

# APPENDIX H

## WATER RESOURCES

This appendix contains the following:

- Water Resources Assessment
- USACE Jurisdictional Determination (SAW-2022-01559)
- North Carolina Department of Public Safety No-Rise Certification Letter for RDU Runway 5L-23R Project, November 15, 2022

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**Proposed Runway 5L/23R Replacement Project  
Raleigh-Durham International Airport**

**Water Resources Assessment**

**December 6, 2022**

**Prepared for:**

**Raleigh-Durham Airport Authority and  
Federal Aviation Administration**



**Prepared by:**



**Three Oaks Engineering, Inc.  
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## **SUMMARY OF WATER RESOURCE FINDINGS**

The Raleigh-Durham Airport Authority (RDUAA or Airport) proposes to relocate existing runway 5L/23R 537 feet west of its current location (Appendix A, Figure 1). This includes the runway itself and all other associated construction tasks. To assess the potential environmental impacts associated with this project, an Environmental Assessment (EA) is being conducted by the Airport and Federal Aviation Administration (FAA), to fulfill actions necessary under the National Environmental Policy Act (NEPA). The location of potential jurisdictional Waters of the United States (WOTUS) is a subset of the necessary natural resource survey tasks required to complete this EA. Three Oaks Engineering, Inc. (Three Oaks) has been tasked with compiling a water resources assessment to accomplish this task.

Three Oaks conducted delineations of potential WOTUS within the 1,436-acre Detailed Study Area (DSA) on the following dates: 2021 – July 15, 20-21 | August 4-5, 10-11, 17, 19, and 31 | September 8, 15, and 27 | October 4; 2022 – August 11. A 1,218-acre subset of the DSA was then reviewed by regulatory agencies (referred to as the Jurisdictional Determination [JD] Review Area) on August 25 and 26, 2022 (Appendix A, Figures 2-5; 8). After evaluation of the JD Review Area, the total potential jurisdictional features within the DSA are as follows: 38 potentially jurisdictional streams, 6 potentially jurisdictional non-stream surface waters, 5 non-jurisdictional ponds constructed in uplands, 51 potentially jurisdictional wetlands, and three non-Section 404 wetland features that are protected under federal Executive Order 11990 (Tables 1,2,4, and 5).

Water resources within the DSA are part of the Neuse River Basin. Therefore, streamside riparian zones within the DSA were also assessed since they are potentially protected under the Neuse River Basin Riparian Buffer Rules administered by the North Carolina Division of Water Resources (NCDWR) (Table 3; Appendix A, Figures 6-7).

Potential jurisdictional areas identified with the JD Review Area were field-verified by the United States Army Corps of Engineers (USACE). The USACE subsequently issued a hybrid Preliminary Jurisdictional Determination (PJD)/Approved Jurisdictional Determination (AJD) for the JD Review Area on November 22, 2022 (Action ID No. SAW-2022-01559). The remaining portions of the DSA outside of the JD Review Area have not been verified by regulatory agencies. If required in the future, it is anticipated that these areas would also be covered under a similar hybrid PJD/AJD.



## **LIST OF ACRONYMS**

AJD – Approved Jurisdictional Determination  
B – Stream Classification B per the North Carolina Department of Environmental Quality  
C – Stream Classification C per the North Carolina Department of Environmental Quality  
CWA – Clean Water Act  
DSA – Detailed Study Area  
EA – Environmental Assessment  
EPA – Environmental Protection Agency  
FAA – Federal Aviation Administration  
FEMA – Federal Emergency Management Agency  
FIRM – Flood Insurance Rate Map  
HQW – High Quality Waters  
JD – Jurisdictional Determination  
NCDEQ – North Carolina Department of Environmental Quality  
NCDWR – North Carolina Division of Water Resources  
NCSAM – North Carolina Stream Assessment Method  
NCWAM – North Carolina Wetland Assessment Method  
NEPA – National Environmental Policy Act  
NRCS – Natural Resources Conservation Service  
NSW – Nutrient Sensitive Waters  
OHWM – Ordinary High Water Mark  
ORW – Outstanding Resource Waters  
PJD – Preliminary Jurisdictional Determination  
RDU – Raleigh-Durham International Airport  
RDUAA – Raleigh-Durham Airport Authority  
SWITC – Surface Water Identification Training Course  
TBD – To Be Determined  
Three Oaks – Three Oaks Engineering, Inc.  
USACE – United States Army Corps of Engineers  
USGS – United States Geological Survey  
UT – Unnamed Tributary  
WOTUS – Waters of the United States  
WS – Water Supply Watershed



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## **1.0 INTRODUCTION**

The following Water Resources Assessment has been completed to support the Environmental Assessment (EA) document and provide information on potential jurisdictional resources within the 1,436-acre Detailed Study Area (DSA; Appendix A, Figure 1).

## **2.0 METHODOLOGY**

Site-specific investigations of vegetation, soils, and hydrology were conducted by qualified delineators to determine the presence of potential streams, wetlands, and/or other surface water features within the DSA. Field work was conducted on the following dates: 2021 – July 15, 20-21 | August 4-5, 10-11, 17, 19, and 31 | September 8, 15, 27 | October 4; 2022 – August 11. Wetlands were identified and delineated by use of the routine onsite inspection methods developed by the United States Army Corps of Engineers (USACE) in accordance with the 1987 “Corps of Engineers Wetlands Delineation Manual”, the USACE “Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0)”, and any other additional regional or national USACE guidance or regulations that were issued up to the time the field work was completed. Streams were identified and delineated following protocols set forth by both USACE and the North Carolina Division of Water Resources (NCDWR). USACE stream methodology follows the “National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams,” while NCDWR methodology follows both the NCDWR Surface Water Identification Training Course (SWITC) and the “Methodology for Identification of Intermittent and Perennial Streams and their Origins, Version 4.11.”

The baseline conditions were thoroughly investigated through pedestrian surveys and formal surveying of the extent of all streams/wetlands/surface waters within the DSA. Water resources identified within a 1,218-acre subset of the DSA (referred to as the Jurisdictional Determination [JD] Review Area) were then reviewed by regulatory agencies on August 25 and 26, 2022.

Each wetland or other water resource potentially within either Environmental Protection Agency (EPA) Clean Water Act (CWA) or Executive Order 11990 jurisdiction are summarized in this document and fully described, documented, classified, and mapped in a separate JD package. Field data sheets for each water resource feature are also incorporated into the JD package. The USACE issued a hybrid Preliminary Jurisdictional Determination (PJD)/Approved Jurisdictional Determination (AJD) for the JD Review Area on November 22, 2022 (Action ID No. SAW-2022-01559). The remaining portions of the DSA outside of the JD Review Area have not been verified by regulatory agencies. If required in the future, it is anticipated that these areas would also be covered under a similar hybrid PJD/AJD.

Principal personnel contributing to the field work and document are provided in Appendix B.



## **3.0 WATER RESOURCES**

### **3.1 Surface Waters**

Surface waters include streams, rivers, lakes, ponds, estuaries, and oceans. Identified features may be subject to the CWA, Rivers and Harbors Act, and state statutes protecting surface waters. Potentially jurisdictional surface waters within the DSA are part of the Neuse River Basin (United States Geological Survey [USGS] Hydrologic Unit Code [HUC] 03020201).

#### ***3.1.1 Potentially Jurisdictional Streams***

To be considered potentially jurisdictional under CWA Section 404 by USACE, a stream feature needs to exhibit an Ordinary High Water Mark (OHWM). The OHWM defines the lateral extent of non-tidal aquatic features in the absence of adjacent wetlands in the United States. The federal regulatory definition of the OHWM (33 CFR 328.3[c][7]) states:

“The term ordinary high water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as [a] clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.” A set of indicators has been developed to determine the presence of an OHWM.

To be considered jurisdictional under CWA Section 401 by NCDWR, a stream feature needs to possess characteristics indicative of a jurisdictional feature, as defined by the state. Per the state Methodology for Identification of Intermittent and Perennial Streams and Their Origins (Version 4.11), a feature is considered jurisdictional, and classified as either a Perennial or Intermittent stream, if it meets the following criteria:

Intermittent - A well-defined channel that contains water for only part of the year, typically during winter and spring when the aquatic bed is below the water table. The flow may be heavily supplemented by stormwater runoff. An intermittent stream often lacks the biological and hydrological characteristics commonly associated with the conveyance of water (as defined in North Carolina Administrative Code 15A NCAC 02B .0233[2][g]). Intermittent Streams typically score between  $\geq 19$  and  $< 30$  on the NCDWR Stream Form, Version 4.11.

Perennial - A well-defined channel that contains water year-round during a year of normal rainfall with the aquatic bed located below the water table for most of the year. Groundwater is the primary source of water for a perennial stream, but it also carries stormwater runoff. A perennial stream exhibits the typical biological, hydrological, and physical characteristics commonly associated with the continuous conveyance of water (as defined in North Carolina Administrative Code 15A NCAC 02B .0233[2][i]). Perennial Streams typically score  $\geq 30$  on the NCDWR Stream Form, Version 4.11.





Thirty-eight potentially jurisdictional stream features were identified in the DSA (Table 1). The location of each potential stream is shown on Figures 2-8 (Appendix A). Only features that meet the Section 404 definition of a jurisdictional stream (e.g., presence of an OHWM) were considered potential streams and included in the table. Features within the JD Review Area were verified by USACE as possessing an OHWM; features within the DSA, but outside of the JD Review Area were determined to possess an OHWM by Three Oaks only. For features included in this table, their NCDWR Classification is also provided based on either the NCDWR Stream Form, Version 4.11 or best professional judgement.

North Carolina Stream Assessment Method (NCSAM) and NCDWR Stream Identification Forms for features within the JD Review Area only are included in a separate JD Package. All features within the DSA have been designated as warm water streams for the purposes of stream mitigation.

There are no designated Outstanding Resource Waters (ORW), High Quality Waters (HQW), or Water Supply I or II (WS-I or WS-II) Watersheds within the DSA or within 1.0 mile downstream of the DSA. The North Carolina 2022 Final 303(d) list of impaired waters identifies Little Brier Creek and Brier Creek within the DSA as impaired because of a Polychlorinated Biphenyl Fish Tissue Advisory (Assessment Unit Nos. 27-33-4-1 and 27-33-4).

**Table 1. Potentially jurisdictional streams in the DSA**

Stream Name	Map ID	NCDWR Index Number	NCDWR Best Usage Classification <sup>1</sup>	NCDWR Classification	NCSAM Rating <sup>2</sup>	Within JD Review Area	Length (ft.)
Brier Creek	Brier Creek	27-33-4	C; NSW	Perennial	*	No	1,103
Little Brier Creek	Little Brier Creek	27-33-4-1	C; NSW	Perennial	*	No	1,407
Unnamed Tributary (UT) to Stirrup Iron Creek	S1	27-33-4-2	C; NSW	Perennial	*	Yes	1,967
UT to Stirrup Iron Creek	S2	27-33-4-2	C; NSW	Intermittent	*	Yes	191
				Perennial	*		29



**Table 1. Potentially jurisdictional streams in the DSA (continued)**

Stream Name	Map ID	NCDWR Index Number	NCDWR Best Usage Classification <sup>1</sup>	NCDWR Classification	NCSAM Rating <sup>2</sup>	Within JD Review Area	Length (ft.)
UT to Stirrup Iron Creek	S3	27-33-4-2	C; NSW	Intermittent	*	Yes	160
UT to Stirrup Iron Creek	S4	27-33-4-2	C; NSW	Intermittent	*	Yes	226
UT to Stirrup Iron Creek	S6	27-33-4-2	C; NSW	Intermittent	*	Yes	28
				Intermittent		No	541
				Perennial		No	39
UT to Stirrup Iron Creek	S7	27-33-4-2	C; NSW	Intermittent	*	No	481
UT to Stirrup Iron Creek	S8	27-33-4-2	C; NSW	Perennial	*	No	571
UT to Brier Creek	S9	27-33-4	C; NSW	Intermittent	*	Yes	984
				Perennial	*		455
UT to Brier Creek	S12	27-33-4	C; NSW	Perennial	*	Yes	966
UT to Brier Creek	S13	27-33-4	C; NSW	Intermittent	*	Yes	391

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**Table 1. Potentially jurisdictional streams in the DSA (continued)**

Stream Name	Map ID	NCDWR Index Number	NCDWR Best Usage Classification <sup>1</sup>	NCDWR Classification	NCSAM Rating <sup>2</sup>	Within JD Review Area	Length (ft.)
UT to Brier Creek	S14	27-33-4	C; NSW	Intermittent	*	Yes	173
UT to Brier Creek	S15	27-33-4	C; NSW	Intermittent	*	Yes	40
UT to Brier Creek	S16	27-33-4	C; NSW	Intermittent	*	No	176
UT to Brier Creek	S17	27-33-4	C; NSW	Intermittent	*	No	138
UT to Brier Creek	S18	27-33-4	C; NSW	Intermittent	*	No	32
UT to Little Brier Creek	S20	27-33-4-1	C; NSW	Perennial	*	Yes	324
UT to Little Brier Creek	S21	27-33-4-1	C; NSW	Perennial	*	Yes	609
UT to Little Brier Creek	S22	27-33-4-1	C; NSW	Intermittent	*	Yes	110

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**Table 1. Potentially jurisdictional streams in the DSA (continued)**

