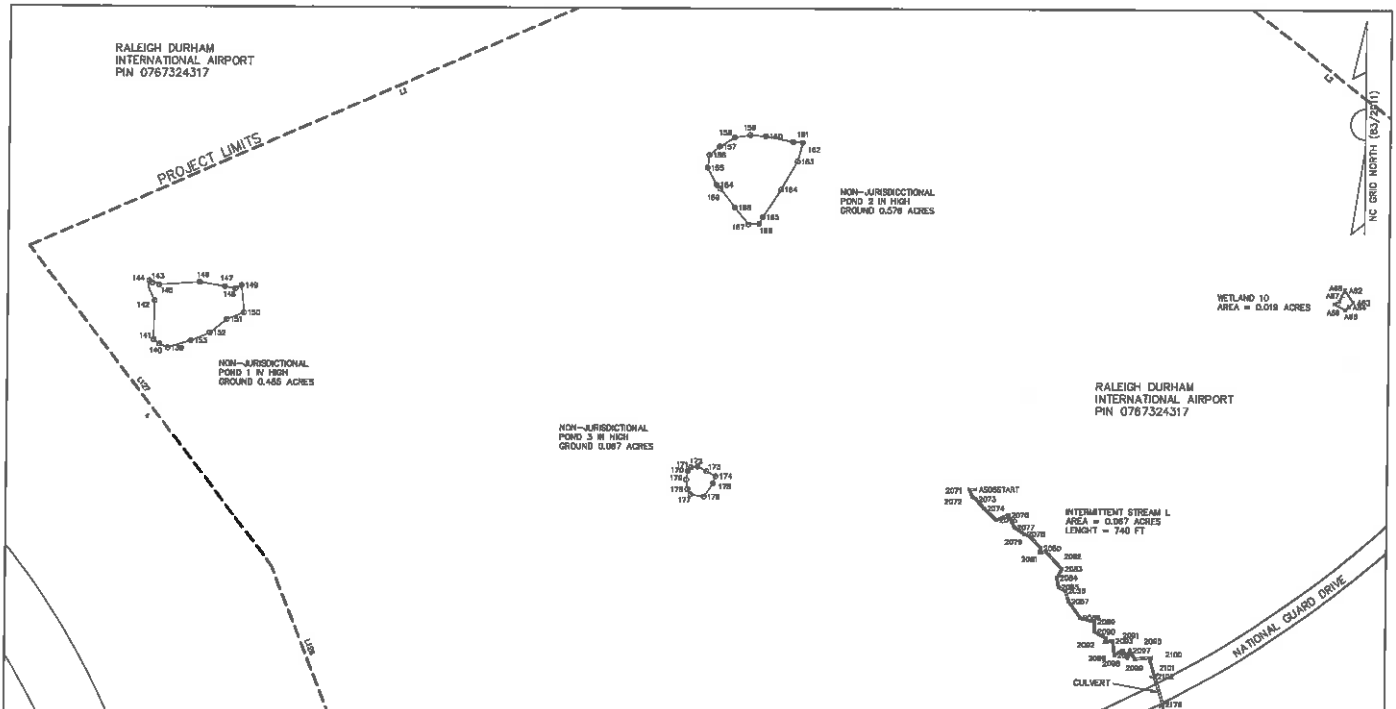


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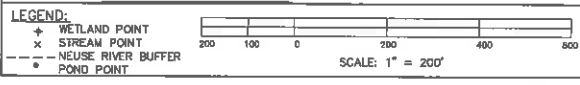
SHEET: 1 OF 22

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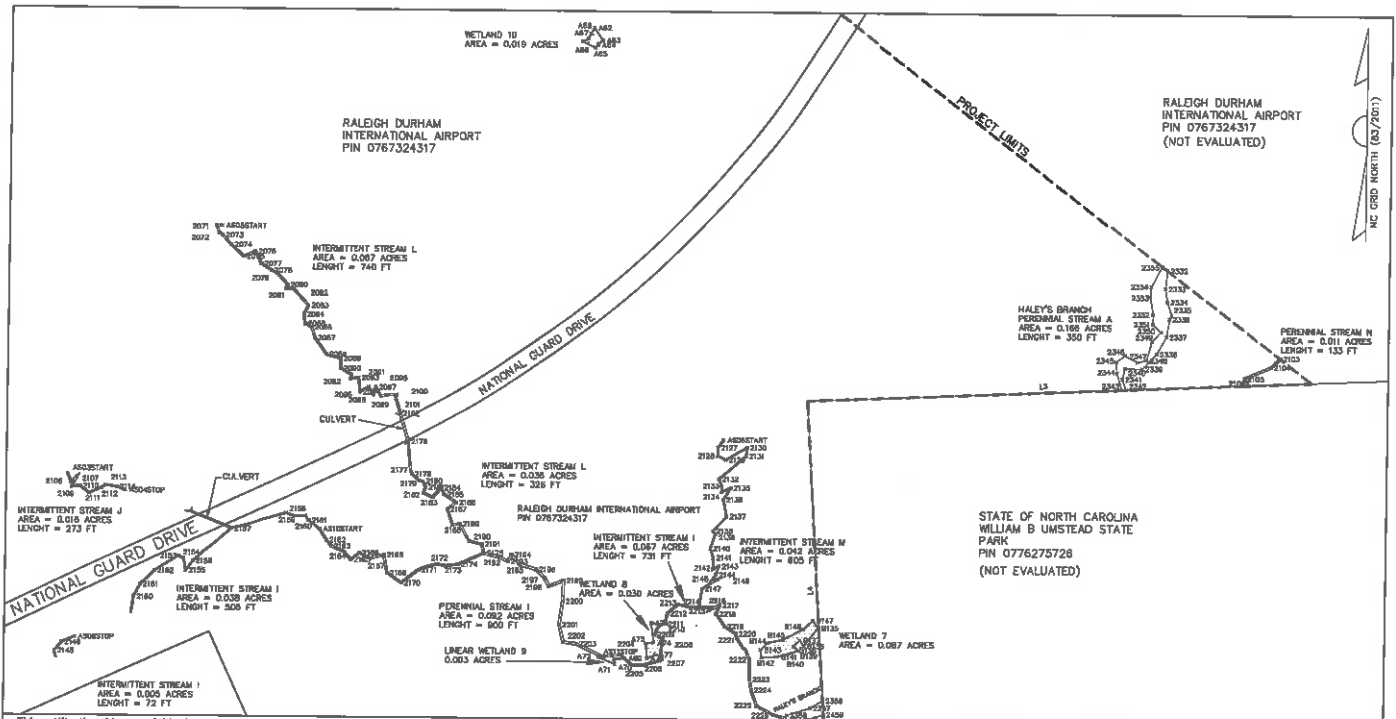


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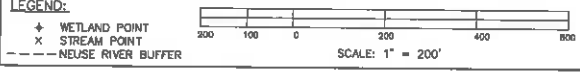
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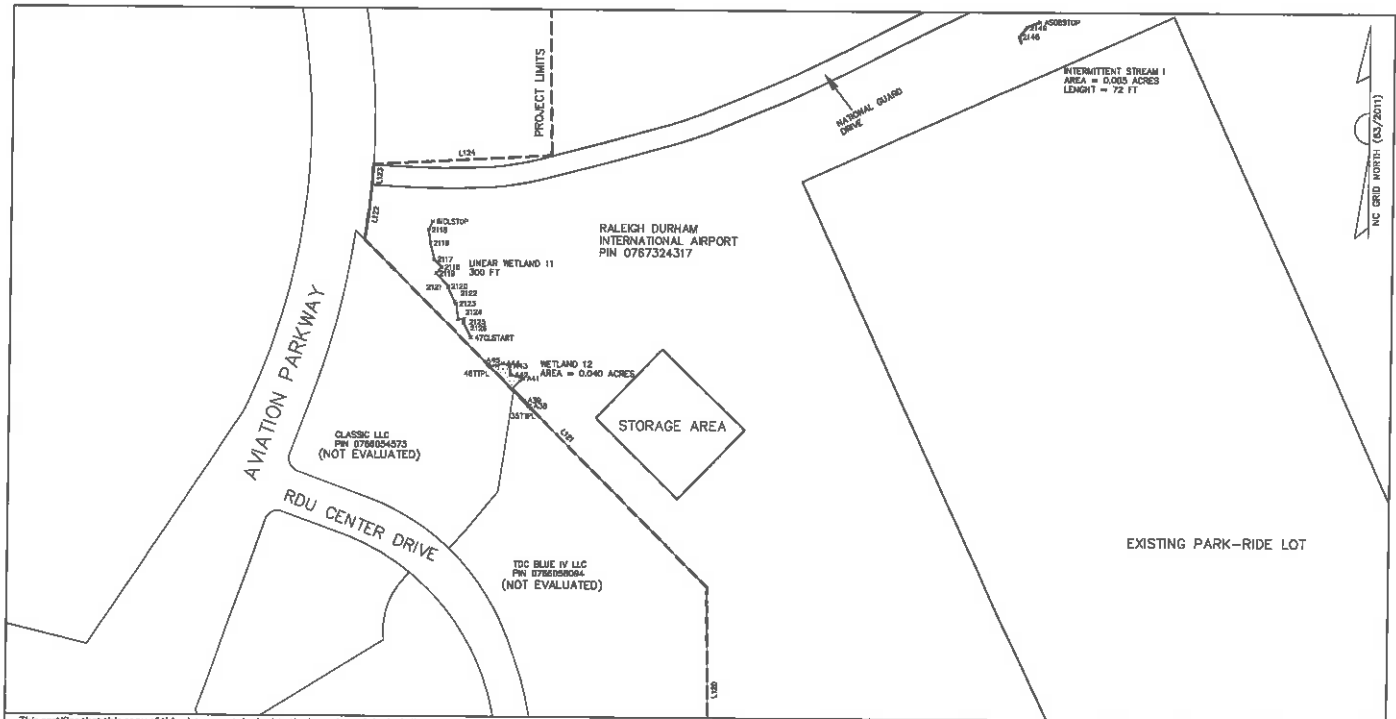


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SHEET: 3 OF 22

NAD 83 GRID NORTH (05/2011)

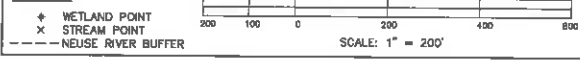
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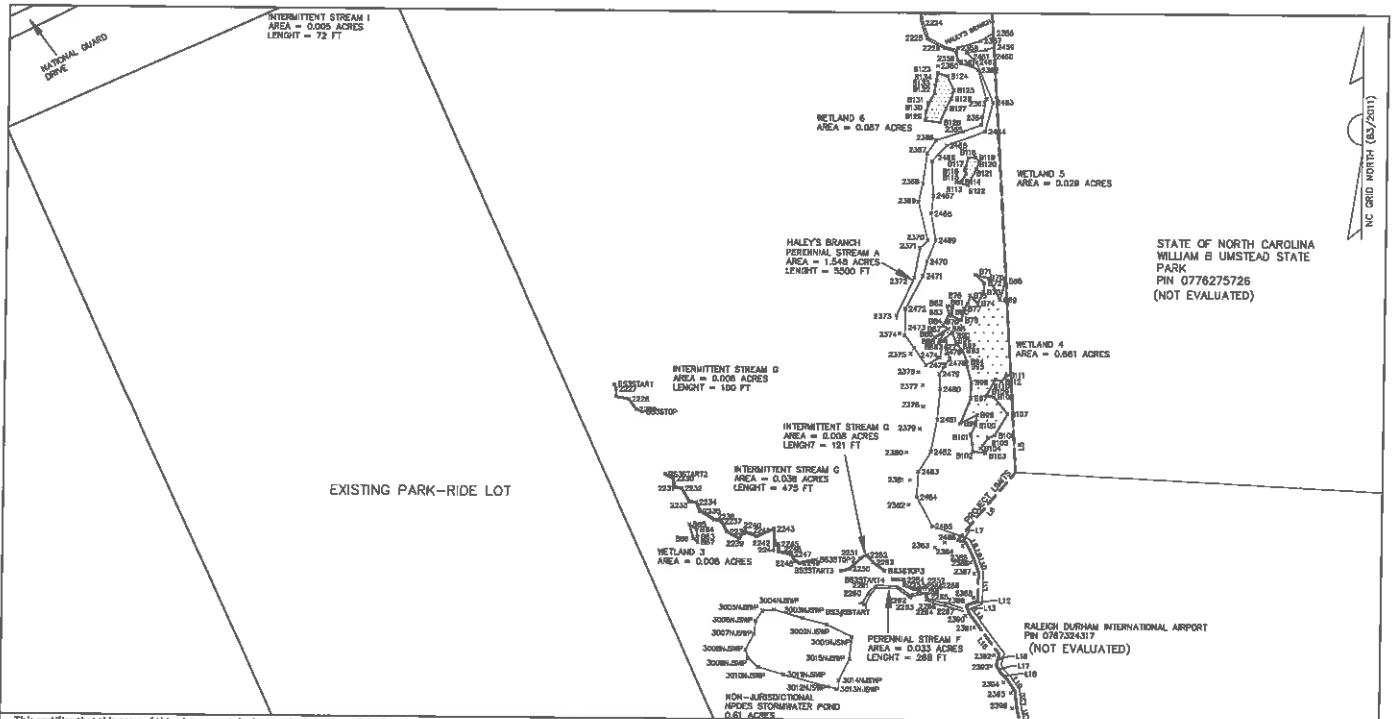