Stream Name	Map ID	NCDWR Index Number	NCDWR Best Usage Classification <sup>1</sup>	NCDWR Classification	NCSAM Rating <sup>2</sup>	Within JD Review Area	Length (ft.)
UT to Little Brier Creek	S23	27-33-4-1	C; NSW	Intermittent	*	Yes	378
UT to Little Brier Creek	S24	27-33-4-1	C; NSW	Perennial	*	Yes	163
UT to Little Brier Creek	S25	27-33-4-1	C; NSW	Intermittent	Low/Low	Yes	431
				Perennial	*		461
UT to Little Brier Creek	S26	27-33-4-1	C; NSW	Intermittent	Low/Low	Yes	249
				Perennial	*		1,700
UT to Little Brier Creek	S29	27-33-4-1	C; NSW	Perennial	*	No	398
UT to Little Brier Creek	S30	27-33-4-1	C; NSW	Intermittent	*	Yes	438
				Intermittent		No	175
UT to Little Brier Creek	S33	27-33-4-1	C; NSW	Intermittent	*	Yes	167
				Intermittent		No	170
UT to Little Brier Creek	S34	27-33-4-1	C; NSW	Intermittent	*	Yes	1,089
				Intermittent		No	53

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**Table 1. Potentially jurisdictional streams in the DSA (continued)**

Stream Name	Map ID	NCDWR Index Number	NCDWR Best Usage Classification <sup>1</sup>	NCDWR Classification	NCSAM Rating <sup>2</sup>	Within JD Review Area	Length (ft.)
UT to Little Brier Creek	S35	27-33-4-1	C; NSW	Intermittent	*	Yes	187
UT to Little Brier Creek	S37	27-33-4-1	C; NSW	Intermittent	Low/Low	Yes	416
UT to Little Brier Creek	S39	27-33-4-1	C; NSW	Intermittent	*	Yes	874
				Perennial	*	Yes	659
				Perennial	*	No	1,025
UT to Little Brier Creek	S40	27-33-4-1	C; NSW	Perennial	*	Yes	160
UT to Little Brier Creek	S41	27-33-4-1	C; NSW	Intermittent	Low/Low	Yes	229
				Perennial	*		432
UT to Little Brier Creek	S42	27-33-4-1	C; NSW	Intermittent	*	Yes	881
UT to Sycamore Creek	S43	27-33-9	B; NSW	Intermittent	*	Yes	267
UT to Sycamore Creek	S44	27-33-9	B; NSW	Intermittent	*	Yes	67

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**Table 1. Potentially jurisdictional streams in the DSA (continued)**

Stream Name	Map ID	NCDWR Index Number	NCDWR Best Usage Classification <sup>1</sup>	NCDWR Classification	NCSAM Rating <sup>2</sup>	Within JD Review Area	Length (ft.)
UT to Little Brier Creek	S45	27-33-4-1	C; NSW	Perennial	*	Yes	84
UT to Little Brier Creek	S46	27-33-4-1	C; NSW	Perennial	Low	Yes	14
						<b>Total</b>	<b>22,308</b>

<sup>1</sup> – C - Waters protected for uses such as aquatic life propagation, survival and maintenance of biological integrity (including fishing and fish), wildlife, secondary contact recreation, and agriculture. Secondary contact recreation means wading, boating, other uses not involving human body contact with water, and activities involving human body contact with water where such activities take place on an infrequent, unorganized, or incidental basis.

B - Waters protected for all Class C uses in addition to primary contact recreation. Primary contact recreation means swimming, diving, water skiing, and similar uses involving human body contact with water where such activities take place in an organized manner or on a frequent basis.

NSW – Supplemental classification intended for waters needing additional nutrient management due to being subject to excessive growths of microscopic or macroscopic vegetation.

<sup>2</sup> – Streams exhibiting characteristics conducive to them receiving moderate to higher functional rating and/or mitigation values are represented by an asterisk (\*).

**Note 1:** The USACE will make the determination for compensatory mitigation during the permitting phase of the Project.

**Note 2:** Streams S19 and S36 do not exist within the DSA. Streams S5, S10, S11, S27, S28, S31, S32, and S38 were removed from the JD Review Area during the field verification site visit.



### 3.1.2 Non-stream Surface Waters

Eleven non-stream surface waters (i.e., ponds, basins, and/or tributaries) were identified in the DSA (Table 2; Appendix A, Figures 2-8). Of those 11 features, six were determined to be potentially jurisdictional. The remaining five were located within the JD Review Area and determined to be non-Section 404 ponds constructed in upland by USACE during their field verification site visit (noted below). These five features were excluded under the Approved JD for the project.

**Table 2. Non-stream surface waters in the DSA**

Map ID	Potentially Section 404 Jurisdictional	NCDWR Best Usage Classification <sup>1</sup>	Within JD Review Area	Area
Brier Creek Reservoir	Yes	C; NSW	Yes	133.3
			No	0.09
Little Brier Creek Reservoir	Yes	C; NSW	Yes	0.01
			No	0.03
Stirrup Iron Creek Reservoir	Yes	C; NSW	No	3.32
P1	No (Constructed in Upland)	N/A	Yes	1.64
P2	No (Constructed in Upland)	N/A	Yes	0.08
P3	Assumed (since in area not covered in JD)	C; NSW	No	0.37
P5	Yes	C; NSW	Yes	0.29
P9	No (Constructed in Upland)	N/A	Yes	0.26
P10	Yes (Assumed based on downslope wetland connection)	C; NSW	Yes	1.70
P11	No (Constructed in Upland)	N/A	Ye	0.03
B2	No (Constructed in Upland)	N/A	Yes	0.07
			<b>Total</b>	<b>141.19</b>

<sup>1</sup> – See Table 1 footnotes for a description of the Best Usage Classifications.

### 3.1.3 Riparian Buffers

This project is located within the Neuse River Basin (USGS HUC 03020201). Streams within this basin are protected by the Neuse River Riparian Buffer Rules, enforced by NCDEQ – NCDWR. To be subject to Neuse River Riparian Buffer Rules, potential streams need to be present on either USGS topographic mapping (Appendix A, Figure 3) or Natural Resources Conservation Service (NRCS) soil survey mapping (Appendix A, Figure 6) (or both).



Per riparian buffer rules, there are two riparian buffer zones that apply to a buffered stream or open water, extending a total of 50 feet outward, perpendicularly from the edge of a feature. Zone One abuts the stream or open water and extends 30 feet perpendicularly from the top of bank (or edge of water) outward, on both sides of a feature. Zone Two starts at the outside edge of Zone One and extends an additional 20 feet perpendicularly from Zone One outward, on both sides of the feature.

Table 3 identifies which jurisdictional features are buffered per the Neuse River Riparian Buffer Rules. The features requiring riparian buffers are shown on Figure 7 (Appendix A). Streams/open waters designated as “Not Subject” were not present on either mapping type; therefore, they are not subject to the riparian buffer rules. Riparian buffers will be preserved to the greatest extent practicable. For unavoidable impacts to these buffers, a buffer impact plan will be submitted to the state for authorization under the Neuse River Riparian Buffer Rules.

**Table 3. Riparian buffers in the DSA**

Map ID	River Basin Buffer	Zone 1 Area (sq. ft.)	Zone 2 Area (sq. ft.)	Feature Total (sq. ft.)
Brier Creek	Subject	67,458	44,551	112,009
Little Brier Creek	Subject	83,913	54,189	138,102
S1	Subject	117,862	74,057	191,919
S2	Subject	11,374	8,052	19,426
S3	Subject	11,198	9,128	20,326
S4	Subject	12,734	9,445	22,179
S6	Subject	35,192	22,557	57,749
S7	Subject	33,861	26,698	60,559
S8	Subject	32,586	18,600	51,186





**Table 3. Riparian buffers in the DSA (continued)**

Map ID	River Basin Buffer	Zone 1 Area (sq. ft.)	Zone 2 Area (sq. ft.)	Feature Total (sq. ft.)
S9	Subject	93,189	70,084	163,273
S12	Subject	57,820	39,766	97,586
S13	Subject	26,230	20,564	46,794
S14	Subject	10,064	7,893	17,957
S15	Subject	5,214	6,617	11,831
S16	Not Subject	N/A	N/A	N/A
S17	Not Subject	N/A	N/A	N/A
S18	Not Subject	N/A	N/A	N/A
S20	Subject	17,671	9,774	27,445
S21	Subject	32,207	22,083	54,290
S22	Subject	6,113	4,514	10,627
S23	Subject	24,195	17,585	41,780



**Table 3. Riparian buffers in the DSA (continued)**

Map ID	River Basin Buffer	Zone 1 Area (sq. ft.)	Zone 2 Area (sq. ft.)	Feature Total (sq. ft.)
S24	Subject	11,301	9,098	20,399
S25	Subject	55,989	39,504	95,493
S26	Subject	128,203	94,481	222,684
S29	Subject	26,682	20,921	47,603
S30	Subject	37,911	26,514	64,425
S33	Subject	22,177	17,996	40,173
S34	Subject	67,774	45,754	113,528
S35	Subject	14,032	12,494	26,526
S37	Subject	27,244	20,364	47,608
S39	Subject	150,003	100,172	250,175
S40	Subject	9,179	6,927	16,106
S41	Subject	43,685	32,289	75,974



**Table 3. Riparian buffers in the DSA (continued)**

Map ID	River Basin Buffer	Zone 1 Area (sq. ft.)	Zone 2 Area (sq. ft.)	Feature Total (sq. ft.)
S42	Subject	54,436	37,843	92,279
S43	Subject	18,704	14,248	32,952
S44	Subject	5,236	4,882	10,118
S45	Subject	7,853	7,530	15,383
S46	Not Subject	N/A	N/A	N/A
Brier Creek	Subject	379,381	218,639	598,020
Little Brier Creek	Subject	12,088	11,101	23,189
Stirrup Iron Creek	Subject	42,639	27,853	70,492
P3	Subject	17,788	14,992	32,780
P5	Subject	15,735	7,938	23,673
P10	Subject	41,028	30,401	71,429
	<b>Total</b>	<b>1,867,949</b>	<b>1,268,098</b>	<b>3,136,047</b>



## 3.2 Potentially Jurisdictional Wetlands

### 3.2.1 Potentially Jurisdictional Wetlands per Section 404

For regulatory purposes under the CWA, the term “wetlands” means areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Areas covered with water for such a short time that there is no effect on moist-soil vegetation are not considered wetlands, nor are the waters of streams, reservoirs, and deep lakes. Wetlands provide many benefits to the human, biological, and hydrological environment, including habitat for fish and wildlife, water quality improvement, flood storage, and opportunities for recreation. Identified features may also be subject to state statutes protecting wetlands.

Fifty-one potentially jurisdictional wetland features were identified within the DSA (Table 4). The locations of these wetlands are shown on Figures 2-8 (Appendix A). Wetlands identified as “Undisturbed” on mapping and in the table exhibit characteristics similar to what is expected for their North Carolina Wetland Assessment Method (NCWAM) wetland type(s) in terms of hydrology, hydrophytic vegetation, and soil. Wetlands identified as “Disturbed” are compromised in one or more of these categories.

All wetlands in the DSA are located within the Neuse River Basin (USGS HUC 03020201). USACE wetland determination forms and NCWAM forms that represent each site within the JD Review Area only are included in a separate JD Package. Features within the DSA, but outside of the JD Review Area, were determined to be potentially jurisdictional by Three Oaks; however, these features have not been reviewed by USACE.

**Table 4. Potentially jurisdictional wetlands in the DSA**

Map ID	NCWAM Classification	NCWAM Rating <sup>1</sup>	Hydrologic Classification	Within JD Review Area	Area (ac.)
W2	Nontidal Freshwater Marsh	*	Riparian	Yes	0.01
W3	Floodplain Pool	*	Riparian	Yes	< 0.01
W5	Nontidal Freshwater Marsh	*	Riparian	Yes	0.01
W7	Headwater Forest	*	Riparian	No	0.06
W8	Headwater Forest	*	Riparian	Yes	0.04
W9	Headwater Forest	*	Riparian	No	0.44
W10	Bottomland Hardwood Forest	*	Riparian	No	0.12



**Table 4. Potentially jurisdictional wetlands in the DSA (continued)**

Map ID	NCWAM Classification	NCWAM Rating <sup>1</sup>	Hydrologic Classification	Within JD Review Area	Area (ac.)
W11	Headwater Forest	*	Riparian	Yes	0.07
W12	Headwater Forest	*	Riparian	Yes	0.11
W13	Headwater Forest	*	Riparian	Yes	0.17
W14 <sup>2</sup>	Nontidal Freshwater Marsh	Medium	Riparian	Yes	2.25
W15	Nontidal Freshwater Marsh	Medium	Riparian	Yes	0.05
W16	Headwater Forest	*	Riparian	Yes	0.07
W17 <sup>2</sup>	Nontidal Freshwater Marsh	Medium	Riparian	Yes	0.01
W18 <sup>2</sup>	Nontidal Freshwater Marsh	Medium	Riparian	Yes	0.02
W19 <sup>2</sup>	Nontidal Freshwater Marsh	Medium	Riparian	Yes	0.07
W20 <sup>2</sup>	Nontidal Freshwater Marsh	Medium	Riparian	Yes	0.02
W21 <sup>2</sup>	Nontidal Freshwater Marsh	Medium	Riparian	Yes	0.15
W22 <sup>2</sup>	Nontidal Freshwater Marsh	Medium	Riparian	Yes	0.08
W23 <sup>2</sup>	Nontidal Freshwater Marsh	Medium	Riparian	Yes	0.03
W24 <sup>2</sup>	Nontidal Freshwater Marsh	Medium	Riparian	Yes	0.04
W25 <sup>2</sup>	Nontidal Freshwater Marsh	Medium	Riparian	Yes	0.17



**Table 4. Potentially jurisdictional wetlands in the DSA (continued)**

Map ID	NCWAM Classification	NCWAM Rating <sup>1</sup>	Hydrologic Classification	Within JD Review Area	Area (ac.)
W26	Headwater Forest	*	Riparian	Yes	0.23
W27	Headwater Forest	*	Riparian	Yes	0.31
W28 <sup>2</sup>	Nontidal Freshwater Marsh	Medium	Riparian	Yes	0.23
W30	Nontidal Freshwater Marsh	*	Riparian	Yes	0.01
W31	Headwater Forest	*	Riparian	Yes	0.05
W32	Nontidal Freshwater Marsh	*	Riparian	No	0.07
W33	Headwater Forest	*	Riparian	No	0.32
W34	Bottomland Hardwood Forest	*	Riparian	No	2.61
W35	Nontidal Freshwater Marsh	*	Riparian	Yes	0.54
W36	Nontidal Freshwater Marsh	*	Riparian	Yes	0.20
W37	Nontidal Freshwater Marsh	*	Riparian	Yes	0.01
W38 <sup>2</sup>	Headwater Forest	Medium	Riparian	Yes	0.02
W39 <sup>2</sup>	Nontidal Freshwater Marsh	*	Riparian	Yes	0.19
W40 <sup>2</sup>	Nontidal Freshwater Marsh	*	Riparian	Yes	0.31
W41	Headwater Forest	*	Riparian	Yes	0.20

Jim Mason, Senior Environmental Scientist  
Three Oaks Engineering, Inc.  
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**Table 4. Potentially jurisdictional wetlands in the DSA (continued)**

Map ID	NCWAM Classification	NCWAM Rating <sup>1</sup>	Hydrologic Classification	Within JD Review Area	Area (ac.)
W42 <sup>2</sup>	Nontidal Freshwater Marsh	Medium	Riparian	Yes	0.12
W43	Riverine Swamp Forest	*	Riparian	Yes	0.98
W44 <sup>2</sup>	Nontidal Freshwater Marsh	*	Riparian	Yes	2.53
W45 <sup>2</sup>	Nontidal Freshwater Marsh	*	Riparian	No	< 0.01
W46	Bottomland Hardwood Forest	*	Riparian	No	0.24
W47	Bottomland Hardwood Forest	*	Riparian	No	0.07
W48	Bottomland Hardwood Forest	*	Riparian	No	0.02
W49 <sup>2</sup>	Headwater Forest	*	Riparian	Yes	0.03
W50	Headwater Forest/Riverine Swamp Forest/Nontidal Freshwater Marsh	*	Riparian	No	5.88
W51	Floodplain Pool	*	Riparian	No	1.10
W52	Bottomland Hardwood Forest	*	Riparian	No	0.22
W55	Headwater Forest	*	Riparian	Yes	0.07
W57 <sup>2</sup>	Headwater Forest	Low	Riparian	Yes	0.26
W59 <sup>2</sup>	Headwater Forest	Medium	Riparian	Yes	0.11
				<b>Total</b>	<b>20.93</b>



<sup>1</sup> – Wetlands exhibiting characteristics conducive to them receiving moderate to higher functional rating and/or mitigation values are represented by an asterisk (\*).

<sup>2</sup> – These wetlands were identified as Disturbed.

**Note:** There are no Wetland features W53, W56, or W58. Wetland features W1, W4, W6, W29, and W54 were removed from the JD Review Area during the JD site visit.

### 3.2.2 Wetlands Protected Under Executive Order 11990

In addition to the potentially jurisdictional wetland features covered under the CWA, three additional features were not considered Section 404 jurisdictional features, but are protected under federal Executive Order 11990. Under this Executive Order:

Federal agencies are required to “avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative.” The stated purpose of this Executive Order is to “minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands.”

The three features associated with this project are located in the JD Review Area and are stormwater/sediment basins that USACE deemed as already permitted features since they were present on As-Built construction plans from previous Airport activities. However, at least portions of these features did meet all three wetland criteria and, therefore, are protected under the Executive Order (Table 5).

**Table 5. Wetland features already deemed permitted per USACE, but still protected under Executive Order 11990**

Map ID (Former Map ID)	Connection	Area
FAA W60 (B1)	S44	0.10
FAA W61 (B6)	S26	1.00
FAA W62 (B8)	S39	1.53
	<b>Total</b>	<b>2.63</b>

**Note** Former Map ID included so that features can be properly cross-referenced when referring to older versions of this document.

### 3.3 Riparian Floodplains

Floodplains are lowland areas adjoining inland and coastal waters which are periodically inundated by flood waters, including flood-prone areas of offshore islands. Floodplains are often discussed in terms of the 100-year flood. The 100-year flood is a flood having a 1 percent chance of occurring in any given year. The 100-year flood is also known as the base flood and is symbolized as Zone AE. Floodplains are valued for their natural flood and erosion control, enhancement of biological productivity, and socioeconomic benefits and functions.

When property in floodplains is proposed for lease, easement, right-of-way, or disposal to non-federal public or private entities, the FAA must, in accordance with Executive Order 11988, Floodplain Management: (1) reference in the conveyance those uses that are restricted under identified federal, state, or local floodplain regulations; (2) attach other appropriate restrictions to uses of properties by the grantee or purchaser and any successors, except where prohibited by law; or (3) withhold such properties from conveyance. Identified





floodplains may be subject to the National Flood Insurance Act, Executive Order 11988, and state statutes protecting regulatory floodplains and floodways.

Riparian floodplains were identified within the DSA using Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) mapping (Table 6; Appendix A, Figure 8).

**Table 6. Characteristics of FEMA-regulated floodplains in the DSA**

Map ID	Floodplain Area (ac.)	FEMA Zone
Brier Creek	147.37	AE, Floodway
	15.05	AE
Little Brier Creek	19.38	AE, Floodway
	33.68	AE
Stirrup Iron Creek	4.94	AE, Floodway
	4.12	AE
<b>Total</b>	<b>224.54</b>	

### 3.4 Rivers and Harbors Act Section 10 Navigable Waters

No potential streams within the DSA have been designated by the USACE as a Navigable Water under Section 10 of the Rivers and Harbors Act.

## **4.0 REFERENCES**

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United States Geological Survey. 1987. Southeast Durham, North Carolina, Topographic Quadrangle (7.5-minute series).




## Appendix A Figures





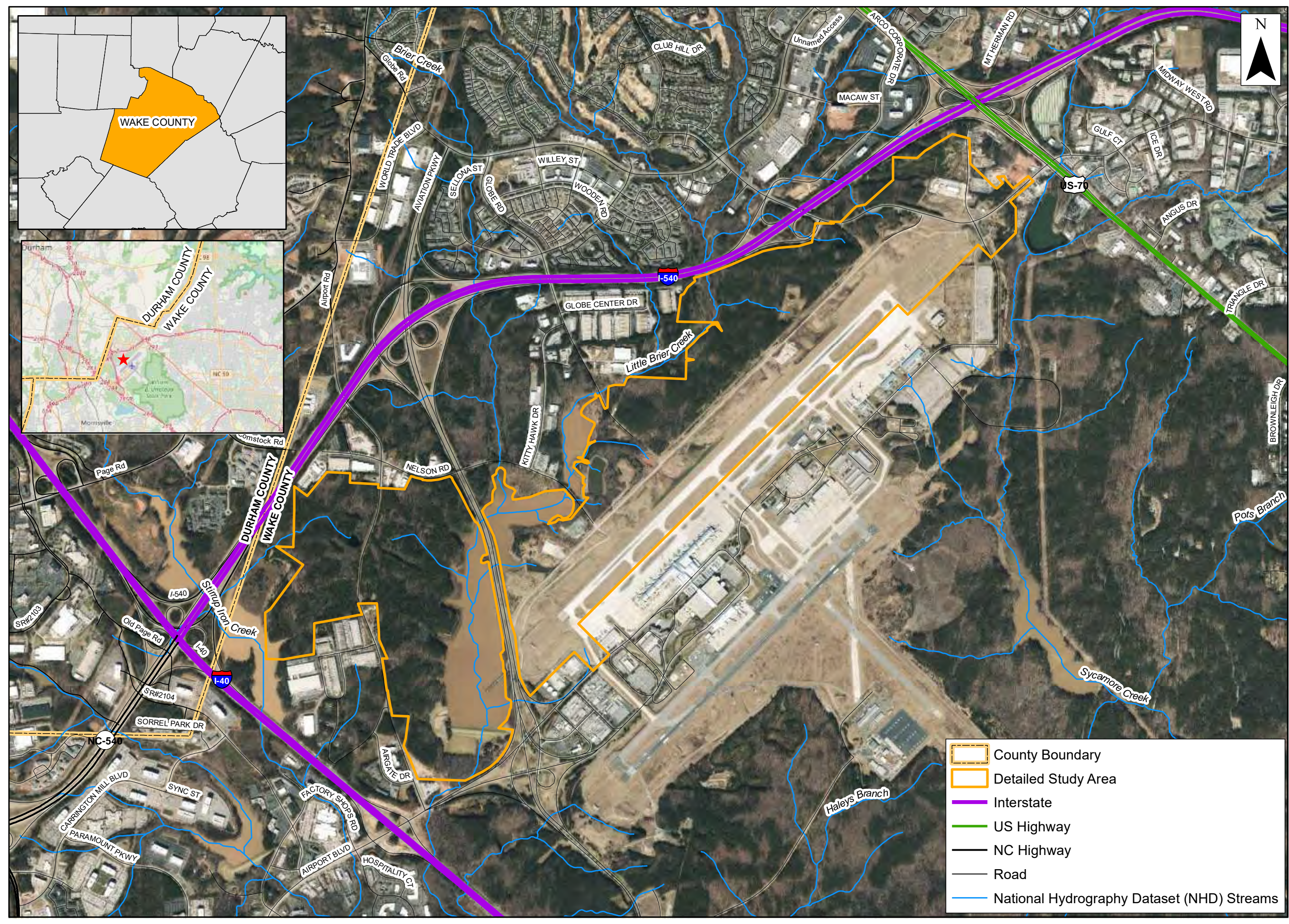
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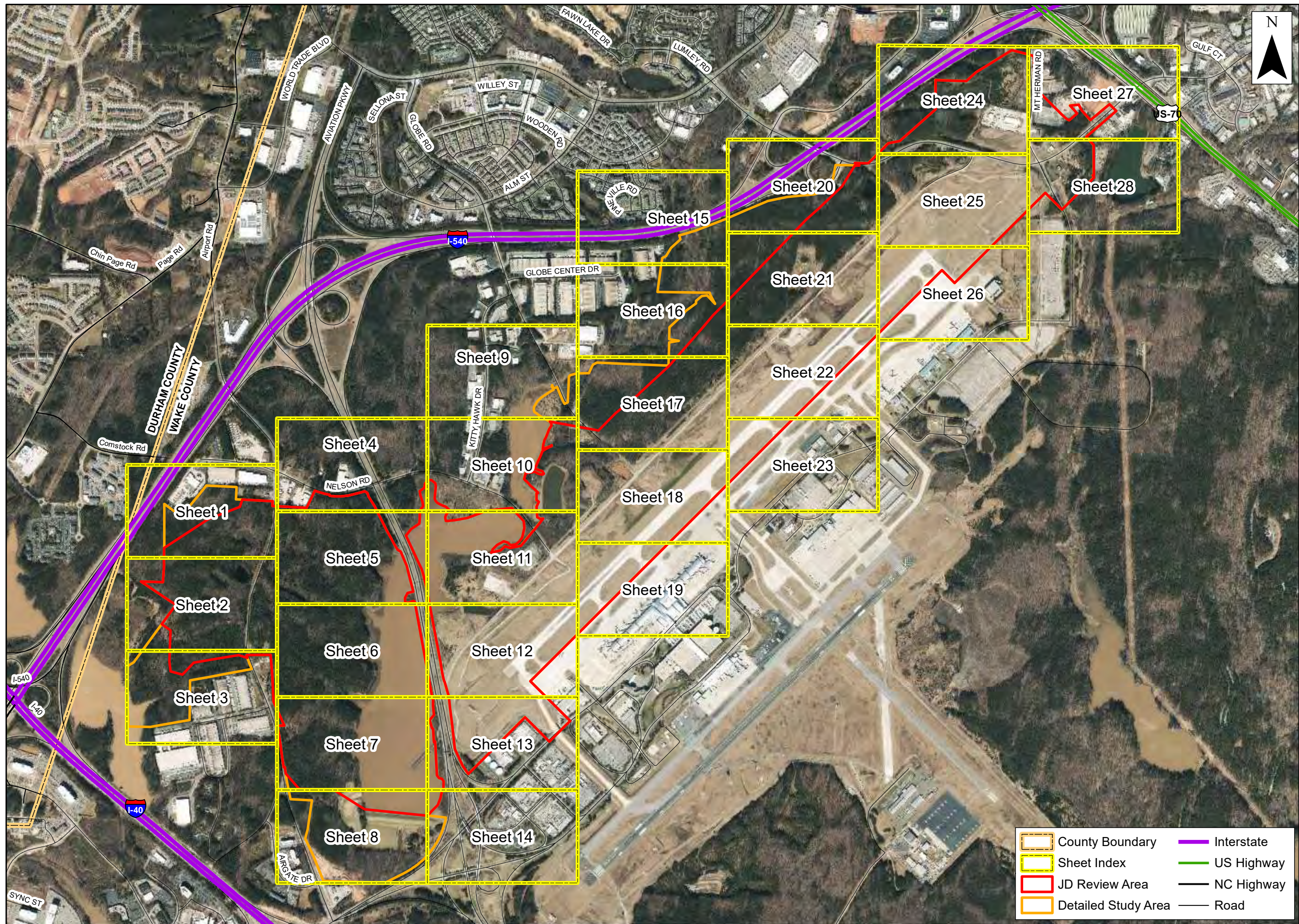