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SHEET: 4 OF 22

NC GRID NORTH: (85/2011)

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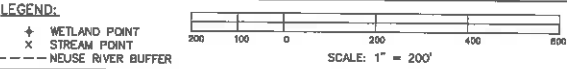


STATE OF NORTH CAROLINA
 WILLIAM B UMSTEAD STATE
 PARK
 PIN 0776275726
 (NOT EVALUATED)

NC GRID NORTH (03/2011)

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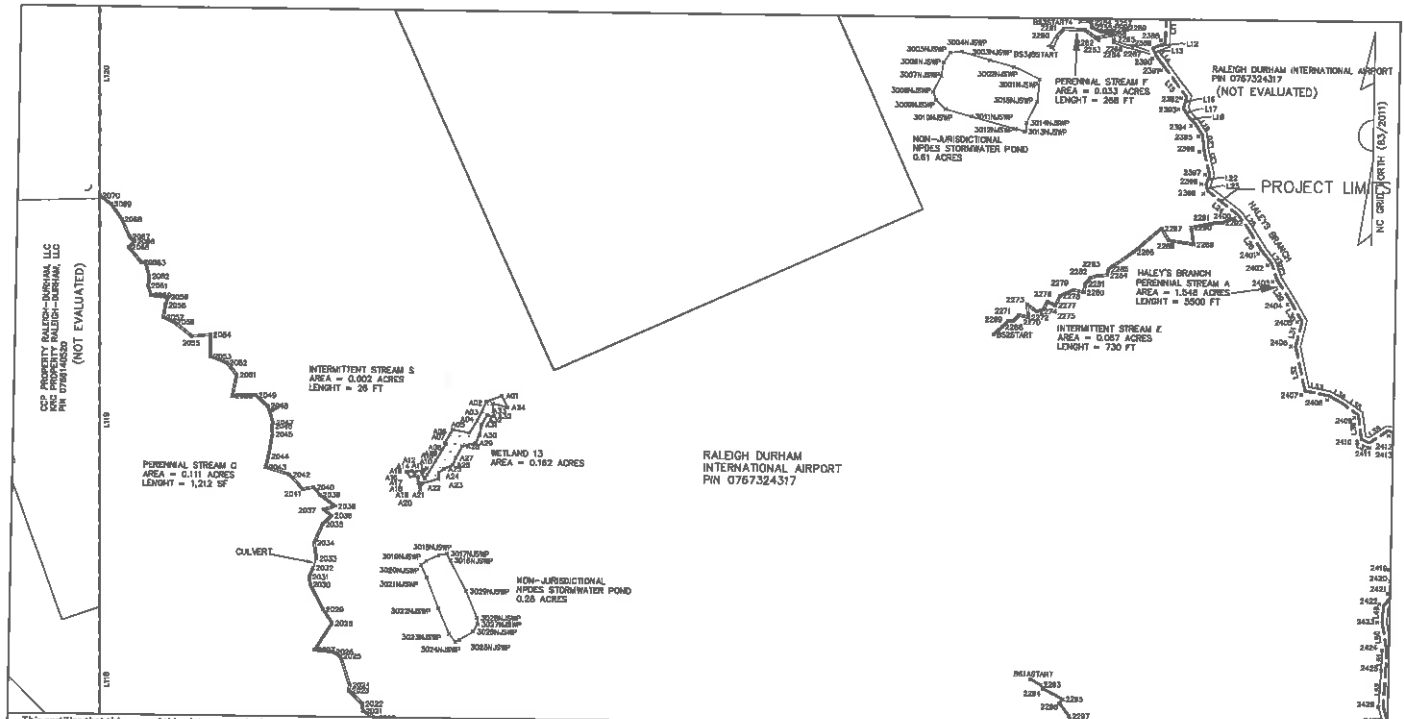


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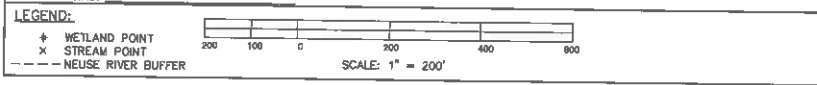
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This certifies that this copy of this plat accurately depicts the boundary of the Jurisdiction of the Section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is change in the law or our published regulations, this determination of Section 404 jurisdiction may be relied upon for a period not to exceed five years from this date. The undersigned completed this determination utilizing the appropriate Regional Supplement to the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual, 33 C.F.R. part 328 and other U.S. Army Corps of Engineers guidance.

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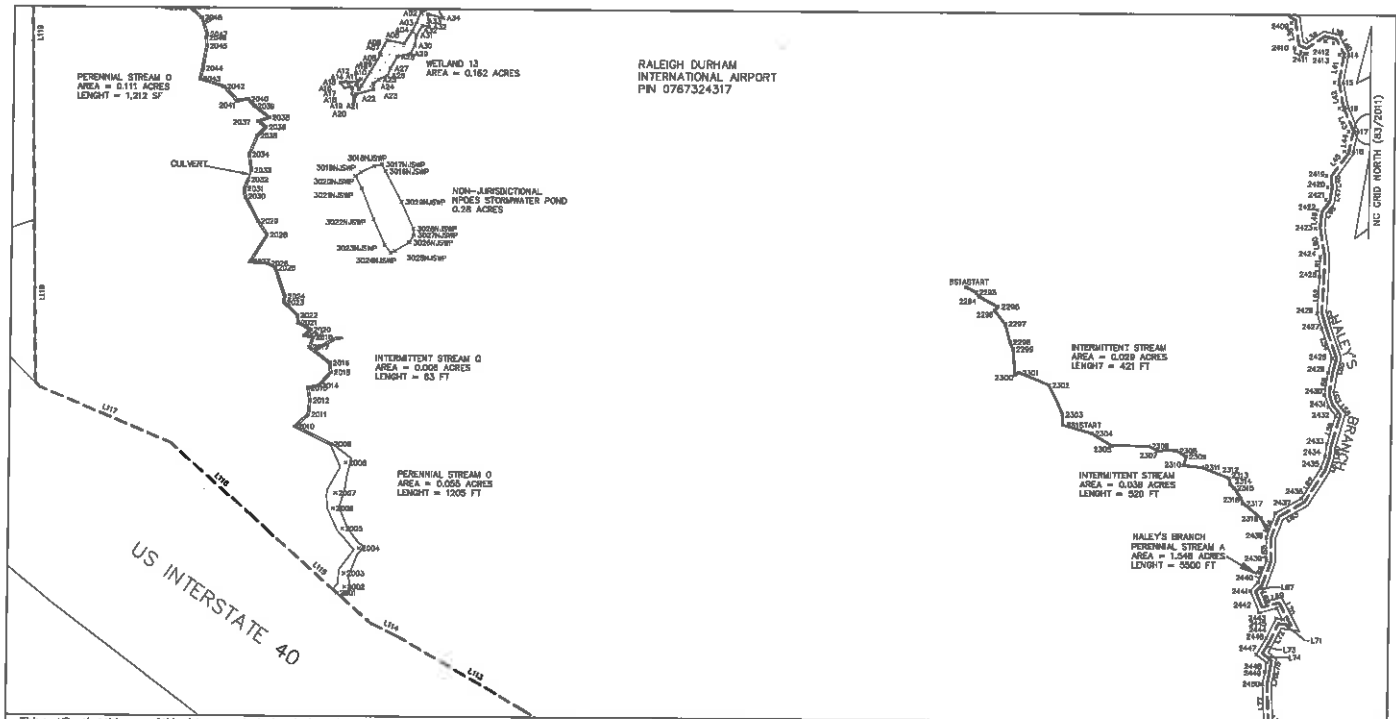


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 MARK A. SMITH
 NORTH CAROLINA
 PROFESSIONAL ENGINEER
 LICENSE NO. 68487

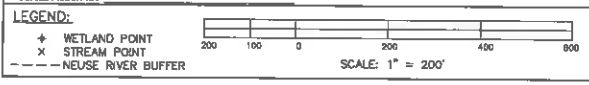
SHEET: 6 OF 22

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This certifies that this copy of this plat accurately depicts the boundary of the jurisdiction of the Section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is change in the law or our published regulations, this determination of Section 404 jurisdiction may be relied upon for a period not to exceed five years from this date. The undersigned completed this determination utilizing the appropriate Regional Supplement to the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual, 33 C.F.R. part 328 and other U.S. Army Corps of Engineers guidance.

Regulatory Official: _____
 Title: _____
 Date: _____
 USACE Action ID: _____

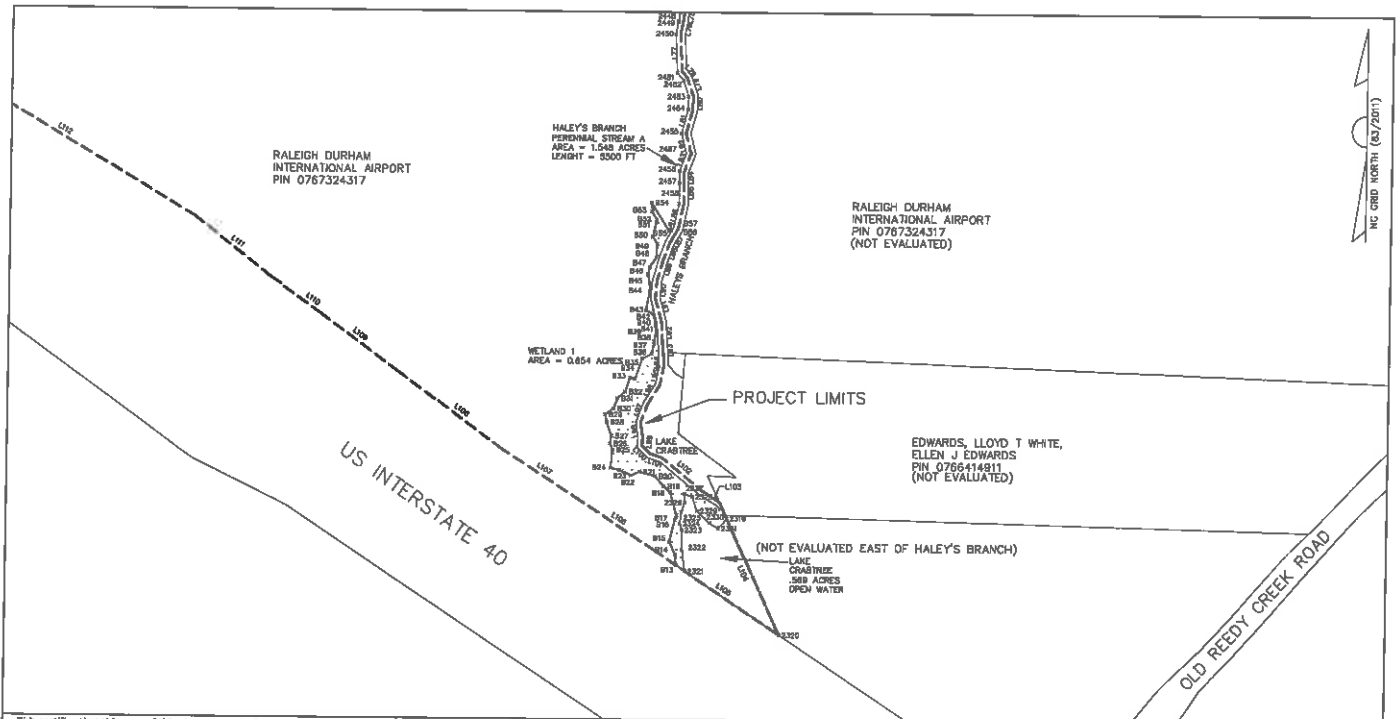


WETHERILL ENGINEERING
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 RALEIGH NORTH CAROLINA 27606
 919-851-9077
 LICENSE No. F-0377
 TRANSPORTATION PLANNING/DESIGN - HIGHWAY/STRUCTURE DESIGN
 CIVIL/SITE DESIGN GIS/GPS - SURVEYING - CONSTRUCTION OBSERVATION