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Figure  
**1**





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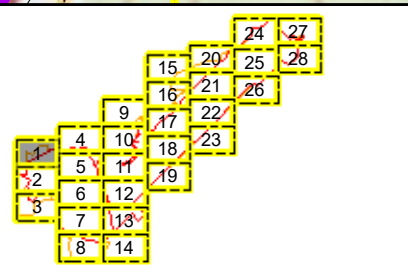
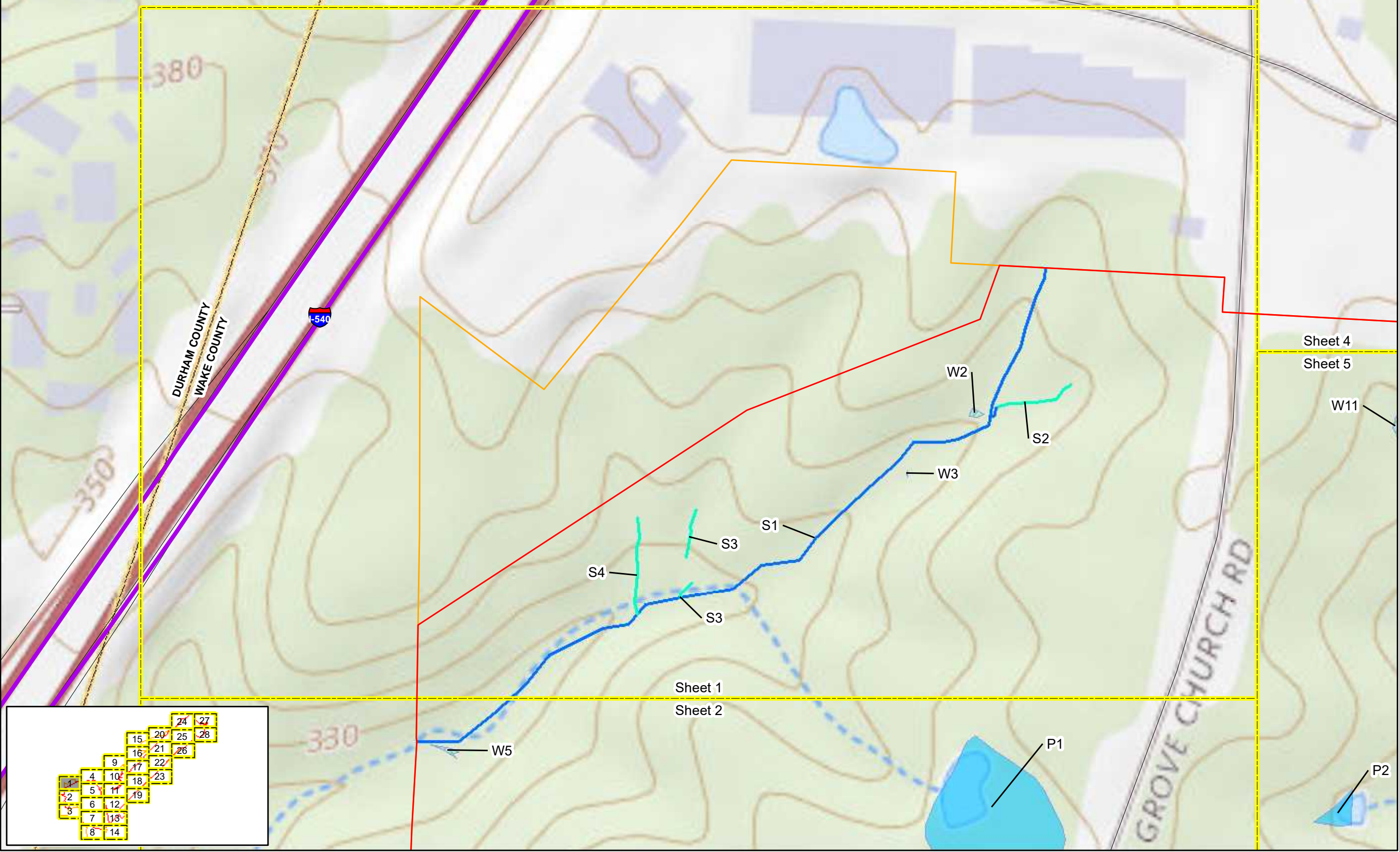
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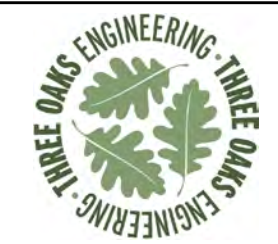
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Figure  
**3**  
Sheet 1

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
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Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			USGS Stream Line





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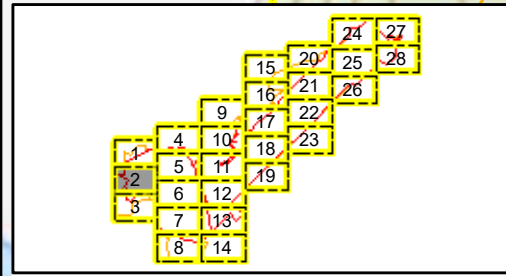
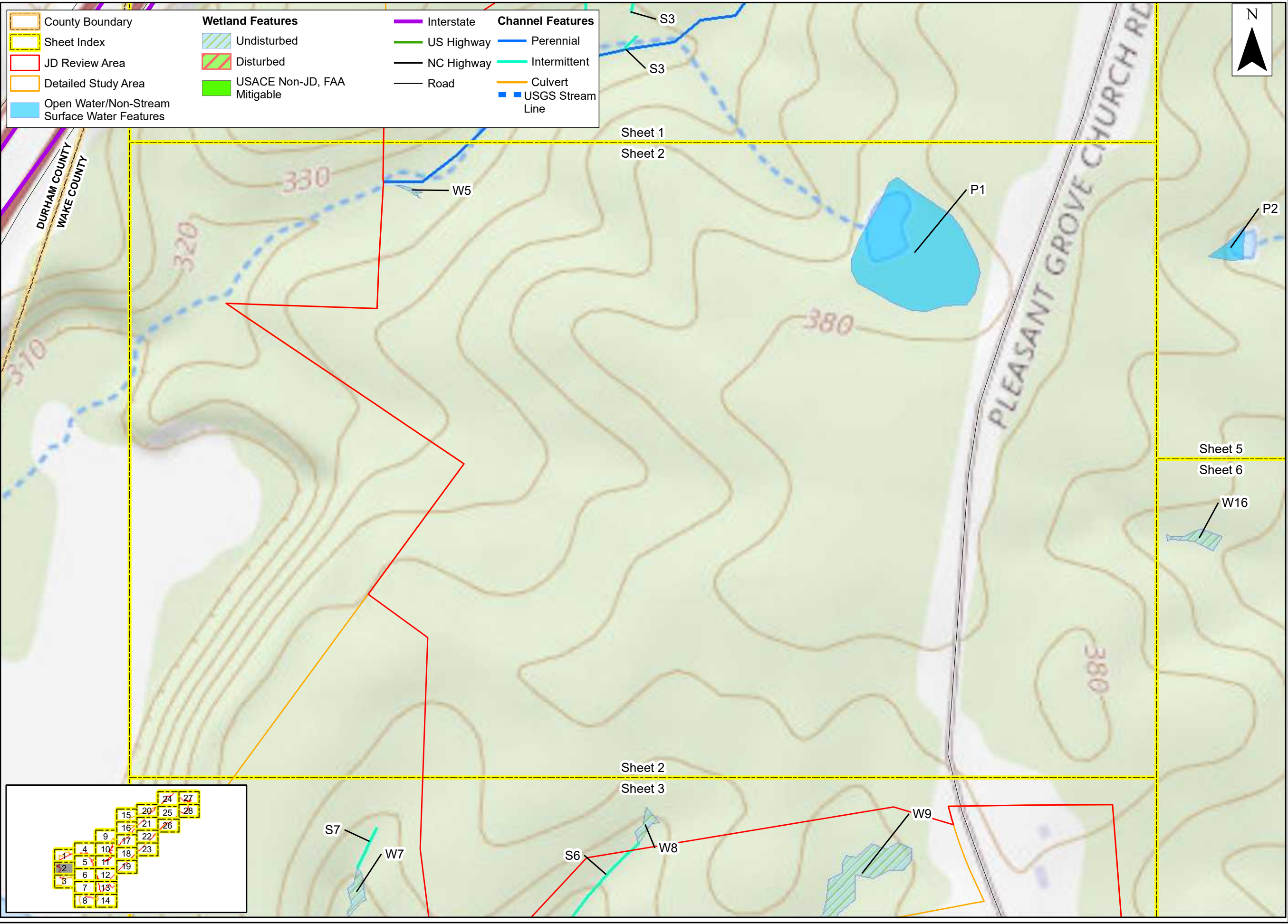
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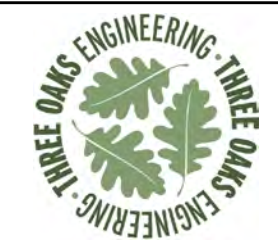
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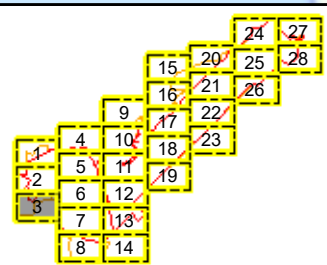
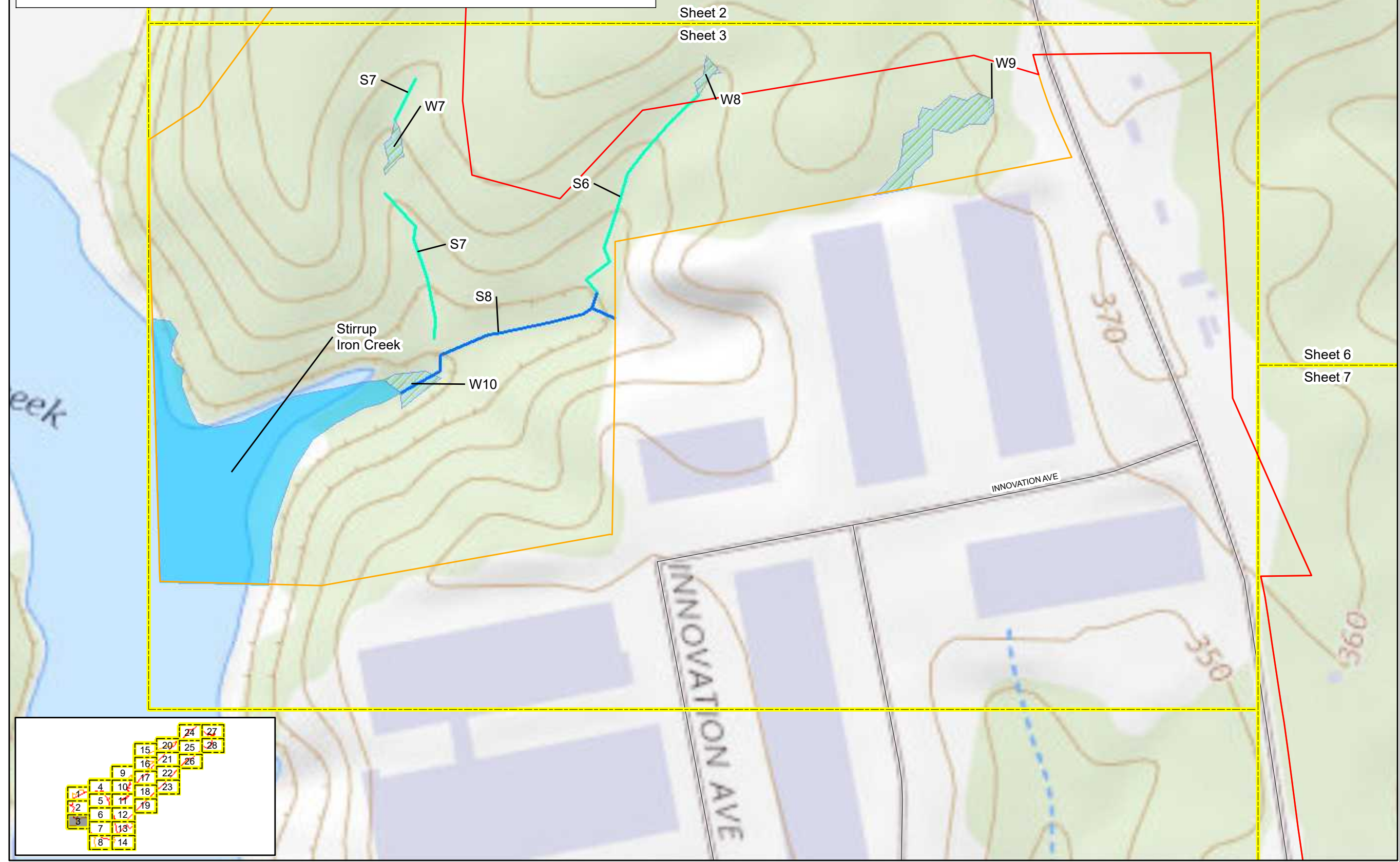
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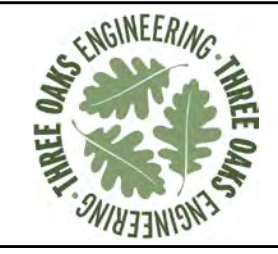
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Sheet 3