SEAL
 STATE SEAL NO. 08487
 MARK A. SMITH
 LICENSE NO. 10000

SHEET: 7 OF 22

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PROJECT LIMITS LINE DATA

Parcel Line Table		
Line #	Length	Direction
L1	2312.52	S66° 12' 04.65"W
L2	2915.58	N52° 21' 56.64"W
L3	1092.75	N87° 35' 04.01"E
L4	1157.12	N3° 45' 08.08"W
L5	452.04	N3° 44' 30.17"W
L6	194.25	N40° 02' 05.18"E
L7	17.83	N79° 39' 45.79"W
L8	23.73	N27° 33' 05.43"W
L9	22.01	N25° 22' 16.63"W
L10	28.14	N20° 18' 33.63"W
L11	61.03	N0° 55' 59.33"E
L12	28.38	N69° 13' 39.88"E
L13	18.70	N24° 34' 53.49"W
L14	31.61	N37° 20' 44.98"W
L15	79.31	N37° 04' 15.45"W
L16	25.51	N13° 54' 19.58"E
L17	20.95	N32° 52' 10.18"W
L18	18.73	N45° 15' 51.24"W
L19	31.32	N34° 22' 30.27"W
L20	35.16	N6° 13' 54.11"W

Parcel Line Table		
Line #	Length	Direction
L21	54.52	N14° 16' 34.35"W
L22	21.36	N20° 51' 49.03"E
L23	14.92	N15° 01' 41.94"W
L24	84.54	N52° 37' 06.13"W
L25	40.14	N36° 43' 51.62"W
L26	54.45	N32° 18' 59.43"W
L27	33.85	N39° 09' 44.47"W
L28	37.63	N19° 46' 32.29"W
L29	57.48	N33° 24' 38.39"W
L30	48.69	N30° 20' 54.76"W
L31	56.11	N13° 17' 39.57"E
L32	98.56	N13° 05' 19.77"W
L33	53.50	N24° 07' 07.28"W
L34	35.13	N62° 12' 10.64"W
L35	44.37	N57° 06' 48.39"W
L36	53.61	N8° 10' 31.06"W
L37	19.06	N65° 18' 14.74"W
L38	47.67	S55° 49' 55.04"W
L39	26.82	N78° 15' 19.93"W
L40	37.51	N29° 26' 09.29"W

Parcel Line Table		
Line #	Length	Direction
L41	62.36	N10° 21' 34.39"E
L42	54.32	N11° 50' 45.73"W
L43	57.56	N23° 47' 13.51"W
L44	49.55	N12° 11' 17.18"E
L45	64.60	N37° 22' 26.03"E
L46	22.20	N8° 01' 17.13"W
L47	31.93	N8° 51' 44.09"E
L48	28.45	N38° 47' 50.21"E
L49	35.96	N4° 44' 21.19"E
L50	62.32	N10° 08' 26.34"W
L51	44.95	N1° 15' 56.01"E
L52	77.24	N3° 09' 14.39"E
L53	33.24	N17° 05' 56.51"W
L54	71.30	N20° 27' 03.45"W
L55	34.88	N14° 51' 23.18"E
L56	44.96	N8° 12' 53.78"E
L57	24.59	N19° 58' 05.11"W
L58	27.97	N40° 27' 05.15"W
L59	70.39	N16° 36' 11.09"E
L60	26.56	N8° 12' 58.68"E

Parcel Line Table		
Line #	Length	Direction
L61	29.24	N18° 17' 47.90"E
L62	81.89	N32° 27' 41.91"E
L63	63.48	N59° 47' 26.89"E
L64	51.37	N20° 36' 11.23"E
L65	50.49	N0° 59' 01.61"W
L66	54.42	N20° 06' 52.66"E
L67	19.95	N42° 53' 10.97"E
L68	36.40	N23° 21' 59.86"W
L69	38.95	S75° 48' 18.84"W
L70	55.20	N27° 58' 22.90"W
L71	26.89	S81° 51' 51.38"E
L72	40.75	N26° 48' 05.77"E
L73	33.36	N29° 54' 23.91"E
L74	25.55	N52° 42' 09.54"W
L75	26.96	N9° 42' 18.54"E
L76	26.60	N11° 00' 51.51"E
L77	79.68	N2° 58' 49.77"W
L78	20.01	N39° 23' 41.20"W
L79	40.70	N19° 01' 29.10"W
L80	31.36	N1° 58' 23.88"E

This certifies that this copy of this plat accurately depicts the boundary of the jurisdiction of the Section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is change in the law or our published regulations, this determination of Section 404 jurisdiction may be relied upon for a period not to exceed five years from this date. The undersigned completed this determination utilizing the appropriate Regional Supplement to the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual, 33 C.F.R. part 328 and other U.S. Army Corps of Engineers guidance.

Regulatory Official: _____
 Title: _____
 Date: _____
 USACE Action ID: _____



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SHEET: 9 OF 22

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PROJECT LIMITS LINE DATA

Parcel Line Table		
Line #	Length	Direction
L81	51.57	N14° 59' 13.85"E
L82	46.19	N14° 11' 50.05"W
L83	42.18	N20° 32' 03.94"E
L84	23.99	N0° 59' 09.33"W
L85	45.85	N0° 01' 27.16"E
L86	56.72	N11° 57' 52.68"E
L87	34.11	N31° 01' 08.99"E
L88	40.47	N19° 27' 21.26"E
L89	45.81	N15° 38' 40.86"E
L90	38.20	N4° 55' 00.66"E
L91	52.69	N15° 42' 50.37"W
L92	46.30	N3° 23' 20.30"W
L93	31.43	N5° 55' 20.23"W
L94	21.28	N0° 20' 47.05"W
L95	39.23	N10° 29' 11.98"E
L96	50.36	N31° 52' 15.31"E
L97	41.86	N20° 08' 42.77"E
L98	33.56	N8° 52' 26.33"W
L99	17.53	N4° 38' 56.10"E
L100	24.49	N46° 19' 33.56"W

Parcel Line Table		
Line #	Length	Direction
L101	28.04	N71° 01' 12.70"W
L102	113.11	N51° 08' 08.15"W
L103	43.53	N57° 24' 40.32"W
L104	317.73	N24° 48' 19.18"W
L105	337.44	S56° 16' 06.42"E
L106	190.40	S56° 41' 26.10"E
L107	198.49	S56° 57' 01.65"E
L108	285.91	S53° 30' 57.31"E
L109	208.76	S53° 48' 58.18"E
L110	135.74	S54° 51' 38.92"E
L111	213.53	S51° 33' 39.26"E
L112	656.92	S59° 23' 22.15"E
L113	315.16	S59° 58' 38.13"E
L114	64.04	S63° 53' 09.10"E
L115	301.77	S48° 25' 31.94"E
L116	236.77	S48° 25' 26.76"E
L117	308.29	S67° 16' 54.20"E
L118	353.00	S1° 05' 28.65"E
L119	888.36	S1° 05' 28.61"E
L120	494.57	S1° 05' 28.83"E

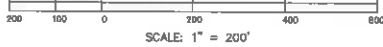
Parcel Line Table		
Line #	Length	Direction
L121	1062.84	S45° 05' 55.10"E
L122	101.18	S7° 12' 17.14"W
L123	63.71	S4° 10' 15.67"W
L124	386.93	S86° 48' 27.00"W
L125	629.43	S0° 59' 15.94"E
L126	419.12	S21° 15' 01.82"E
L127	874.61	S37° 26' 18.86"E

This certifies that this copy of this plan accurately depicts the boundary of the jurisdiction of the Section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is change in the law or our published regulations, this determination of Section 404 jurisdiction may be relied upon for a period not to exceed five years from this date. The undersigned completed this determination utilizing the appropriate Regional Supplement to the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual, 33 C.F.R. part 328 and other U.S. Army Corps of Engineers guidance.

Regulatory Official: _____
 Title: _____
 Date: _____
 USACE Action ID: _____

LEGEND:

- + WETLAND POINT
- x STREAM POINT
- NEUSE RIVER BUFFER





**WETHERILL
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 919-851-8077
 LICENSE No. F-0377

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN G&E/S - SURVEYING - CONSTRUCTION OBSERVATION



SHEET 10 OF 22

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POND POINTS DATA

Point Table			
PT#	NORTHING	EASTING	DESC
153	N35° 51' 31.98"	W78° 47' 45.61"	P1
152	N35° 51' 32.15"	W78° 47' 45.11"	P1
151	N35° 51' 32.45"	W78° 47' 44.66"	P1
150	N35° 51' 32.59"	W78° 47' 44.21"	P1
149	N35° 51' 33.18"	W78° 47' 44.28"	P1
148	N35° 51' 33.10"	W78° 47' 44.44"	P1
146	N35° 51' 33.24"	W78° 47' 45.38"	P1
145	N35° 51' 33.19"	W78° 47' 46.46"	P1
144	N35° 51' 33.28"	W78° 47' 46.71"	P1
143	N35° 51' 33.22"	W78° 47' 46.64"	P1
142	N35° 51' 32.84"	W78° 47' 46.58"	P1
141	N35° 51' 32.01"	W78° 47' 46.59"	P1
140	N35° 51' 31.91"	W78° 47' 46.44"	P1
147	N35° 51' 33.15"	W78° 47' 44.71"	P1
139	N35° 51' 31.83"	W78° 47' 46.22"	P1
189	N35° 51' 35.27"	W78° 47' 31.70"	P2
168	N35° 51' 34.87"	W78° 47' 31.32"	P2
167	N35° 51' 34.50"	W78° 47' 30.96"	P2
166	N35° 51' 34.52"	W78° 47' 30.67"	P2
165	N35° 51' 34.66"	W78° 47' 30.58"	P2
164	N35° 51' 35.25"	W78° 47' 30.10"	P2

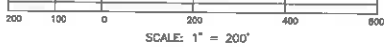
Point Table			
PT#	NORTHING	EASTING	DESC
163	N35° 51' 35.86"	W78° 47' 29.67"	P2
162	N35° 51' 36.26"	W78° 47' 29.54"	P2
161	N35° 51' 36.28"	W78° 47' 29.79"	P2
160	N35° 51' 36.40"	W78° 47' 30.51"	P2
159	N35° 51' 36.42"	W78° 47' 30.93"	P2
158	N35° 51' 36.37"	W78° 47' 31.34"	P2
157	N35° 51' 36.18"	W78° 47' 31.73"	P2
156	N35° 51' 36.00"	W78° 47' 31.99"	P2
155	N35° 51' 35.72"	W78° 47' 32.04"	P2
154	N35° 51' 35.36"	W78° 47' 31.80"	P2
179	N35° 51' 29.01"	W78° 47' 32.53"	P3
178	N35° 51' 28.81"	W78° 47' 32.49"	P3
177	N35° 51' 28.70"	W78° 47' 32.41"	P3
176	N35° 51' 28.65"	W78° 47' 32.07"	P3
175	N35° 51' 28.93"	W78° 47' 31.83"	P3
174	N35° 51' 29.09"	W78° 47' 31.76"	P3
173	N35° 51' 29.20"	W78° 47' 32.00"	P3
172	N35° 51' 29.30"	W78° 47' 32.23"	P3
171	N35° 51' 29.28"	W78° 47' 32.40"	P3
170	N35° 51' 29.20"	W78° 47' 32.49"	P3

This certifies that this copy of this plat accurately depicts the boundary of the jurisdiction of the Section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is change in the law or our published regulations, this determination of Section 404 jurisdiction may be relied upon for a period not to exceed five years from this date. The undersigned completed this determination utilizing the appropriate Regional Supplement to the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual, 33 C.F.R. part 328 and other U.S. Army Corps of Engineers guidance.

Regulatory Official: _____
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 Date: _____
 USACE Action ID: _____

LEGEND:

- + WETLAND POINT
- x STREAM POINT
- NEUSE RIVER BUFFER



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 CIVIL/SITE DESIGN GIS/GPS - SURVEYING - CONSTRUCTION OBSERVATION



STREAM POINTS DATA

Point Table			
PT#	NORTHING	EASTING	DESC
112	N35° 51' 15.62"	W78° 47' 44.60"	6ICLSTOP
679	N35° 53' 19.05"	W78° 57' 42.23"	6ICLSTOP
821	N35° 53' 16.56"	W78° 57' 41.18"	47CLSTART
722	N35° 51' 13.13"	W78° 47' 43.56"	47CLSTART
707	N35° 53' 26.93"	W78° 57' 26.54"	AS03START
193	N35° 51' 23.48"	W78° 47' 28.90"	AS03START
10279	N35° 53' 26.57"	W78° 57' 25.00"	AS04STOP
10226	N35° 51' 23.12"	W78° 47' 27.36"	AS04STOP
194	N35° 51' 28.81"	W78° 47' 24.90"	AS05START
716	N35° 53' 27.74"	W78° 57' 09.24"	AS06START
236	N35° 51' 24.26"	W78° 47' 11.61"	AS06START
747	N35° 53' 23.41"	W78° 57' 26.29"	AS08STOP
384	N35° 51' 19.96"	W78° 47' 28.66"	AS08STOP
745	N35° 53' 25.77"	W78° 57' 19.88"	AS10START
366	N35° 51' 22.31"	W78° 47' 22.25"	AS10START
744	N35° 53' 23.07"	W78° 57' 12.40"	AS11STOP
318	N35° 51' 19.60"	W78° 47' 14.78"	AS11STOP
10167	N35° 50' 52.77"	W78° 47' 12.41"	BS1ASTART
10277	N35° 52' 56.24"	W78° 57' 09.98"	BS1ASTART
10182	N35° 50' 49.81"	W78° 47' 09.83"	BS1ASTART

Point Table			
PT#	NORTHING	EASTING	DESC
10278	N35° 52' 53.29"	W78° 57' 07.39"	BS1START
10136	N35° 51' 00.17"	W78° 47' 13.54"	BS2START
10276	N35° 53' 03.65"	W78° 57' 11.12"	BS2START
824	N35° 53' 09.84"	W78° 57' 09.72"	BS3#5START
725	N35° 51' 06.37"	W78° 47' 12.13"	BS3#5START
10231	N35° 53' 14.55"	W78° 57' 16.39"	BS3START
10043	N35° 51' 11.08"	W78° 47' 18.78"	BS3START
10114	N35° 51' 09.15"	W78° 47' 17.41"	BS3START2
10274	N35° 53' 12.62"	W78° 57' 15.02"	BS3START2
10198	N35° 53' 10.56"	W78° 57' 10.34"	BS3START3
10032	N35° 51' 07.09"	W78° 47' 12.74"	BS3START3
774	N35° 53' 10.39"	W78° 57' 08.97"	BS3START4
525	N35° 51' 06.92"	W78° 47' 11.37"	BS3START4
10230	N35° 53' 13.96"	W78° 57' 15.63"	BS3STOP
10038	N35° 51' 10.49"	W78° 47' 18.02"	BS3STOP
10135	N35° 51' 07.33"	W78° 47' 13.40"	BS3STOP2
10275	N35° 53' 10.80"	W78° 57' 10.99"	BS3STOP2
775	N35° 53' 10.57"	W78° 57' 09.19"	BS3STOP3
526	N35° 51' 07.10"	W78° 47' 11.59"	BS3STOP3

This certifies that this copy of this plat accurately depicts the boundary of the Jurisdiction of the Section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is change in the law or our published regulations, this determination of Section 404 Jurisdiction may be relied upon for a period not to exceed five years from this date. The undersigned completed this determination utilizing the appropriate Regional Supplement to the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual, 33 C.F.R. part 328 and other U.S. Army Corps of Engineers guidance.

Regulatory Official: _____
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LEGEND:

- + WETLAND POINT
- x STREAM POINT
- NEUSE RIVER BUFFER



SCALE: 1" = 200'



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SHEET 12 OF 22

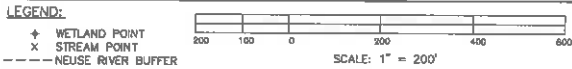
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WETLANDS POINTS DATA

Point Table				Point Table				Point Table			
PT#	NORTHING	EASTING	DESC	PT#	NORTHING	EASTING	DESC	PT#	NORTHING	EASTING	DESC
673	N35° 50' 32.84"	W78° 47' 04.32"	B13	653	N35° 50' 36.86"	W78° 47' 05.59"	B33	624	N35° 50' 40.48"	W78° 47' 05.04"	B53
672	N35° 50' 33.06"	W78° 47' 04.34"	B14	652	N35° 50' 36.83"	W78° 47' 05.46"	B34	623	N35° 50' 40.62"	W78° 47' 05.08"	B54
671	N35° 50' 33.33"	W78° 47' 04.50"	B15	651	N35° 50' 37.27"	W78° 47' 05.27"	B35	622	N35° 50' 40.01"	W78° 47' 04.61"	B55
670	N35° 50' 33.80"	W78° 47' 04.36"	B16	650	N35° 50' 37.37"	W78° 47' 05.03"	B36	621	N35° 50' 40.03"	W78° 47' 04.55"	B56
669	N35° 50' 33.90"	W78° 47' 04.32"	B17	644	N35° 50' 37.58"	W78° 47' 04.97"	B37	620	N35° 50' 40.18"	W78° 47' 04.58"	B57
668	N35° 50' 34.40"	W78° 47' 04.48"	B18	649	N35° 50' 37.64"	W78° 47' 04.97"	B38	10037	N35° 51' 07.81"	W78° 47' 16.52"	B63
667	N35° 50' 34.53"	W78° 47' 04.66"	B19	643	N35° 50' 37.86"	W78° 47' 04.91"	B39	10036	N35° 51' 07.96"	W78° 47' 16.54"	B64
666	N35° 50' 34.74"	W78° 47' 04.90"	B20	642	N35° 50' 38.17"	W78° 47' 04.97"	B40	10035	N35° 51' 08.08"	W78° 47' 16.75"	B65
665	N35° 50' 34.83"	W78° 47' 05.31"	B21	640	N35° 50' 37.99"	W78° 47' 04.93"	B41	10034	N35° 51' 07.77"	W78° 47' 16.63"	B66
664	N35° 50' 34.76"	W78° 47' 05.53"	B22	639	N35° 50' 38.24"	W78° 47' 05.02"	B42	10033	N35° 51' 07.69"	W78° 47' 16.52"	B67
663	N35° 50' 34.87"	W78° 47' 05.84"	B23	638	N35° 50' 38.31"	W78° 47' 05.20"	B43	409	N35° 51' 13.34"	W78° 47' 08.51"	B68
662	N35° 50' 34.92"	W78° 47' 06.07"	B24	636	N35° 50' 38.72"	W78° 47' 05.10"	B44	408	N35° 51' 12.93"	W78° 47' 08.64"	B69
661	N35° 50' 35.31"	W78° 47' 06.03"	B25	635	N35° 50' 38.89"	W78° 47' 05.10"	B45	407	N35° 51' 13.40"	W78° 47' 08.93"	B70
660	N35° 50' 35.44"	W78° 47' 06.10"	B26	633	N35° 50' 39.08"	W78° 47' 05.15"	B46	406	N35° 51' 13.47"	W78° 47' 09.30"	B71
659	N35° 50' 35.61"	W78° 47' 06.07"	B27	632	N35° 50' 39.25"	W78° 47' 05.10"	B47	405	N35° 51' 13.30"	W78° 47' 09.05"	B72
658	N35° 50' 35.90"	W78° 47' 06.19"	B28	630	N35° 50' 39.45"	W78° 47' 04.93"	B48	404	N35° 51' 13.10"	W78° 47' 09.07"	B73
657	N35° 50' 36.06"	W78° 47' 06.24"	B29	629	N35° 50' 39.74"	W78° 47' 04.91"	B49	403	N35° 51' 12.86"	W78° 47' 09.22"	B74
656	N35° 50' 36.20"	W78° 47' 06.01"	B30	627	N35° 50' 39.89"	W78° 47' 05.04"	B50	402	N35° 51' 13.03"	W78° 47' 09.43"	B75
655	N35° 50' 36.41"	W78° 47' 05.91"	B31	626	N35° 50' 40.26"	W78° 47' 04.94"	B51	401	N35° 51' 12.86"	W78° 47' 09.49"	B76
654	N35° 50' 36.56"	W78° 47' 05.72"	B32	625	N35° 50' 40.44"	W78° 47' 05.06"	B52	400	N35° 51' 12.75"	W78° 47' 09.59"	B77

This certifies that this copy of this plat accurately depicts the boundary of the jurisdiction of the Section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is change in the law or our published regulations, this determination of Section 404 jurisdiction may be relied upon for a period not to exceed five years from this date. The undersigned completed this determination utilizing the appropriate Regional Supplement to the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual, 33 C.F.R. part 328 and other U.S. Army Corps of Engineers guidance.

Regulatory Official: _____
 Title: _____
 Date: _____
 USACE Action ID: _____



1223 JONES FRANKLIN ROAD
 RALEIGH NORTH CAROLINA 27608
 919-851-8077
 LICENSE No. F-0377
 TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN GIS/GIS - SURVEYING - CONSTRUCTION OBSERVATION



E:\Projects\2017 Projects\B1&S\Perk Economy 3 Lot Expansion\17448.dwg\Wetlands\Wetlands.dwg SHEET 15 OF 22 3:12:59 PM

WETLANDS POINTS DATA

Point Table			
PT#	NORTHING	EASTING	DESC
399	N35° 51' 12.50"	W78° 47' 09.66"	B78
398	N35° 51' 12.59"	W78° 47' 09.92"	B79
10091	N35° 51' 12.67"	W78° 47' 09.92"	B80
10092	N35° 51' 12.78"	W78° 47' 09.90"	B81
10093	N35° 51' 12.81"	W78° 47' 10.04"	B82
10094	N35° 51' 12.61"	W78° 47' 09.99"	B83
10095	N35° 51' 12.38"	W78° 47' 10.15"	B84
10096	N35° 51' 12.31"	W78° 47' 10.00"	B85
10097	N35° 51' 12.13"	W78° 47' 10.36"	B86
10098	N35° 51' 12.21"	W78° 47' 10.13"	B87
10099	N35° 51' 12.06"	W78° 47' 10.22"	B88
10100	N35° 51' 12.01"	W78° 47' 10.24"	B89
10101	N35° 51' 12.23"	W78° 47' 09.90"	B90
10102	N35° 51' 12.03"	W78° 47' 09.80"	B91
10103	N35° 51' 11.99"	W78° 47' 09.77"	B92
10104	N35° 51' 11.84"	W78° 47' 09.61"	B93
10105	N35° 51' 11.61"	W78° 47' 09.49"	B94
10106	N35° 51' 11.50"	W78° 47' 09.48"	B95
10107	N35° 51' 11.16"	W78° 47' 09.37"	B96
10108	N35° 51' 10.82"	W78° 47' 09.39"	B97