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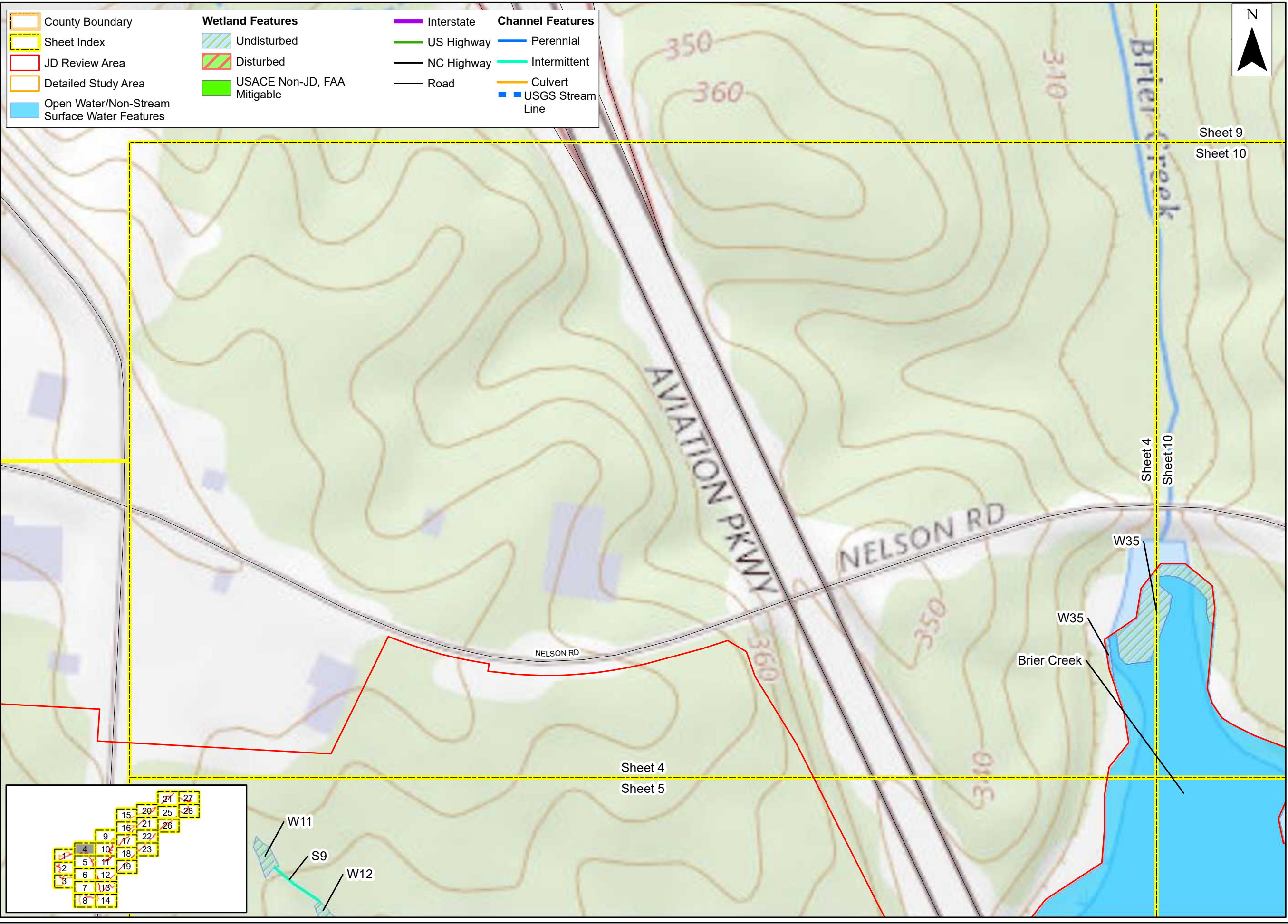
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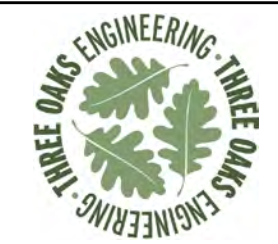
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Sheet 4



County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
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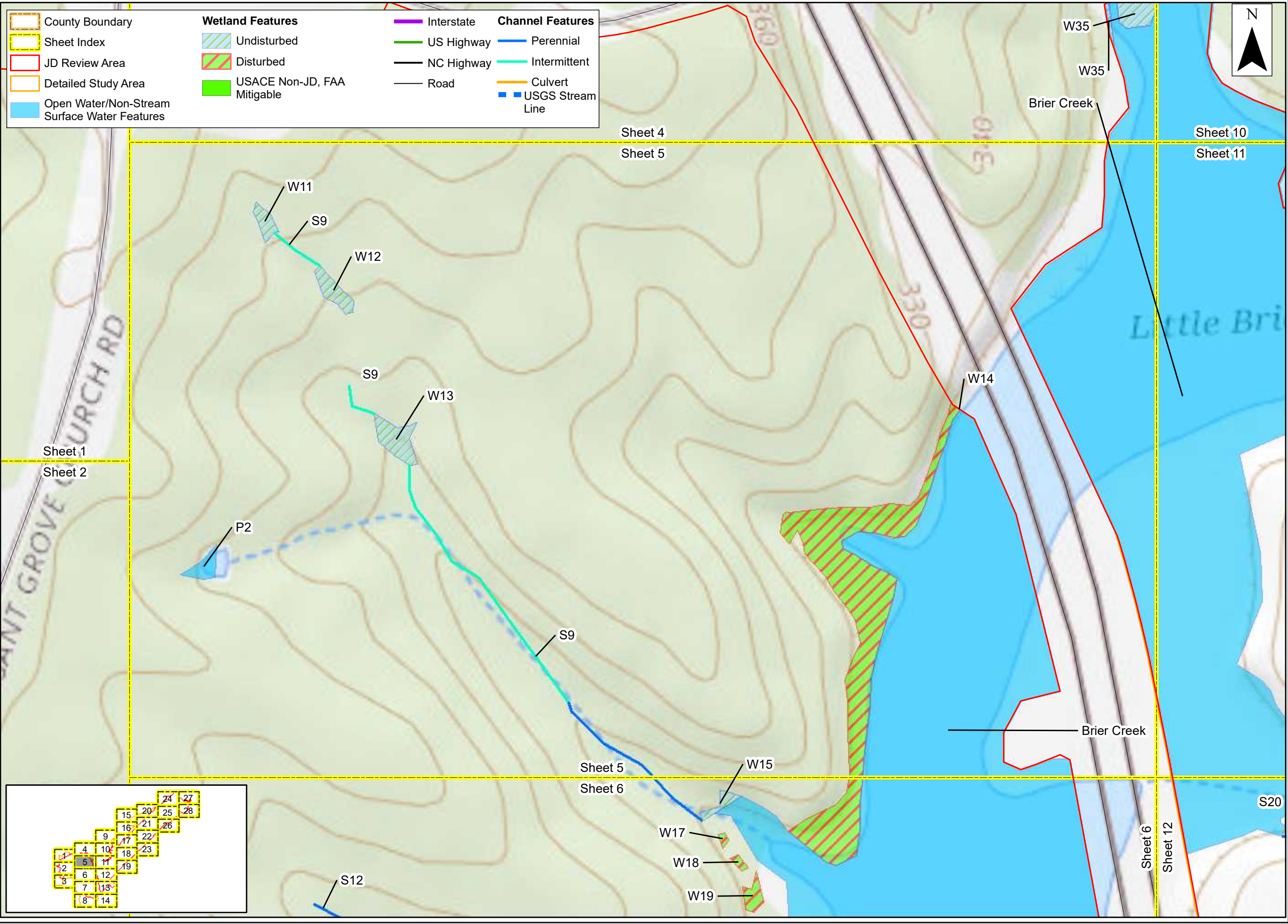
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**3**  
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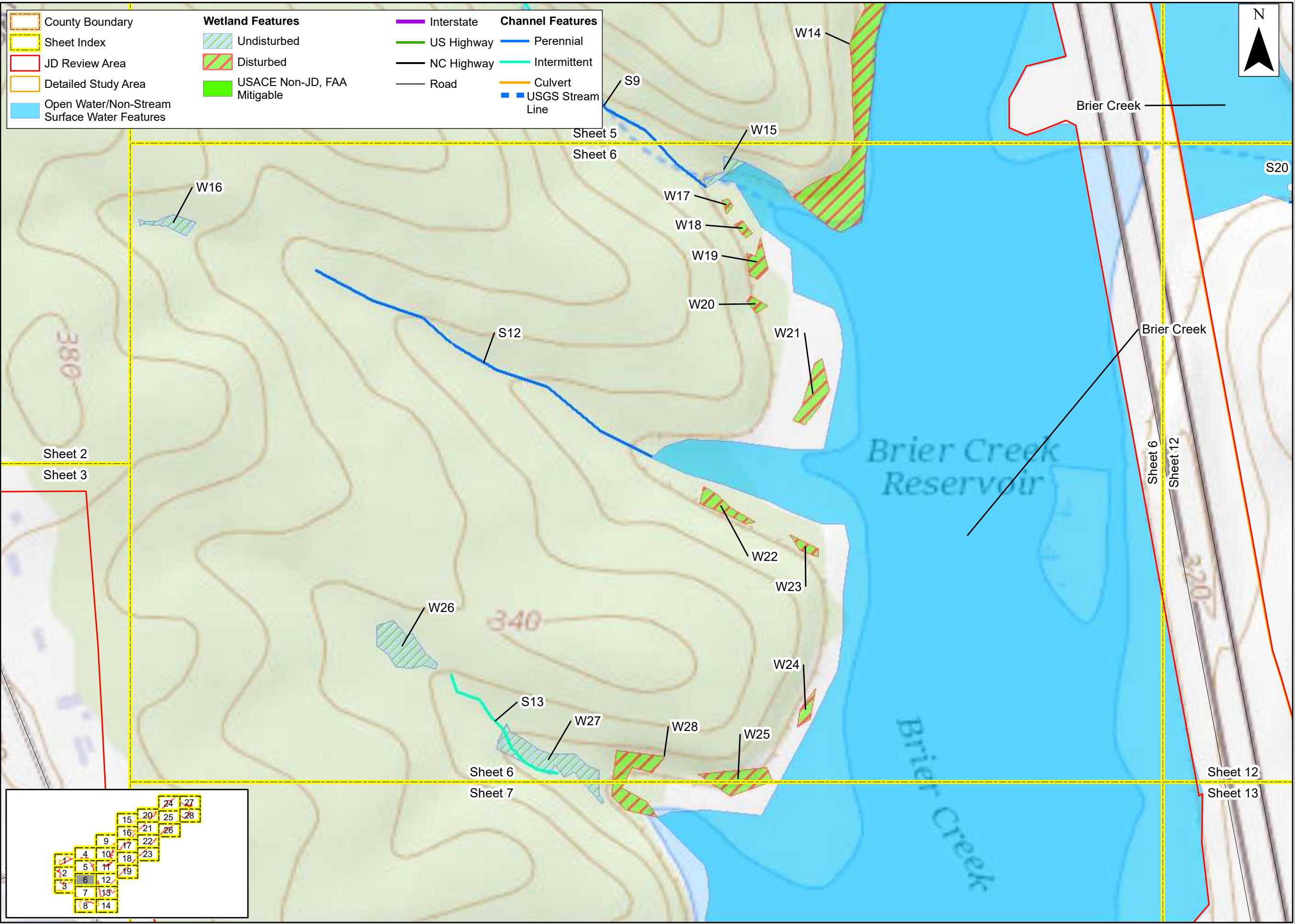
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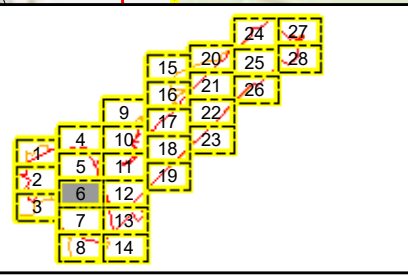
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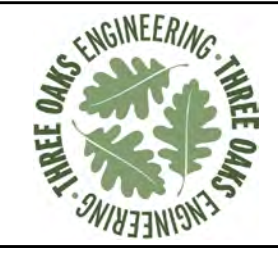
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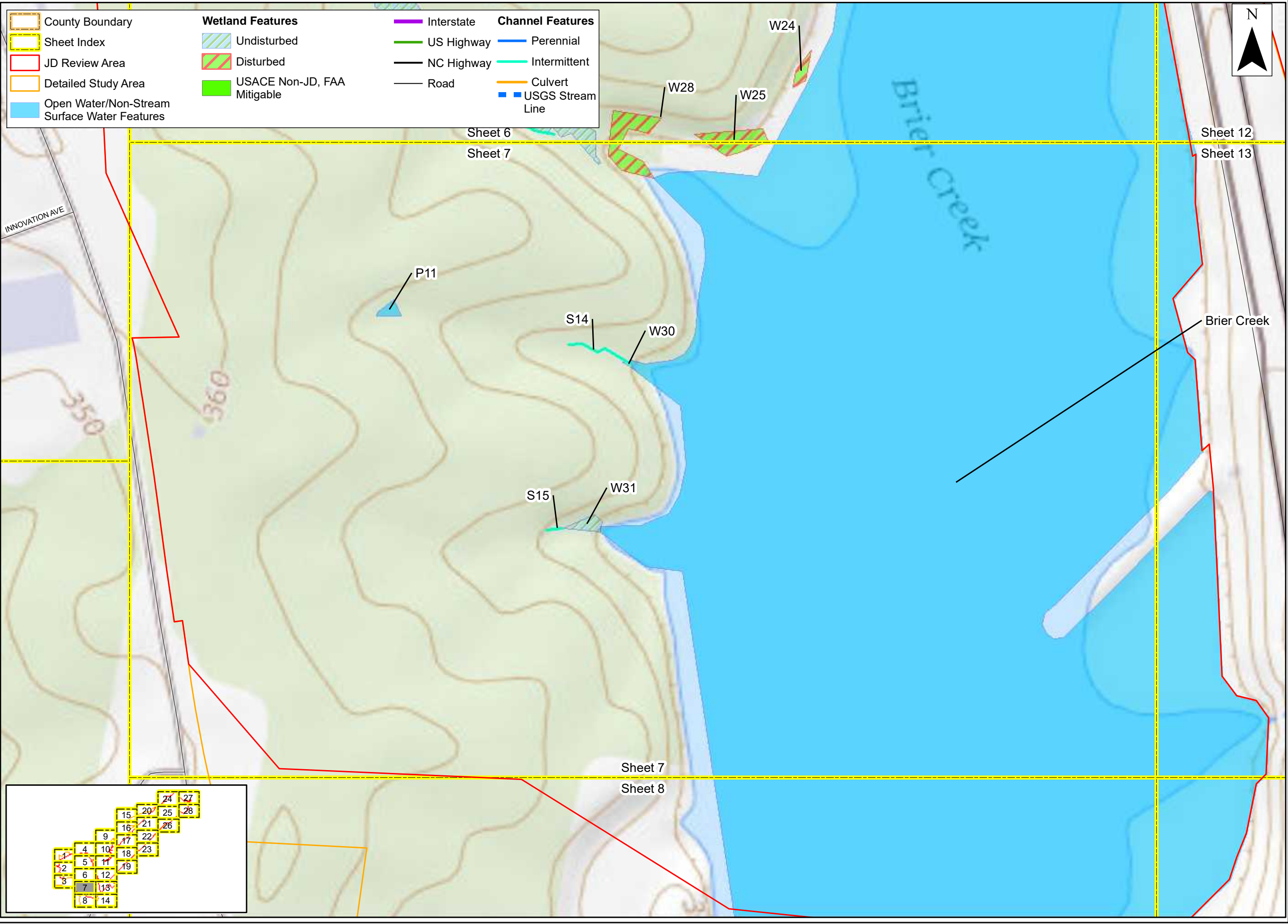