Point Table			
PT#	NORTHING	EASTING	DESC
10109	N35° 51' 10.28"	W78° 47' 09.65"	B98
10110	N35° 51' 10.46"	W78° 47' 09.21"	B99
10111	N35° 51' 10.24"	W78° 47' 09.25"	B100
10112	N35° 51' 10.05"	W78° 47' 09.37"	B101
10113	N35° 51' 09.68"	W78° 47' 09.31"	B102
419	N35° 51' 09.64"	W78° 47' 08.97"	B103
418	N35° 51' 09.74"	W78° 47' 09.10"	B104
417	N35° 51' 09.96"	W78° 47' 08.91"	B105
416	N35° 51' 10.02"	W78° 47' 08.73"	B106
415	N35° 51' 10.48"	W78° 47' 08.40"	B107
414	N35° 51' 10.85"	W78° 47' 08.77"	B108
413	N35° 51' 10.87"	W78° 47' 08.96"	B109
412	N35° 51' 11.23"	W78° 47' 08.73"	B110
411	N35° 51' 11.32"	W78° 47' 08.44"	B111
410	N35° 51' 11.16"	W78° 47' 08.57"	B112
10081	N35° 51' 15.46"	W78° 47' 09.84"	B113
10082	N35° 51' 15.47"	W78° 47' 09.71"	B114
10083	N35° 51' 15.65"	W78° 47' 09.58"	B115
10084	N35° 51' 15.74"	W78° 47' 09.61"	B116
10085	N35° 51' 15.77"	W78° 47' 09.60"	B117

Point Table			
PT#	NORTHING	EASTING	DESC
10086	N35° 51' 15.99"	W78° 47' 09.53"	B118
10087	N35° 51' 16.00"	W78° 47' 09.33"	B119
10088	N35° 51' 15.91"	W78° 47' 09.23"	B120
10089	N35° 51' 15.74"	W78° 47' 09.31"	B121
10090	N35° 51' 15.40"	W78° 47' 09.54"	B122
10072	N35° 51' 17.81"	W78° 47' 10.36"	B123
397	N35° 51' 17.74"	W78° 47' 10.11"	B124
10073	N35° 51' 17.44"	W78° 47' 09.94"	B125
10074	N35° 51' 17.26"	W78° 47' 10.01"	B126
10075	N35° 51' 17.04"	W78° 47' 10.14"	B127
10076	N35° 51' 16.75"	W78° 47' 10.29"	B128
10077	N35° 51' 16.79"	W78° 47' 10.68"	B129
10078	N35° 51' 16.97"	W78° 47' 10.66"	B130
10079	N35° 51' 17.16"	W78° 47' 10.60"	B131
10080	N35° 51' 17.38"	W78° 47' 10.44"	B132
395	N35° 51' 17.54"	W78° 47' 10.43"	B133
396	N35° 51' 17.65"	W78° 47' 10.39"	B134
272	N35° 51' 20.23"	W78° 47' 09.05"	B135
271	N35° 51' 19.84"	W78° 47' 09.42"	B136
270	N35° 51' 19.96"	W78° 47' 09.52"	B137

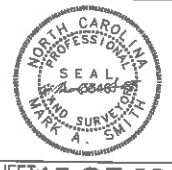
This certifies that this copy of this plot accurately depicts the boundary of the jurisdiction of the Section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is change in the law or our published regulations, this determination of Section 404 jurisdiction may be relied upon for a period not to exceed five years from this date. The undersigned completed this determination utilizing the appropriate Regional Supplement to the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual, 33 C.F.R. part 328 and other U.S. Army Corps of Engineers guidance.

Regulatory Official: _____
 Title: _____
 Date: _____

USACE Action ID: _____



WETHERILL ENGINEERING
 1223 JONES FRANKLIN ROAD
 RALEIGH NORTH CAROLINA 27606
 919-851-8077
 LICENSE No. F-0377
 TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN/GE/SPE - SURVEYED - CONSTRUCTION OBSERVATION



WETLANDS POINTS DATA

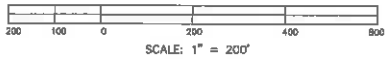
Point Table			
PT#	NORTHING	EASTING	DESC
269	N35° 51' 19.83"	W78° 47' 09.69"	B138
268	N35° 51' 19.75"	W78° 47' 09.55"	B139
267	N35° 51' 19.69"	W78° 47' 09.75"	B140
266	N35° 51' 19.61"	W78° 47' 10.10"	B141
265	N35° 51' 19.59"	W78° 47' 10.53"	B142
264	N35° 51' 19.76"	W78° 47' 10.55"	B143
263	N35° 51' 19.90"	W78° 47' 10.37"	B144
262	N35° 51' 19.98"	W78° 47' 09.96"	B145
261	N35° 51' 20.20"	W78° 47' 09.44"	B146
260	N35° 51' 20.39"	W78° 47' 09.18"	B147

This certifies that this copy of this plat accurately depicts the boundary of the jurisdiction of the Section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is change in the law or our published regulations, this determination of Section 404 jurisdiction may be relied upon for a period not to exceed five years from this date. The undersigned completed this determination utilizing the appropriate Regional Supplement to the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual, 33 C.F.R. part 328 and other U.S. Army Corps of Engineers guidance.

Regulatory Official: _____
 Title: _____
 Date: _____
 USACE Action ID: _____

LEGEND:

- + WETLAND POINT
- X STREAM POINT
- NEUSE RIVER BUFFER



1223 JONES FRANKLIN ROAD
 RALEIGH NORTH CAROLINA 27606
 919-851-8077
 LICENSE No. F-0377
 TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN/OPS - SURVEYING - CONSTRUCTION OBSERVATION



SHEET 16 OF 22

STREAM CENTERLINE POINTS DATA W/WIDTH

Point Table			
PT#	NORTHING	EASTING	WIDTH
2001	N35° 50' 46.12"	W78° 47' 28.90"	16
2002	N35° 50' 48.25"	W78° 47' 28.71"	24
2003	N35° 50' 46.55"	W78° 47' 28.72"	12
2004	N35° 50' 47.09"	W78° 47' 28.33"	8
2005	N35° 50' 47.51"	W78° 47' 28.78"	8
2006	N35° 50' 47.94"	W78° 47' 29.02"	8
2007	N35° 50' 48.27"	W78° 47' 28.97"	10
2008	N35° 50' 48.92"	W78° 47' 28.70"	8
2009	N35° 50' 49.32"	W78° 47' 29.10"	4
2010	N35° 50' 49.70"	W78° 47' 30.05"	4
2011	N35° 50' 49.96"	W78° 47' 29.70"	4
2012	N35° 50' 50.26"	W78° 47' 29.66"	4
2013	N35° 50' 50.53"	W78° 47' 29.72"	4
2014	N35° 50' 50.58"	W78° 47' 29.43"	4
2015	N35° 50' 50.87"	W78° 47' 29.12"	4
2016	N35° 50' 51.07"	W78° 47' 29.15"	4
2017	N35° 50' 51.40"	W78° 47' 29.69"	4
2018	N35° 50' 51.62"	W78° 47' 29.60"	4
2019	N35° 50' 51.66"	W78° 47' 29.83"	4
2020	N35° 50' 51.78"	W78° 47' 29.67"	4

Point Table			
PT#	NORTHING	EASTING	WIDTH
2021	N35° 50' 51.93"	W78° 47' 30.00"	4
2022	N35° 50' 52.09"	W78° 47' 30.02"	4
2023	N35° 50' 52.37"	W78° 47' 30.38"	4
2024	N35° 50' 52.49"	W78° 47' 30.36"	4
2025	N35° 50' 53.11"	W78° 47' 30.62"	4
2026	N35° 50' 53.20"	W78° 47' 30.81"	4
2027	N35° 50' 53.24"	W78° 47' 31.29"	4
2028	N35° 50' 53.81"	W78° 47' 30.85"	4
2029	N35° 50' 54.11"	W78° 47' 31.09"	4
2030	N35° 50' 54.64"	W78° 47' 31.45"	4
2031	N35° 50' 54.80"	W78° 47' 31.47"	4
2032	N35° 50' 55.00"	W78° 47' 31.38"	4
2033	N35° 50' 55.20"	W78° 47' 31.29"	4
2034	N35° 50' 55.54"	W78° 47' 31.36"	4
2035	N35° 50' 55.94"	W78° 47' 31.14"	4
2036	N35° 50' 56.13"	W78° 47' 30.91"	4
2037	N35° 50' 56.26"	W78° 47' 31.11"	4
2038	N35° 50' 56.33"	W78° 47' 30.82"	4
2039	N35° 50' 56.58"	W78° 47' 31.22"	4
2040	N35° 50' 56.73"	W78° 47' 31.40"	4

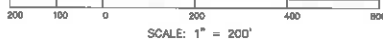
Point Table			
PT#	NORTHING	EASTING	WIDTH
2041	N35° 50' 56.69"	W78° 47' 31.68"	4
2042	N35° 50' 57.00"	W78° 47' 32.03"	4
2043	N35° 50' 57.16"	W78° 47' 32.67"	4
2044	N35° 50' 57.39"	W78° 47' 32.60"	4
2045	N35° 50' 57.87"	W78° 47' 32.50"	4
2046	N35° 50' 58.04"	W78° 47' 32.52"	4
2047	N35° 50' 58.12"	W78° 47' 32.49"	4
2048	N35° 50' 58.47"	W78° 47' 32.64"	4
2049	N35° 50' 58.70"	W78° 47' 32.96"	4
2050	N35° 50' 58.68"	W78° 47' 33.57"	4
2051	N35° 50' 59.13"	W78° 47' 33.47"	4
2052	N35° 50' 59.40"	W78° 47' 33.74"	4
2053	N35° 50' 59.53"	W78° 47' 34.15"	4
2054	N35° 50' 59.99"	W78° 47' 34.17"	4
2055	N35° 50' 59.96"	W78° 47' 34.66"	4
2056	N35° 51' 00.26"	W78° 47' 35.13"	4
2057	N35° 51' 00.36"	W78° 47' 35.41"	4
2058	N35° 51' 00.62"	W78° 47' 35.36"	4
2059	N35° 51' 00.80"	W78° 47' 35.30"	4
2060	N35° 51' 00.83"	W78° 47' 35.75"	4

This certifies that this copy of this plat accurately depicts the boundary of the Jurisdiction of the Section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is change in the law or our published regulations, this determination of Section 404 Jurisdiction may be relied upon for a period not to exceed five years from this date. The undersigned completed this determination utilizing the appropriate Regional Supplement to the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual, 33 C.F.R. part 328 and other U.S. Army Corps of Engineers guidance.

Regulatory Official: _____
 Title: _____
 Date: _____
 USACE Action ID: _____

LEGEND:

- + WETLAND POINT
- x STREAM POINT
- NEUSE RIVER BUFFER



1223 JONES FRANKLIN ROAD
 RALEIGH NORTH CAROLINA 27606
 919-551-8077
 LICENSE No. F-0377
 TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN GR/OPS - SURVEYING - CONSTRUCTION OBSERVATION



SHEET 17 OF 22

STREAM CENTERLINE POINTS DATA W/WIDTH

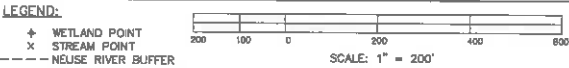
Point Table			
PT#	NORTHING	EASTING	WIDTH
2061	N35° 51' 01.03"	W78° 47' 35.83"	4
2062	N35° 51' 01.24"	W78° 47' 35.81"	4
2063	N35° 51' 01.53"	W78° 47' 35.91"	4
2064	N35° 51' 01.54"	W78° 47' 36.03"	4
2065	N35° 51' 01.85"	W78° 47' 36.36"	4
2066	N35° 51' 01.98"	W78° 47' 36.21"	4
2067	N35° 51' 02.09"	W78° 47' 36.34"	4
2068	N35° 51' 02.45"	W78° 47' 36.57"	4
2069	N35° 51' 02.77"	W78° 47' 36.85"	4
2070	N35° 51' 02.96"	W78° 47' 37.16"	4
2071	N35° 51' 28.81"	W78° 47' 25.05"	4
2072	N35° 51' 28.67"	W78° 47' 24.98"	4
2073	N35° 51' 28.61"	W78° 47' 24.88"	4
2074	N35° 51' 28.41"	W78° 47' 24.66"	4
2075	N35° 51' 28.16"	W78° 47' 24.33"	4
2076	N35° 51' 28.27"	W78° 47' 24.02"	4
2077	N35° 51' 28.00"	W78° 47' 23.87"	4
2078	N35° 51' 27.86"	W78° 47' 23.60"	4
2079	N35° 51' 27.80"	W78° 47' 23.45"	4
2080	N35° 51' 27.55"	W78° 47' 23.18"	4