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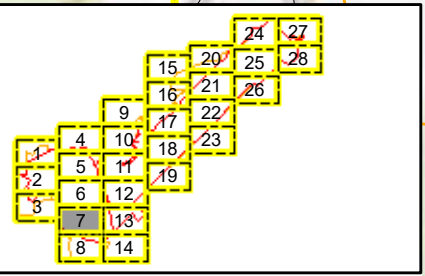
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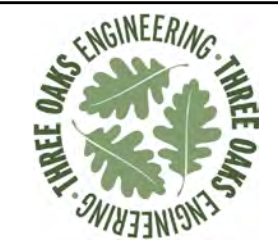


- County Boundary
- Sheet Index
- JD Review Area
- Detailed Study Area
- Open Water/Non-Stream Surface Water Features

- Wetland Features**
- Undisturbed
  - Disturbed
  - USACE Non-JD, FAA Mitigable

- Channel Features**
- Interstate
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  - NC Highway
  - Road
  - Perennial
  - Intermittent
  - Culvert
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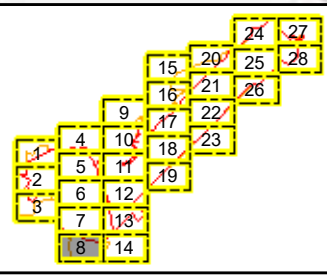
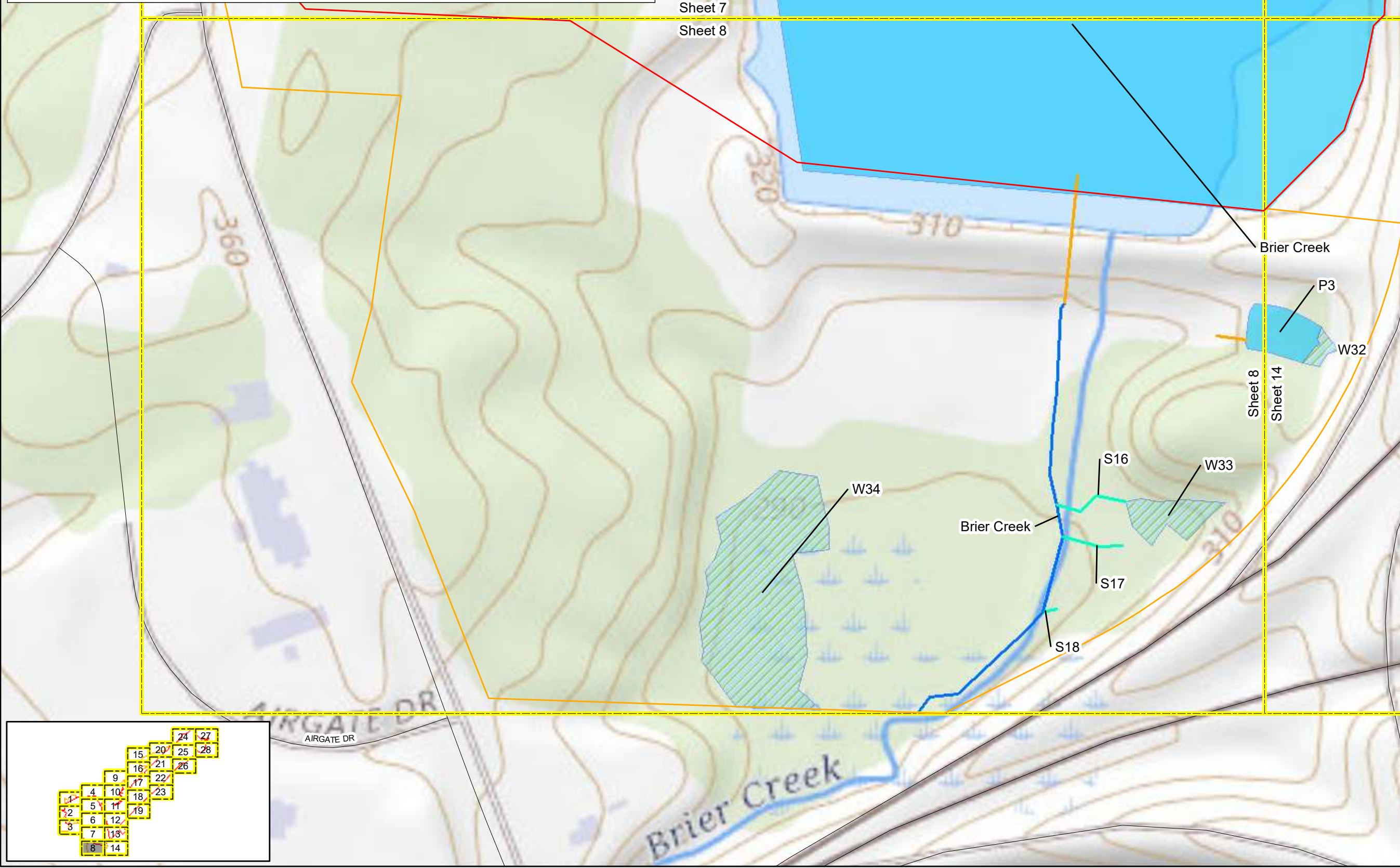
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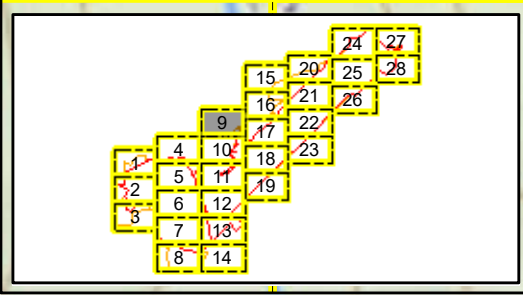
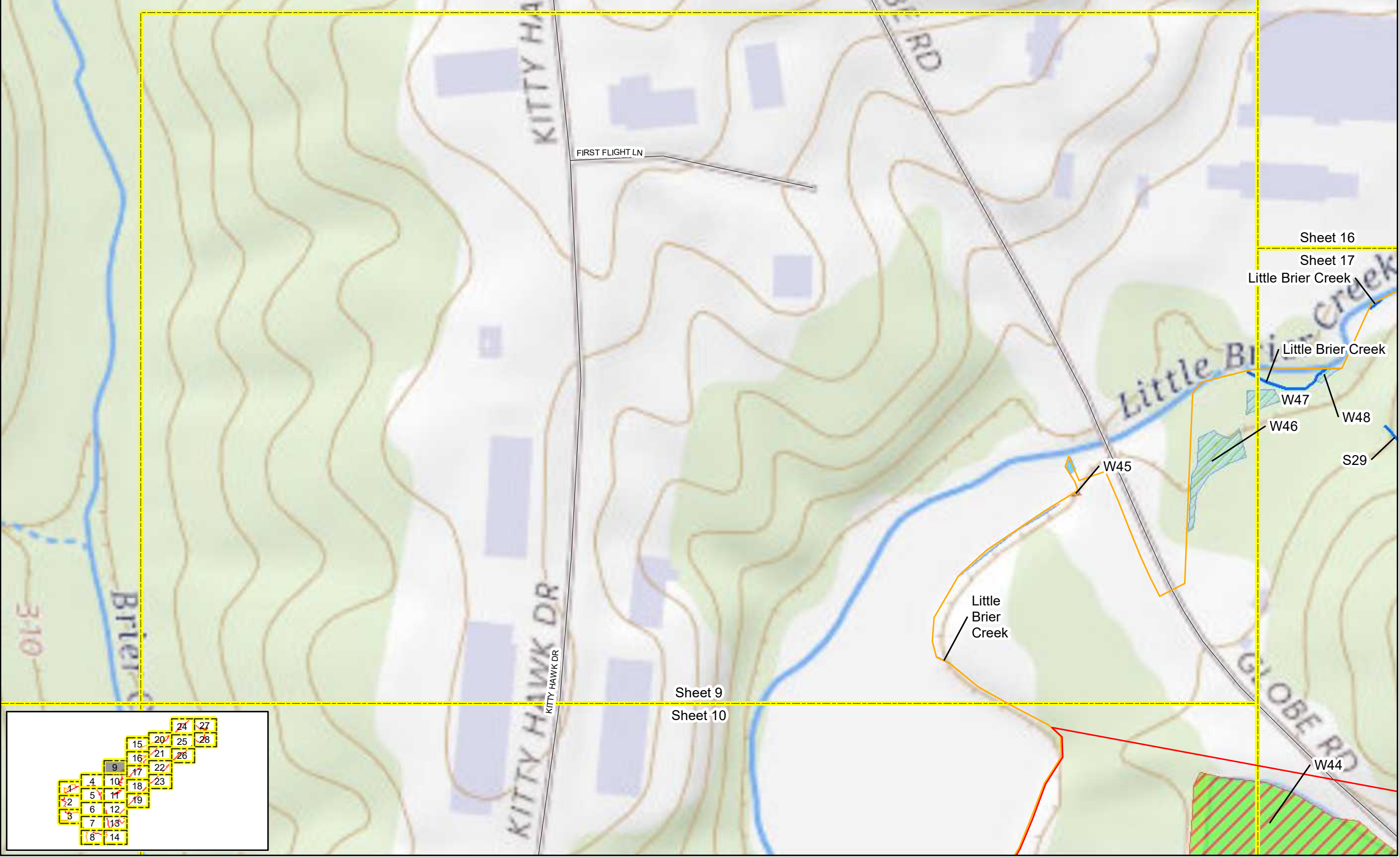
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Sheet 9

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			USGS Stream Line



Sheet 9  
Sheet 10

Sheet 16  
Sheet 17

Little Brier Creek

Little Brier Creek

W47

W46

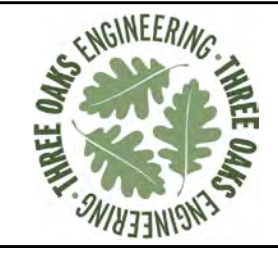
W48

S29

W45

Little  
Brier  
Creek

W44



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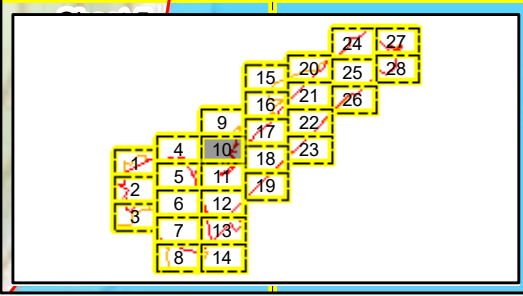
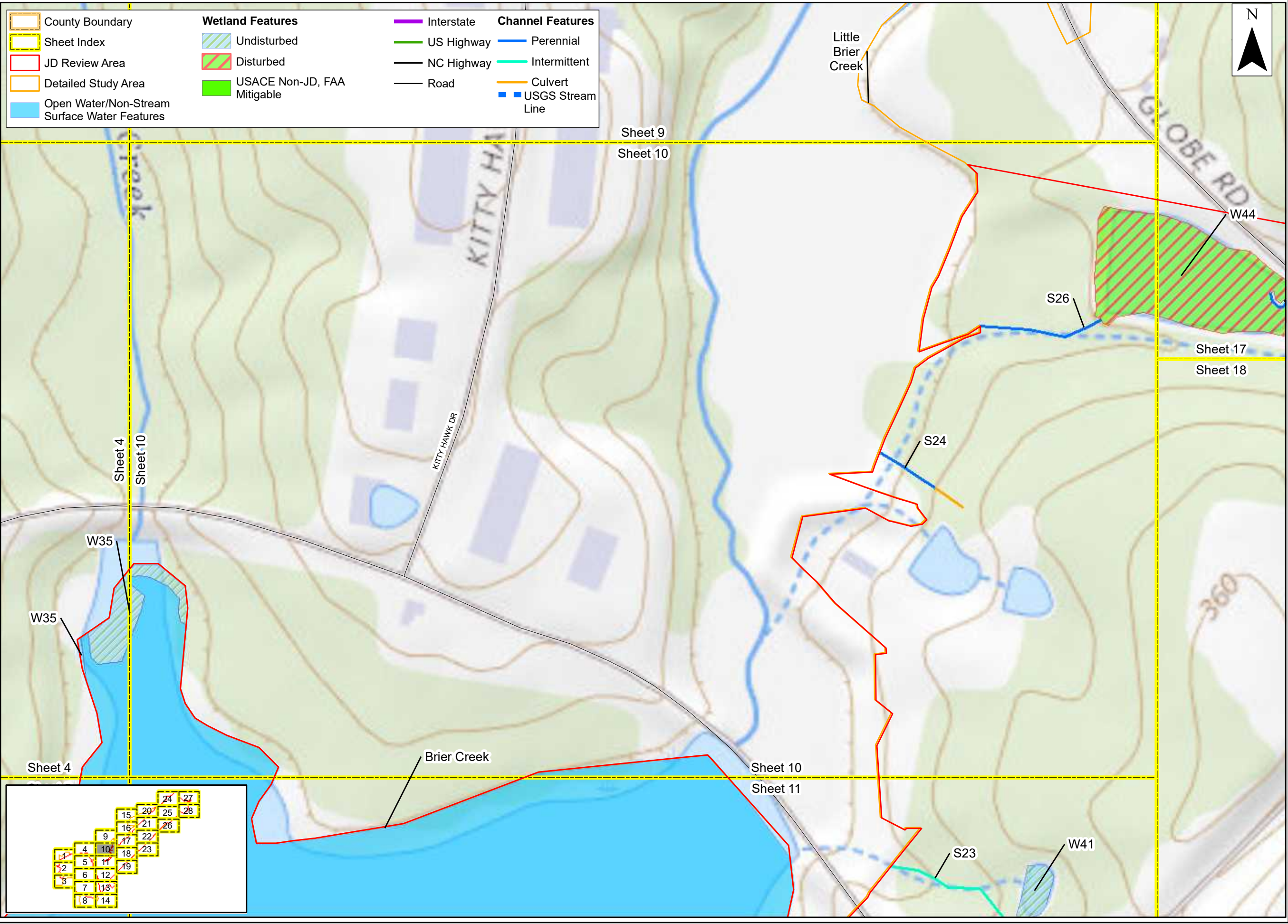
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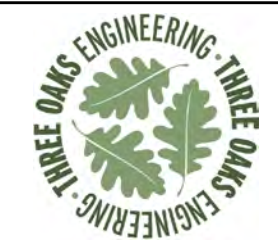
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Sheet 10

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
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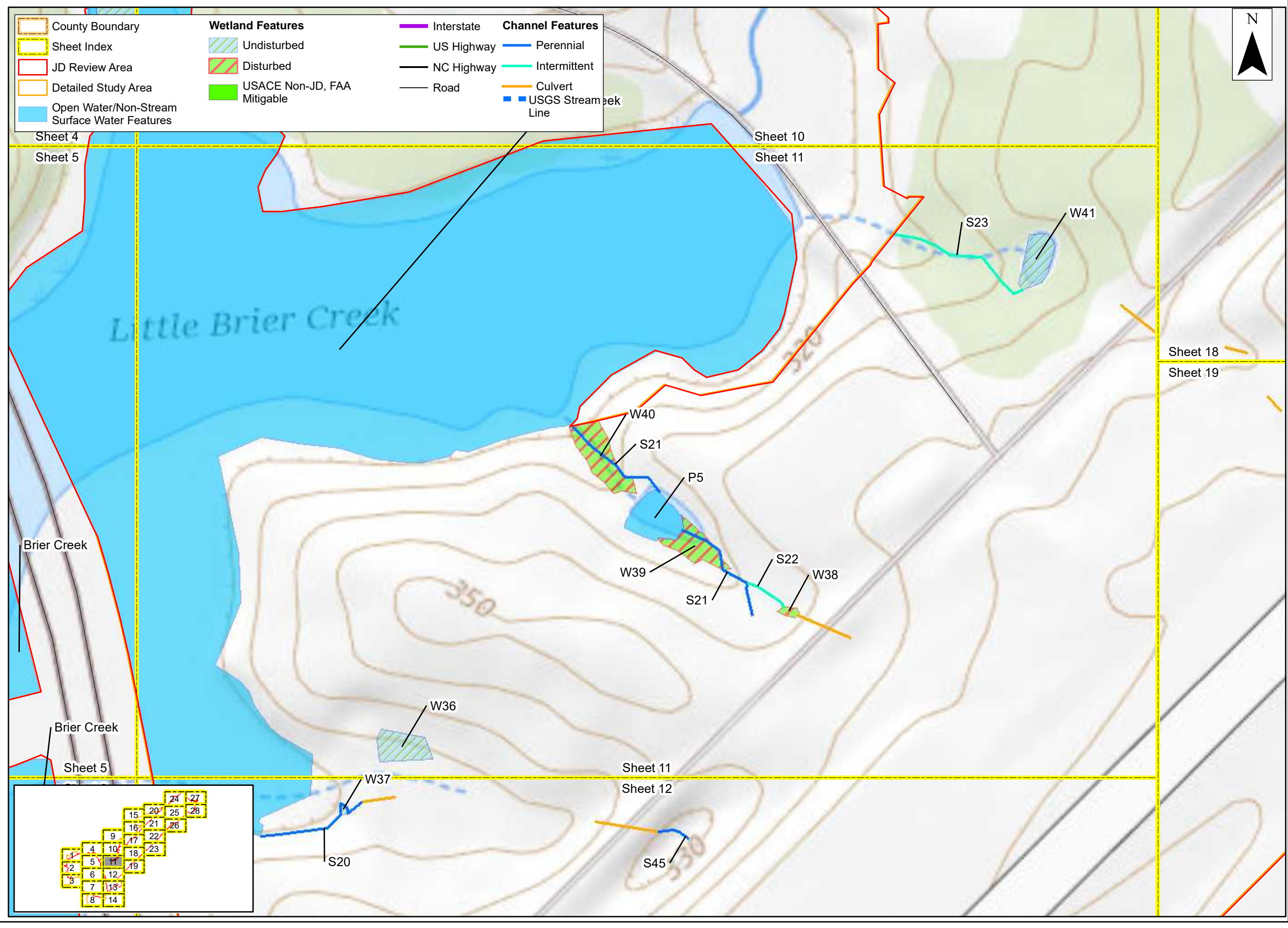
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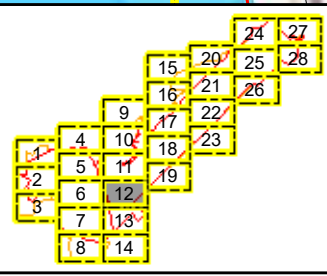
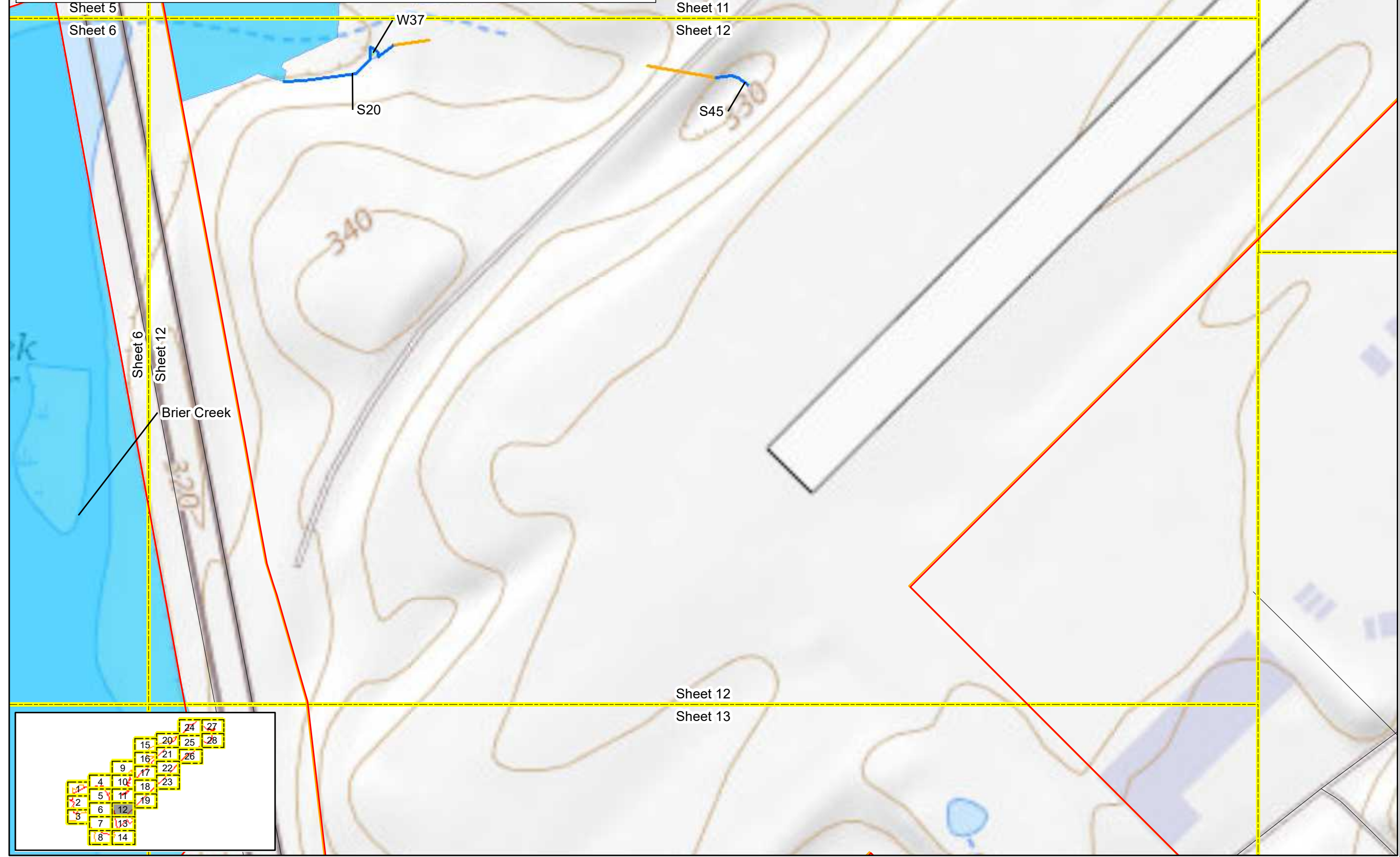
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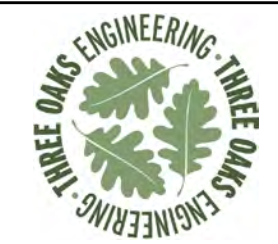
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Sheet 12

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			USGS Stream Line





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Scale: 0 100 200 Ft

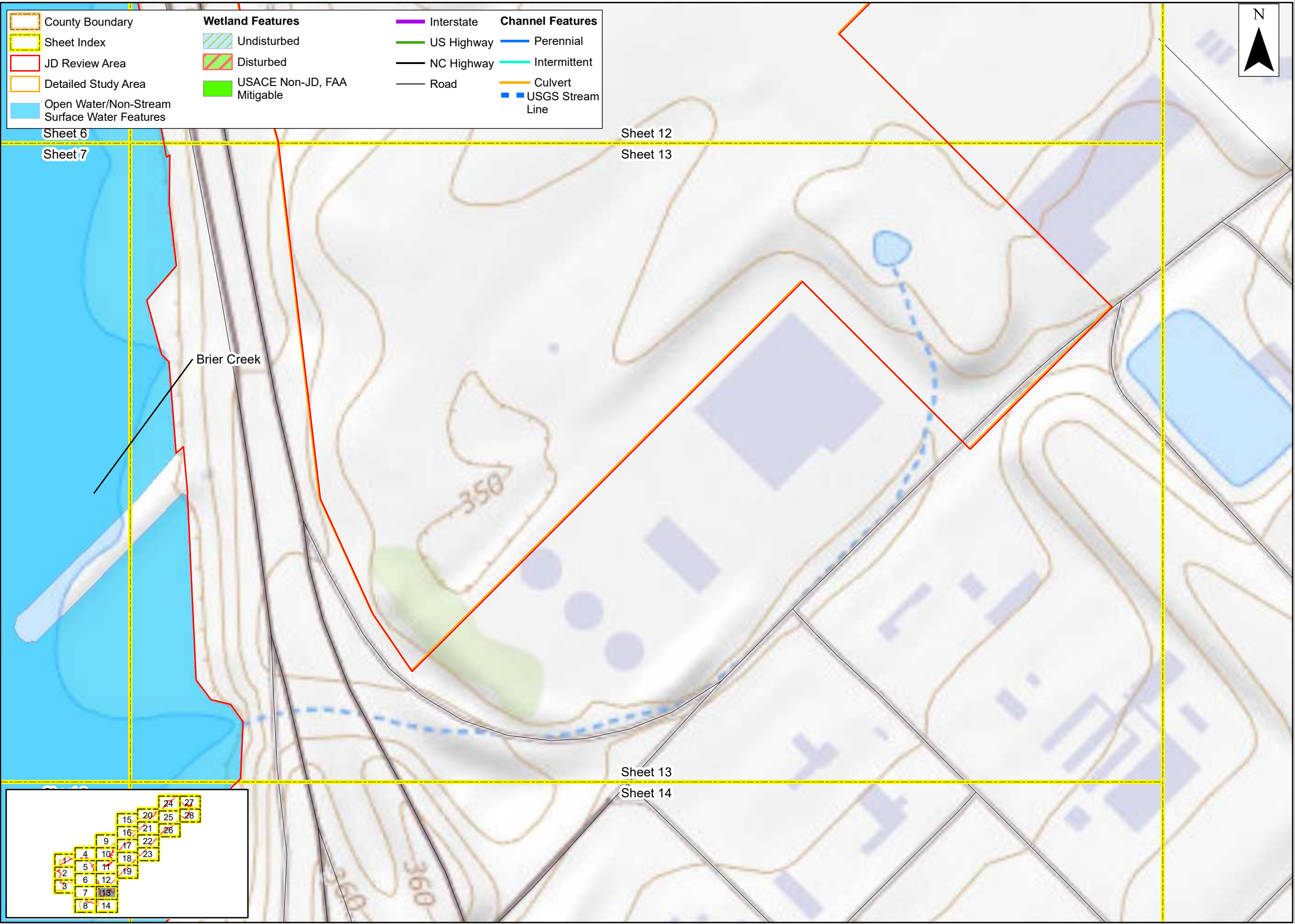
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County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			USGS Stream Line