Point Table			
PT#	NORTHING	EASTING	WIDTH
2081	N35° 51' 27.46"	W78° 47' 23.21"	4
2082	N35° 51' 27.47"	W78° 47' 23.03"	4
2083	N35° 51' 27.11"	W78° 47' 22.61"	4
2084	N35° 51' 26.92"	W78° 47' 22.74"	4
2085	N35° 51' 26.72"	W78° 47' 22.69"	4
2086	N35° 51' 26.64"	W78° 47' 22.52"	4
2087	N35° 51' 26.42"	W78° 47' 22.43"	4
2088	N35° 51' 26.06"	W78° 47' 22.12"	4
2089	N35° 51' 25.97"	W78° 47' 21.74"	4
2090	N35° 51' 25.76"	W78° 47' 21.74"	4
2091	N35° 51' 25.63"	W78° 47' 21.44"	4
2092	N35° 51' 25.53"	W78° 47' 21.47"	4
2093	N35° 51' 25.56"	W78° 47' 21.26"	4
2094	N35° 51' 25.26"	W78° 47' 21.22"	4
2095	N35° 51' 25.36"	W78° 47' 21.00"	4
2096	N35° 51' 25.20"	W78° 47' 20.87"	4
2097	N35° 51' 25.36"	W78° 47' 20.80"	
2098	N35° 51' 25.17"	W78° 47' 20.67"	
2099	N35° 51' 25.20"	W78° 47' 20.44"	
2100	N35° 51' 25.20"	W78° 47' 20.25"	

Point Table			
PT#	NORTHING	EASTING	WIDTH
2101	N35° 51' 25.12"	W78° 47' 20.27"	
2102	N35° 51' 24.80"	W78° 47' 20.15"	
2103	N35° 51' 28.08"	W78° 46' 56.97"	4
2104	N35° 51' 25.89"	W78° 46' 57.22"	4
2105	N35° 51' 25.64"	W78° 46' 57.90"	4
2106	N35° 51' 25.49"	W78° 46' 57.78"	4
2107	N35° 51' 23.28"	W78° 47' 28.80"	4
2108	N35° 51' 23.40"	W78° 47' 28.64"	4
2109	N35° 51' 23.18"	W78° 47' 28.78"	4
2110	N35° 51' 23.20"	W78° 47' 28.56"	4
2111	N35° 51' 23.04"	W78° 47' 28.33"	4
2112	N35° 51' 23.16"	W78° 47' 28.00"	4
2113	N35° 51' 23.22"	W78° 47' 27.89"	4
2114	N35° 51' 23.19"	W78° 47' 27.58"	4
2127	N35° 51' 24.10"	W78° 47' 11.75"	3
2128	N35° 51' 23.92"	W78° 47' 11.75"	3
2129	N35° 51' 23.84"	W78° 47' 11.54"	3
2130	N35° 51' 24.10"	W78° 47' 10.98"	3
2131	N35° 51' 23.92"	W78° 47' 11.00"	3
2132	N35° 51' 23.43"	W78° 47' 11.71"	3

This certifies that this copy of this plat accurately depicts the boundary of the jurisdiction of the Section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is change in the law or our published regulations, this determination of Section 404 Jurisdiction may be relied upon for a period not to exceed five years from this date. The undersigned completed this determination utilizing the appropriate Regional Supplement to the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual, 33 C.F.R. part 328 and other U.S. Army Corps of Engineers guidance.

Regulatory Official: _____
 Title: _____
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1223 JONES FRANKLIN ROAD
 RALEIGH NORTH CAROLINA 27606
 919-851-8077
 LICENSE No. F-0377
 TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CHM./SITE DESIGN O&M/S - SURVEYING - CONSTRUCTION OBSERVATION



STREAM CENTERLINE POINTS DATA W/WIDTH

Point Table			
PT#	NORTHING	EASTING	WIDTH
2133	N35° 51' 23.28"	W78° 47' 11.64"	3
2134	N35° 51' 23.15"	W78° 47' 11.64"	3
2135	N35° 51' 23.24"	W78° 47' 11.40"	3
2136	N35° 51' 22.98"	W78° 47' 11.59"	3
2137	N35° 51' 22.62"	W78° 47' 11.50"	3
2138	N35° 51' 22.31"	W78° 47' 11.85"	3
2139	N35° 51' 22.24"	W78° 47' 11.79"	3
2140	N35° 51' 21.93"	W78° 47' 11.92"	3
2141	N35° 51' 21.73"	W78° 47' 11.84"	3
2142	N35° 51' 21.49"	W78° 47' 11.84"	3
2143	N35° 51' 21.55"	W78° 47' 11.69"	3
2144	N35° 51' 21.36"	W78° 47' 11.76"	3
2145	N35° 51' 21.21"	W78° 47' 11.91"	3
2146	N35° 51' 21.26"	W78° 47' 11.71"	3
2147	N35° 51' 21.07"	W78° 47' 12.13"	3
2148	N35° 51' 19.65"	W78° 47' 29.19"	3
2149	N35° 51' 19.84"	W78° 47' 29.00"	3
2150	N35° 51' 20.82"	W78° 47' 27.11"	3
2151	N35° 51' 21.09"	W78° 47' 26.95"	3
2152	N35° 51' 21.39"	W78° 47' 26.57"	3

Point Table			
PT#	NORTHING	EASTING	WIDTH
2153	N35° 51' 21.70"	W78° 47' 25.96"	3
2154	N35° 51' 21.66"	W78° 47' 25.82"	3
2155	N35° 51' 21.40"	W78° 47' 25.75"	3
2156	N35° 51' 21.60"	W78° 47' 25.57"	3
2157	N35° 51' 22.30"	W78° 47' 24.57"	3
2158	N35° 51' 22.64"	W78° 47' 23.15"	3
2159	N35° 51' 22.58"	W78° 47' 22.93"	3
2160	N35° 51' 22.59"	W78° 47' 22.63"	3
2161	N35° 51' 22.48"	W78° 47' 22.53"	3
2162	N35° 51' 22.07"	W78° 47' 22.06"	4
2163	N35° 51' 21.93"	W78° 47' 21.93"	4
2164	N35° 51' 21.81"	W78° 47' 21.57"	4
2165	N35° 51' 21.65"	W78° 47' 21.41"	4
2166	N35° 51' 21.80"	W78° 47' 21.18"	4
2167	N35° 51' 21.68"	W78° 47' 20.90"	4
2168	N35° 51' 21.75"	W78° 47' 20.53"	4
2169	N35° 51' 21.37"	W78° 47' 20.44"	4
2170	N35° 51' 21.15"	W78° 47' 20.07"	4
2171	N35° 51' 21.44"	W78° 47' 19.61"	4
2172	N35° 51' 21.56"	W78° 47' 19.15"	4

Point Table			
PT#	NORTHING	EASTING	WIDTH
2173	N35° 51' 21.53"	W78° 47' 18.89"	4
2174	N35° 51' 21.56"	W78° 47' 18.57"	4
2175	N35° 51' 21.80"	W78° 47' 17.89"	4
2176	N35° 51' 24.19"	W78° 47' 19.93"	4
2177	N35° 51' 23.56"	W78° 47' 19.85"	4
2178	N35° 51' 23.50"	W78° 47' 19.82"	4
2179	N35° 51' 23.35"	W78° 47' 19.62"	4
2180	N35° 51' 23.34"	W78° 47' 19.52"	4
2181	N35° 51' 23.21"	W78° 47' 19.45"	4
2182	N35° 51' 23.09"	W78° 47' 19.50"	4
2183	N35° 51' 23.00"	W78° 47' 19.26"	4
2184	N35° 51' 23.20"	W78° 47' 19.04"	4
2185	N35° 51' 23.06"	W78° 47' 18.96"	4
2186	N35° 51' 22.89"	W78° 47' 18.64"	4
2187	N35° 51' 22.75"	W78° 47' 18.87"	4
2188	N35° 51' 22.41"	W78° 47' 18.73"	4
2189	N35° 51' 22.43"	W78° 47' 18.54"	4
2190	N35° 51' 22.06"	W78° 47' 18.28"	4
2191	N35° 51' 22.00"	W78° 47' 17.95"	4
2192	N35° 51' 21.71"	W78° 47' 17.49"	5

This certifies that this copy of this plot accurately depicts the boundary of the jurisdiction of the Section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is change in the law or our published regulations, this determination of Section 404 jurisdiction may be relied upon for a period not to exceed five years from this date. The undersigned completed this determination utilizing the appropriate Regional Supplement to the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual, 33 C.F.R. part 328 and other U.S. Army Corps of Engineers guidance.

Regulatory Official: _____
 Title: _____
 Date: _____
 USACE Action ID: _____




WETHERILL ENGINEERING
 1223 JONES FRANKLIN ROAD
 RALEIGH NORTH CAROLINA 27606
 919-851-8077
 LICENSE No. F-0377
 TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN GEOTECH - SURVEYING - CONSTRUCTION OBSERVATION



STREAM CENTERLINE POINTS DATA W/WIDTH

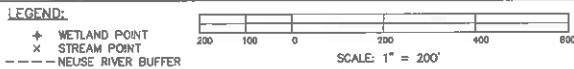
Point Table			
PT#	NORTHING	EASTING	WIDTH
2193	N35° 51' 21.63"	W78° 47' 17.25"	5
2194	N35° 51' 21.77"	W78° 47' 17.16"	5
2195	N35° 51' 21.56"	W78° 47' 16.94"	5
2196	N35° 51' 21.46"	W78° 47' 16.51"	5
2197	N35° 51' 21.28"	W78° 47' 16.29"	5
2198	N35° 51' 21.10"	W78° 47' 16.17"	5
2199	N35° 51' 21.22"	W78° 47' 15.79"	5
2200	N35° 51' 20.78"	W78° 47' 15.80"	5
2201	N35° 51' 20.28"	W78° 47' 15.89"	5
2202	N35° 51' 19.90"	W78° 47' 15.78"	5
2203	N35° 51' 19.88"	W78° 47' 15.44"	5
2204	N35° 51' 19.64"	W78° 47' 14.26"	4
2205	N35° 51' 19.41"	W78° 47' 13.96"	4
2206	N35° 51' 19.41"	W78° 47' 13.70"	4
2207	N35° 51' 19.50"	W78° 47' 13.24"	4
2208	N35° 51' 19.98"	W78° 47' 13.15"	4
2209	N35° 51' 20.07"	W78° 47' 13.38"	4
2210	N35° 51' 20.28"	W78° 47' 13.24"	4
2211	N35° 51' 20.30"	W78° 47' 13.10"	4
2212	N35° 51' 20.53"	W78° 47' 13.04"	4

Point Table			
PT#	NORTHING	EASTING	WIDTH
2213	N35° 51' 20.72"	W78° 47' 12.77"	4
2214	N35° 51' 20.67"	W78° 47' 12.46"	4
2215	N35° 51' 20.66"	W78° 47' 11.89"	4
2216	N35° 51' 20.60"	W78° 47' 11.93"	4
2217	N35° 51' 20.71"	W78° 47' 11.66"	4
2218	N35° 51' 20.52"	W78° 47' 11.74"	4
2219	N35° 51' 20.26"	W78° 47' 11.52"	4
2220	N35° 51' 20.10"	W78° 47' 11.22"	4
2221	N35° 51' 20.02"	W78° 47' 11.20"	4
2222	N35° 51' 19.56"	W78° 47' 10.85"	4
2223	N35° 51' 19.12"	W78° 47' 10.84"	4
2224	N35° 51' 18.89"	W78° 47' 10.79"	4
2225	N35° 51' 18.54"	W78° 47' 10.64"	4
2226	N35° 51' 18.35"	W78° 47' 10.18"	4
2227	N35° 51' 10.98"	W78° 47' 18.73"	2.5
2228	N35° 51' 10.76"	W78° 47' 18.39"	2.5
2229	N35° 51' 10.54"	W78° 47' 18.19"	2.5
2230	N35° 51' 09.06"	W78° 47' 17.19"	3.5
2231	N35° 51' 08.88"	W78° 47' 17.16"	3.5
2232	N35° 51' 08.85"	W78° 47' 16.96"	3.5

Point Table			
PT#	NORTHING	EASTING	WIDTH
2233	N35° 51' 08.56"	W78° 47' 16.75"	3.5
2234	N35° 51' 08.55"	W78° 47' 16.57"	3.5
2235	N35° 51' 08.36"	W78° 47' 16.46"	3.5
2236	N35° 51' 08.18"	W78° 47' 16.08"	3.5
2237	N35° 51' 08.14"	W78° 47' 15.89"	3.5
2238	N35° 51' 07.92"	W78° 47' 15.75"	3.5
2239	N35° 51' 07.77"	W78° 47' 15.42"	3.5
2240	N35° 51' 07.93"	W78° 47' 15.30"	3.5
2241	N35° 51' 07.88"	W78° 47' 15.14"	3.5
2242	N35° 51' 07.83"	W78° 47' 14.97"	3.5
2243	N35° 51' 07.99"	W78° 47' 14.52"	3.5
2244	N35° 51' 07.65"	W78° 47' 14.48"	3.5
2245	N35° 51' 07.67"	W78° 47' 14.40"	3.5
2246	N35° 51' 07.50"	W78° 47' 14.38"	3.5
2247	N35° 51' 07.44"	W78° 47' 14.06"	3.5
2248	N35° 51' 07.30"	W78° 47' 13.94"	3.5
2249	N35° 51' 07.26"	W78° 47' 13.83"	3.5
2250	N35° 51' 07.14"	W78° 47' 12.51"	3
2251	N35° 51' 07.37"	W78° 47' 12.22"	3
2252	N35° 51' 07.44"	W78° 47' 12.06"	3

This certifies that this copy of this plat accurately depicts the boundary of the jurisdiction of the Section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is change in the law or our published regulations, this determination of Section 404 jurisdiction may be relied upon for a period not to exceed five years from this date. The undersigned completed this determination utilizing the appropriate Regional Supplement to the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual, 33 C.F.R. part 328 and other U.S. Army Corps of Engineers guidance.

Regulatory Official: _____
 Title: _____
 Date: _____
 USACE Action ID: _____



1223 JONES FRANKLIN ROAD
 RALEIGH NORTH CAROLINA 27606
 919-551-8077
 LICENSE No. F-0377
 TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN GIS/GPS - SURVEYING - CONSTRUCTION OBSERVATION



SHEET 20 OF 22

STREAM CENTERLINE POINTS DATA W/WIDTH

Point Table			
PT#	NORTHING	EASTING	WIDTH
2253	N35° 51' 07.28"	W78° 47' 11.89"	3
2254	N35° 51' 06.90"	W78° 47' 11.09"	4
2255	N35° 51' 06.79"	W78° 47' 11.07"	4
2256	N35° 51' 06.70"	W78° 47' 10.82"	4
2257	N35° 51' 06.71"	W78° 47' 10.68"	4
2258	N35° 51' 06.66"	W78° 47' 10.69"	4
2259	N35° 51' 06.72"	W78° 47' 10.55"	4
2260	N35° 51' 06.58"	W78° 47' 11.99"	6
2261	N35° 51' 06.75"	W78° 47' 11.82"	6
2262	N35° 51' 06.74"	W78° 47' 11.26"	6
2263	N35° 51' 06.55"	W78° 47' 10.92"	6
2264	N35° 51' 06.57"	W78° 47' 10.90"	6
2265	N35° 51' 06.64"	W78° 47' 10.50"	6
2266	N35° 51' 06.49"	W78° 47' 10.48"	6
2267	N35° 51' 06.37"	W78° 47' 09.99"	8
2268	N35° 51' 00.34"	W78° 47' 13.30"	4
2269	N35° 51' 00.47"	W78° 47' 13.15"	4
2270	N35° 51' 00.47"	W78° 47' 13.02"	4
2271	N35° 51' 00.60"	W78° 47' 12.88"	4
2272	N35° 51' 00.55"	W78° 47' 12.62"	4

Point Table			
PT#	NORTHING	EASTING	WIDTH
2273	N35° 51' 00.82"	W78° 47' 12.66"	4
2274	N35° 51' 00.68"	W78° 47' 12.40"	4
2275	N35° 51' 00.72"	W78° 47' 12.23"	4
2276	N35° 51' 00.89"	W78° 47' 12.13"	4
2277	N35° 51' 00.82"	W78° 47' 11.91"	4
2278	N35° 51' 01.02"	W78° 47' 11.80"	4
2279	N35° 51' 01.15"	W78° 47' 11.45"	4
2280	N35° 51' 01.10"	W78° 47' 11.17"	4
2281	N35° 51' 01.29"	W78° 47' 11.13"	4
2282	N35° 51' 01.41"	W78° 47' 11.01"	4
2283	N35° 51' 01.46"	W78° 47' 10.82"	4
2284	N35° 51' 01.47"	W78° 47' 10.55"	4
2285	N35° 51' 01.61"	W78° 47' 10.53"	4
2286	N35° 51' 01.98"	W78° 47' 09.86"	4
2287	N35° 51' 02.49"	W78° 47' 09.14"	4
2288	N35° 51' 02.24"	W78° 47' 08.95"	4
2289	N35° 51' 02.15"	W78° 47' 08.29"	4
2290	N35° 51' 02.51"	W78° 47' 08.36"	4
2291	N35° 51' 02.61"	W78° 47' 07.75"	4
2292	N35° 51' 02.62"	W78° 47' 07.54"	4

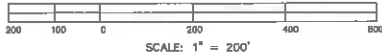
Point Table			
PT#	NORTHING	EASTING	WIDTH
2293	N35° 50' 52.65"	W78° 47' 12.13"	3
2294	N35° 50' 52.56"	W78° 47' 12.05"	3
2295	N35° 50' 52.35"	W78° 47' 11.54"	3
2296	N35° 50' 52.26"	W78° 47' 11.63"	3
2297	N35° 50' 51.98"	W78° 47' 11.36"	3
2298	N35° 50' 51.59"	W78° 47' 11.23"	3
2299	N35° 50' 51.44"	W78° 47' 11.16"	3
2300	N35° 50' 50.88"	W78° 47' 11.10"	3
2301	N35° 50' 50.93"	W78° 47' 10.99"	3
2302	N35° 50' 50.86"	W78° 47' 10.20"	3
2303	N35° 50' 50.03"	W78° 47' 09.84"	3
2304	N35° 50' 49.63"	W78° 47' 09.06"	3
2305	N35° 50' 49.37"	W78° 47' 08.55"	3
2306	N35° 50' 49.37"	W78° 47' 07.58"	3
2307	N35° 50' 49.27"	W78° 47' 07.36"	3
2308	N35° 50' 49.27"	W78° 47' 06.84"	3
2309	N35° 50' 49.14"	W78° 47' 06.59"	3
2310	N35° 50' 48.95"	W78° 47' 06.65"	3
2311	N35° 50' 48.91"	W78° 47' 06.17"	3
2312	N35° 50' 48.77"	W78° 47' 05.73"	3

This certifies that this copy of this plat accurately depicts the boundary of the jurisdiction of the Section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is change in the law or our published regulations, this determination of Section 404 jurisdiction may be relied upon for a period not to exceed five years from this date. The undersigned completed this determination utilizing the appropriate Regional Supplement to the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual, 33 C.F.R. part 328 and other U.S. Army Corps of Engineers guidance.

Regulatory Official: _____
 Title: _____
 Date: _____
 USACE Action ID: _____

LEGEND:

- + WETLAND POINT
- x STREAM POINT
- NEUSE RIVER BUFFER



1223 JONES FRANKLIN ROAD
 RALEIGH NORTH CAROLINA 27606
 919-851-8077
 LICENSE No. F-0577
 TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN GE/OPS - SURVEYING - CONSTRUCTION OBSERVATION



SHEET: 21 OF 22

STREAM CENTERLINE POINTS DATA W/WIDTH - NON J STORMWATER POND POINTS

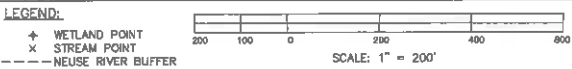
Point Table			
PT#	NORTHING	EASTING	WIDTH
2313	N35° 50' 48.68"	W78° 47' 05.45"	3
2314	N35° 50' 48.56"	W78° 47' 05.41"	3
2315	N35° 50' 48.47"	W78° 47' 05.30"	3
2316	N35° 50' 48.24"	W78° 47' 05.12"	3
2317	N35° 50' 48.14"	W78° 47' 05.06"	3
2318	N35° 50' 47.83"	W78° 47' 04.59"	3

Point Table			
PT#	NORTHING	EASTING	DESC
3029	N35° 50' 54.53"	W78° 47' 27.32"	NJSWP
3028	N35° 50' 53.96"	W78° 47' 27.01"	NJSWP
3027	N35° 50' 53.83"	W78° 47' 26.99"	NJSWP
3026	N35° 50' 53.66"	W78° 47' 27.11"	NJSWP
3025	N35° 50' 53.48"	W78° 47' 27.48"	NJSWP
3024	N35° 50' 53.44"	W78° 47' 27.58"	NJSWP
3023	N35° 50' 53.62"	W78° 47' 27.75"	NJSWP
3022	N35° 50' 54.16"	W78° 47' 28.04"	NJSWP
3021	N35° 50' 54.83"	W78° 47' 28.37"	NJSWP
3020	N35° 50' 55.09"	W78° 47' 28.53"	NJSWP
3019	N35° 50' 55.18"	W78° 47' 28.39"	NJSWP
3018	N35° 50' 55.30"	W78° 47' 28.06"	NJSWP
3017	N35° 50' 55.34"	W78° 47' 27.85"	NJSWP
3016	N35° 50' 55.19"	W78° 47' 27.75"	NJSWP
3015	N35° 51' 05.19"	W78° 47' 12.48"	NJSWP

Point Table			
PT#	NORTHING	EASTING	DESC
3014	N35° 51' 04.74"	W78° 47' 12.76"	NJSWP
3013	N35° 51' 04.54"	W78° 47' 12.82"	NJSWP
3012	N35° 51' 04.60"	W78° 47' 13.05"	NJSWP
3011	N35° 51' 04.86"	W78° 47' 14.22"	NJSWP
3010	N35° 51' 05.01"	W78° 47' 14.89"	NJSWP
3008	N35° 51' 05.38"	W78° 47' 15.22"	NJSWP
3007	N35° 51' 05.72"	W78° 47' 15.01"	NJSWP
3006	N35° 51' 06.01"	W78° 47' 14.96"	NJSWP
3005	N35° 51' 06.22"	W78° 47' 14.79"	NJSWP
3004	N35° 51' 06.25"	W78° 47' 14.49"	NJSWP
3003	N35° 51' 06.07"	W78° 47' 13.75"	NJSWP
3002	N35° 51' 05.93"	W78° 47' 13.10"	NJSWP
3009	N35° 51' 05.20"	W78° 47' 15.15"	NJSWP
3001	N35° 51' 05.67"	W78° 47' 12.43"	NJSWP

This certifies that this copy of this plat accurately depicts the boundary of the Jurisdiction of the Section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is change in the law or our published regulations, this determination of Section 404 Jurisdiction may be relied upon for a period not to exceed five years from this date. The undersigned completed this determination utilizing the appropriate Regional Supplement to the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual, 33 C.F.R. part 328 and other U.S. Army Corps of Engineers guidance.

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VETHERILL ENGINEERING
 1223 JONES FRANKLIN ROAD
 RALEIGH NORTH CAROLINA 27606
 919-861-8077
 LICENSE No. F-0377
 TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN (S/S) - SURVEYING - CONSTRUCTION OBSERVATION



ROY COOPER
Governor

ELIZABETH S. BISER
Secretary

RICHARD E. ROGERS, JR.
Director



NORTH CAROLINA
Environmental Quality

November 8, 2022

Raleigh Durham International Authority
Attn: Victor Malcolm
1000 Trade Dr.
PO Box 80001
Raleigh, NC 27623

Subject: Buffer Determination Letter
NBRRO #22-465
Wake County

Determination Type:	
Buffer	Intermittent/Perennial
<input checked="" type="checkbox"/> Neuse (15A NCAC 2B .0714) <input type="checkbox"/> Tar-Pamlico (15A NCAC 2B .0734) <input type="checkbox"/> Jordan (15A NCAC 2B .0267) (governmental and/or interjurisdictional projects)	<input type="checkbox"/> Intermittent/Perennial Determination (where local buffer ordinances apply)

Project Name RDU-PE3

Address/Location Southeast of RDU Airport, adjacent to I-40

Stream(s): Haley's Branch

Determination Date: November 8, 2022

Staff: Stephanie Goss



Feature	E/I/P *	Not Subject	Subject	Start@	Stop@	Soil Survey	USGS Topo
A: Haleys Branch	P		X	Throughout Project		X	X
B	E	X		Throughout Project		X	
C	I/P		X	B-S1	Feature A	X	
D	E	X		Throughout Project		X	
E	I/P		X	B-S2	Feature A	X	
F	I/P		X	Culvert	Feature G	X	
G (#1)	I/P		X	B-S3	B-S3 stop	X	
G (#2)	I/P		X	B-S3 #2	B-S3 #2 stop	X	
G (#3)	I/P		X	B-S3 #3	B-S3#3 stop	X	
G (#4)	I/P		X	B-S3 #4	Feature A	X	
H	E	X		Throughout project		X	
I	I/P		X	DWR Flag I	Feature L	X	
J	I/P		X	A-S03	A-S04	X	
K	E	X		Throughout Project		X	
L	I/P		X	A-S05	Feature I		X
M	I/P		X	A-S06	Feature I	X	
N	I/P		X	Throughout Project		X	X
O	I/P		X	Throughout Project		X	X
P	E	X		Throughout Project		X	
R	E	X		Throughout		X	
S	I/P		X	A-S02	Feature O	X	
T	N/P	X		Throughout Project		X	
U	E	X		Throughout Project		X	
V	E	X		Throughout Project		X	X
W	E	X		Throughout Project			X
Pond 1	NA	X		Throughout Project			X
Pond 2	NA	X		Throughout Project			X
Pond 3	NA	X		Throughout Project		X	
Pond 5	N/P	X		Throughout Project		X	

(1) E = Ephemeral, I = Intermittent, P = Perennial, NP = Not Present, N/A=Not Applicable

(2) Refers to State riparian buffer rules only. Stream, wetland, or pond impacts are still subject to applicable water quality standards and permitting requirements.

Explanation: The stream(s) listed above been located on the most recent published NRCS Soil Survey of Wake County, North Carolina and/or the most recent copy of the USGS Topographic map at a 1:24,000 scale. Each stream that is checked "Not Subject" has been determined to not be at least intermittent or is not present. Streams that are checked "Subject" have been located on the property and possess characteristics that qualify it to be at least an intermittent stream. There may be other streams located on the property that do not show up on the maps referenced above but may be considered jurisdictional according to the US Army Corps of Engineers.



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 the DWR may request a determination by the Director. An appeal request must be made within sixty (60) days of date of this letter. A request for a determination by the Director shall be referred to the Director in writing. *If sending via US Postal Service: c/o Paul Wojoski; DWR – 401 & Buffer Permitting Unit; 1617 Mail Service Center; Raleigh, NC 27699-1617. If sending via delivery service (UPS, FedEx, etc.): Paul Wojoski; DWR – 401 & Buffer Permitting Unit; 512 N. Salisbury Street; Raleigh, NC 27604.*

This determination is final and binding unless, as detailed above, unless an appeal is requested within sixty (60) days.

This project may require a Section 404/401 Permit for the proposed activity. Any inquiries should be directed to the US Army Corp of Engineers (Raleigh Regulatory Field Office) at (919)-554-4884.

If you have questions regarding this determination, please feel free to contact Stephanie Goss at (919) 791-4256 or via email at stephanie.goss@ncdenr.gov.

Sincerely,

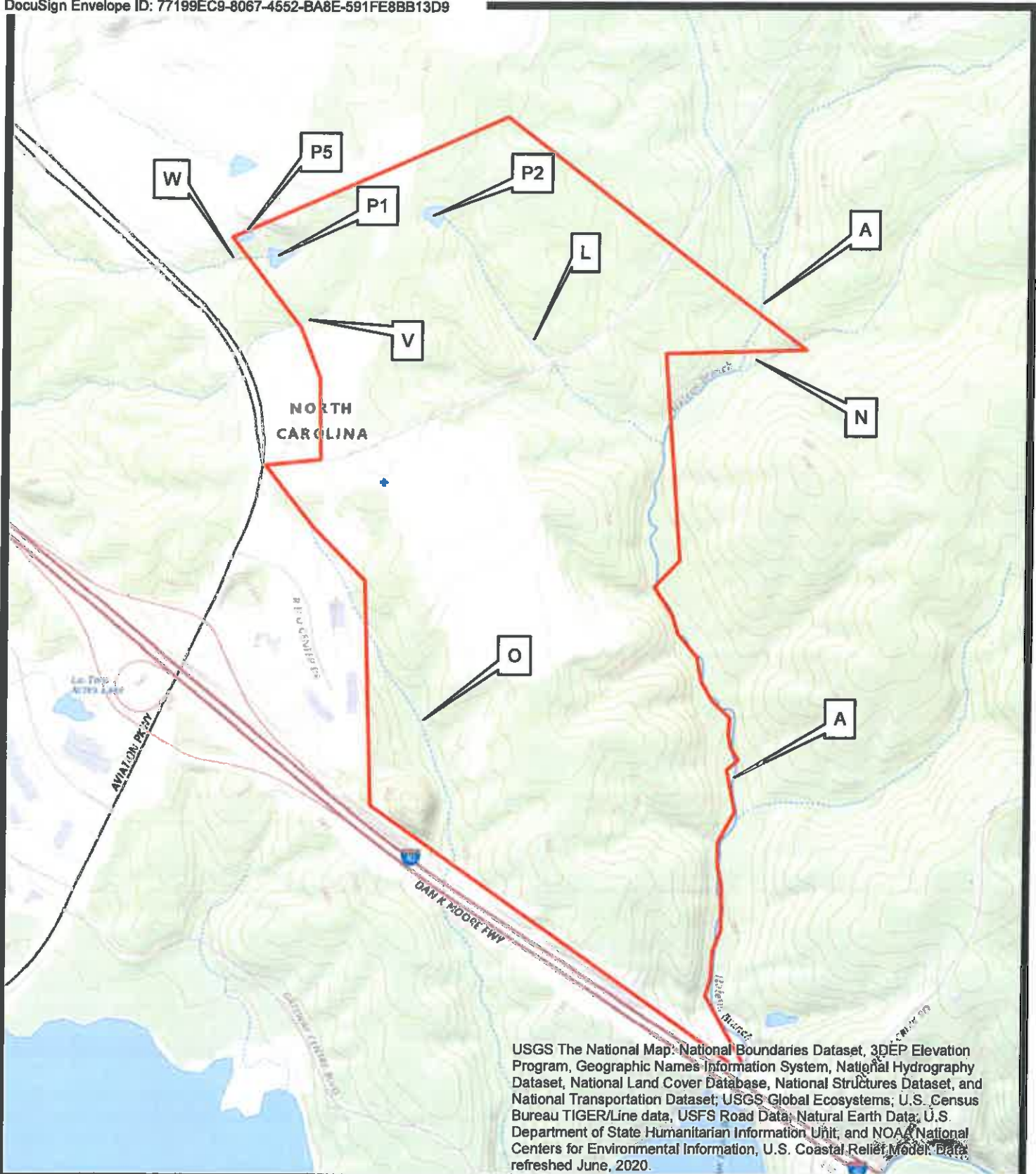
DocuSigned by:

BCDA9D825D4A46D...

Scott Vinson, Regional Supervisor
Water Quality Regional Operations Section
Raleigh Regional Office
Division of Water Resources, NCDEQ

cc: Laserfiche
Bob Zarzecki, S&EC PA (via email)





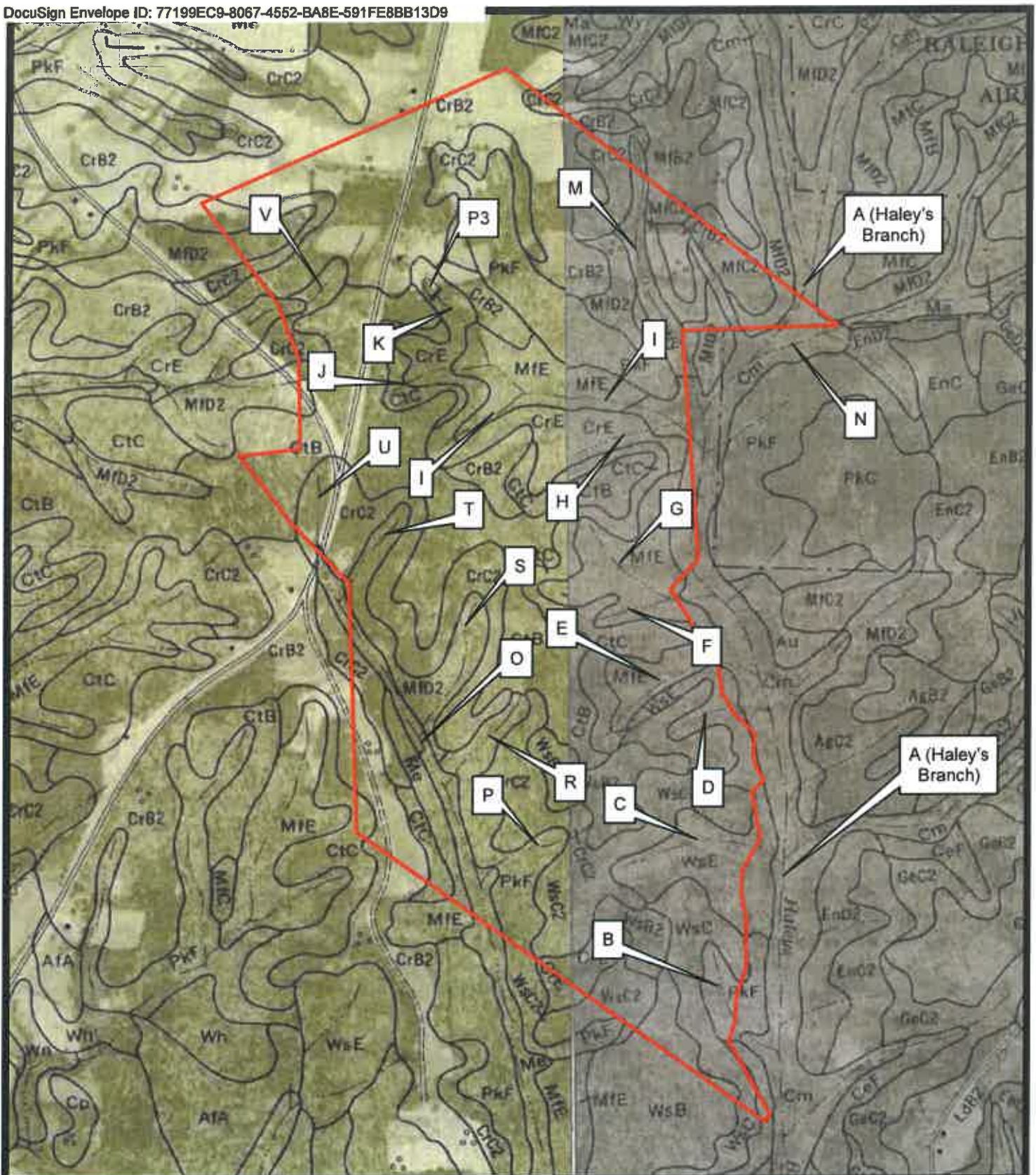
USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data, USFS Road Data, Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed June, 2020.

Project Number: **13254.W8**
 Project Manager: **BZ**
 Scale: **1" = 1000'**
 Date: **11/01/2022**

Map Title:
Figure 1 - USGS Map
RDU Airport Authority
Wake County, NC
 Source:
USGS National Map

0 1,000 2,000
 Feet

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Project Number: **13254.W8**
Project Manager: **BZ**
Scale: **1" = 900'**
Date: **10/31/2022**

Map Title:
Figure 2 - Soil Survey Map
RDU Airport Authority
Wake County, NC
Source:
Soil Survey Sheet No. 36 & 37

0 900 1,800
Feet

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