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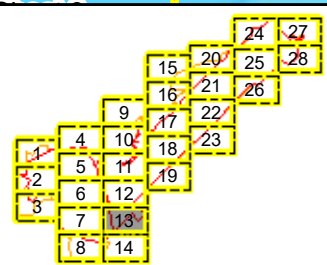
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Sheet 14

Brier Creek

350

360





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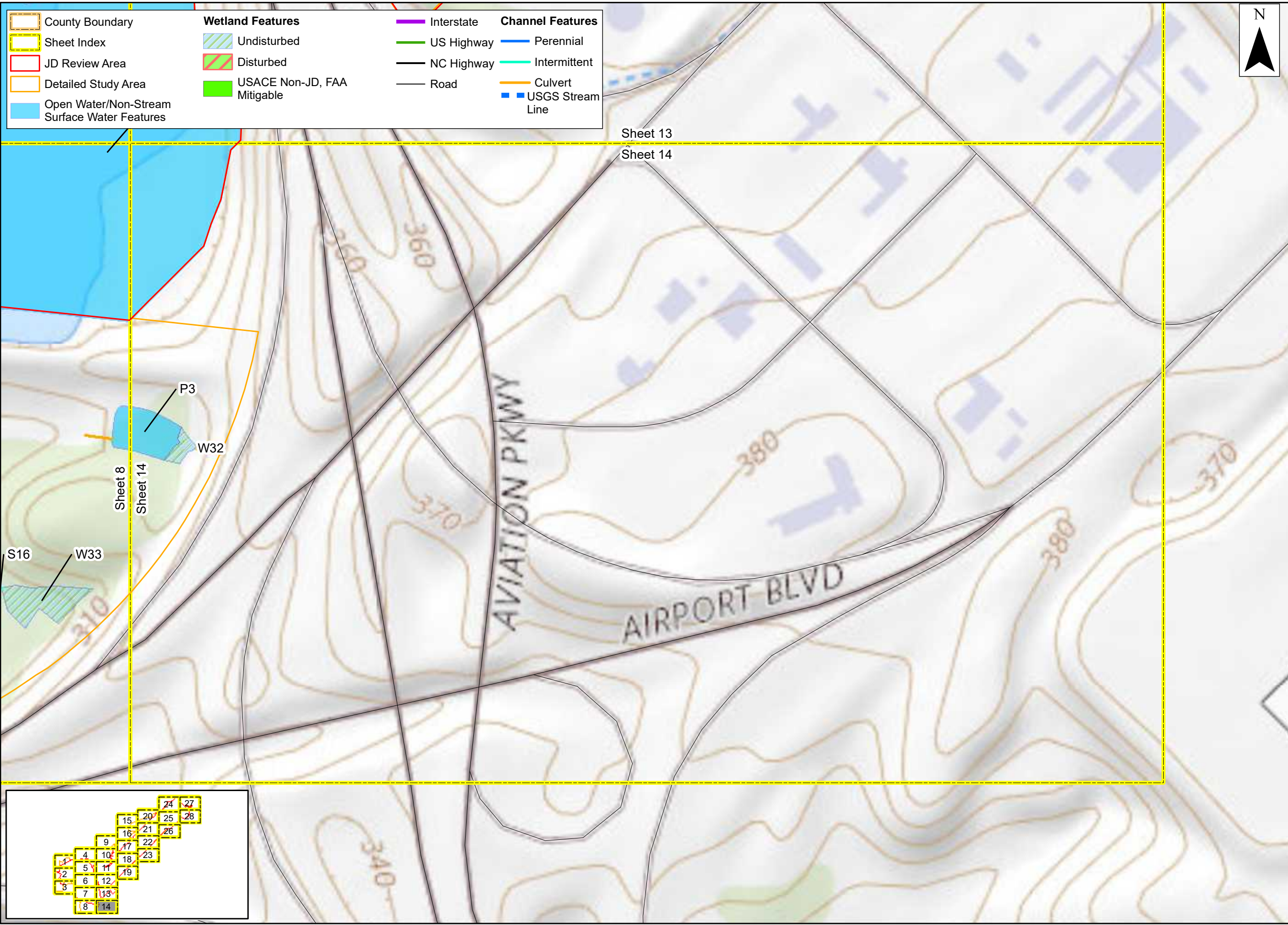
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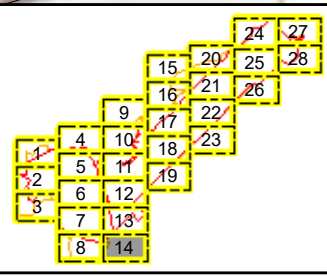
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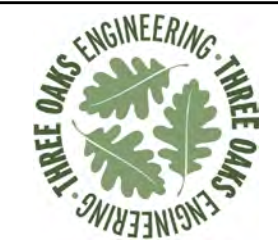
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County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
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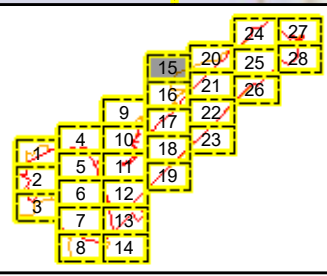
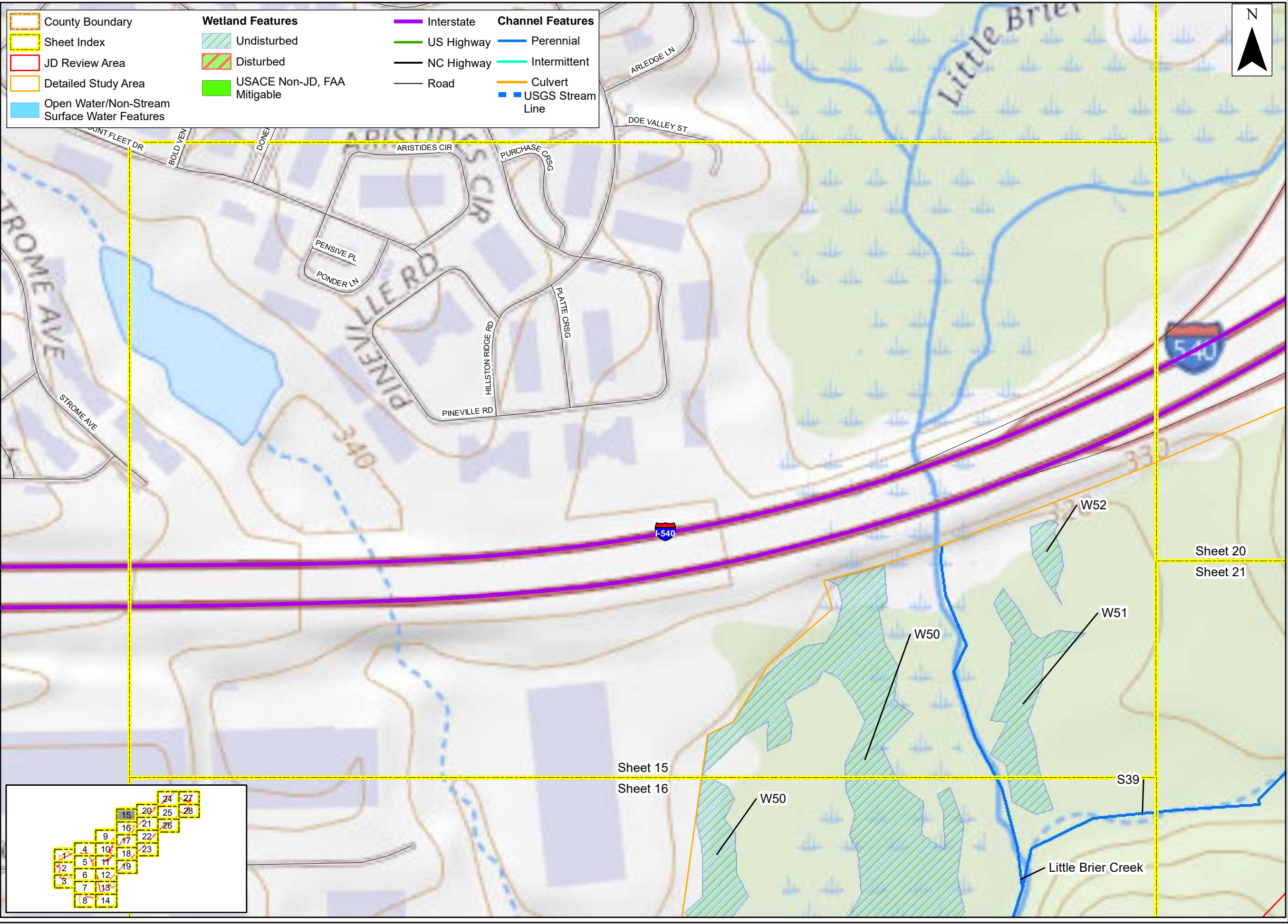
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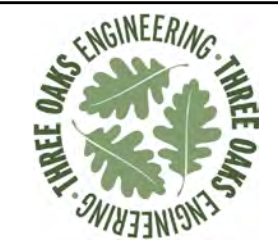
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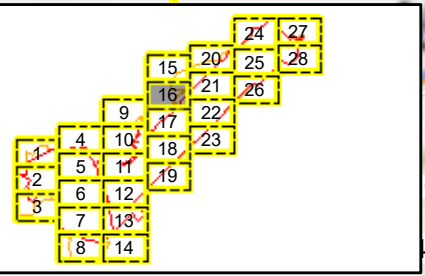
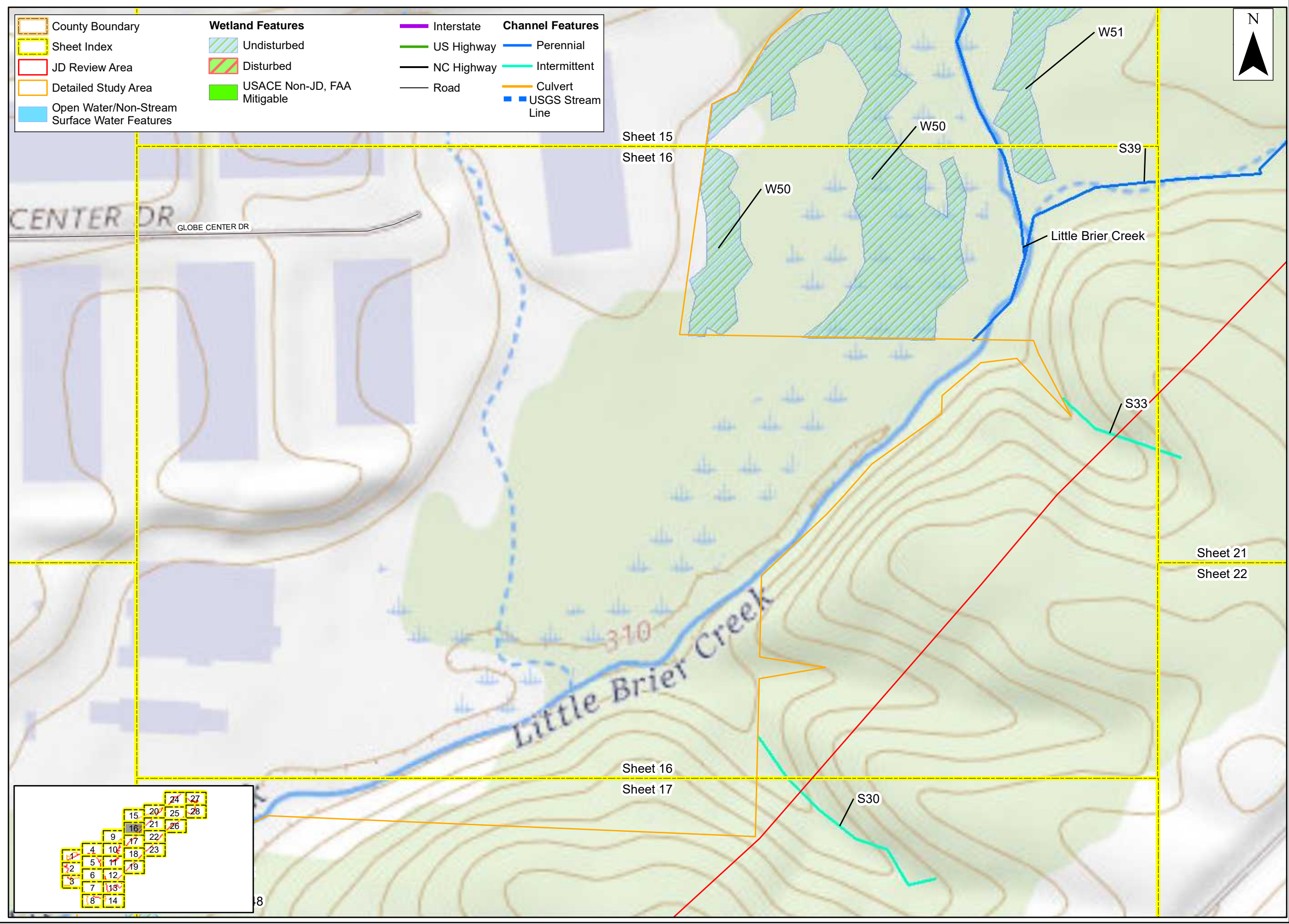
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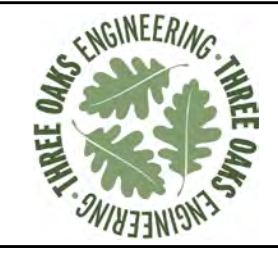
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Figure  
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Sheet 16

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			USGS Stream Line





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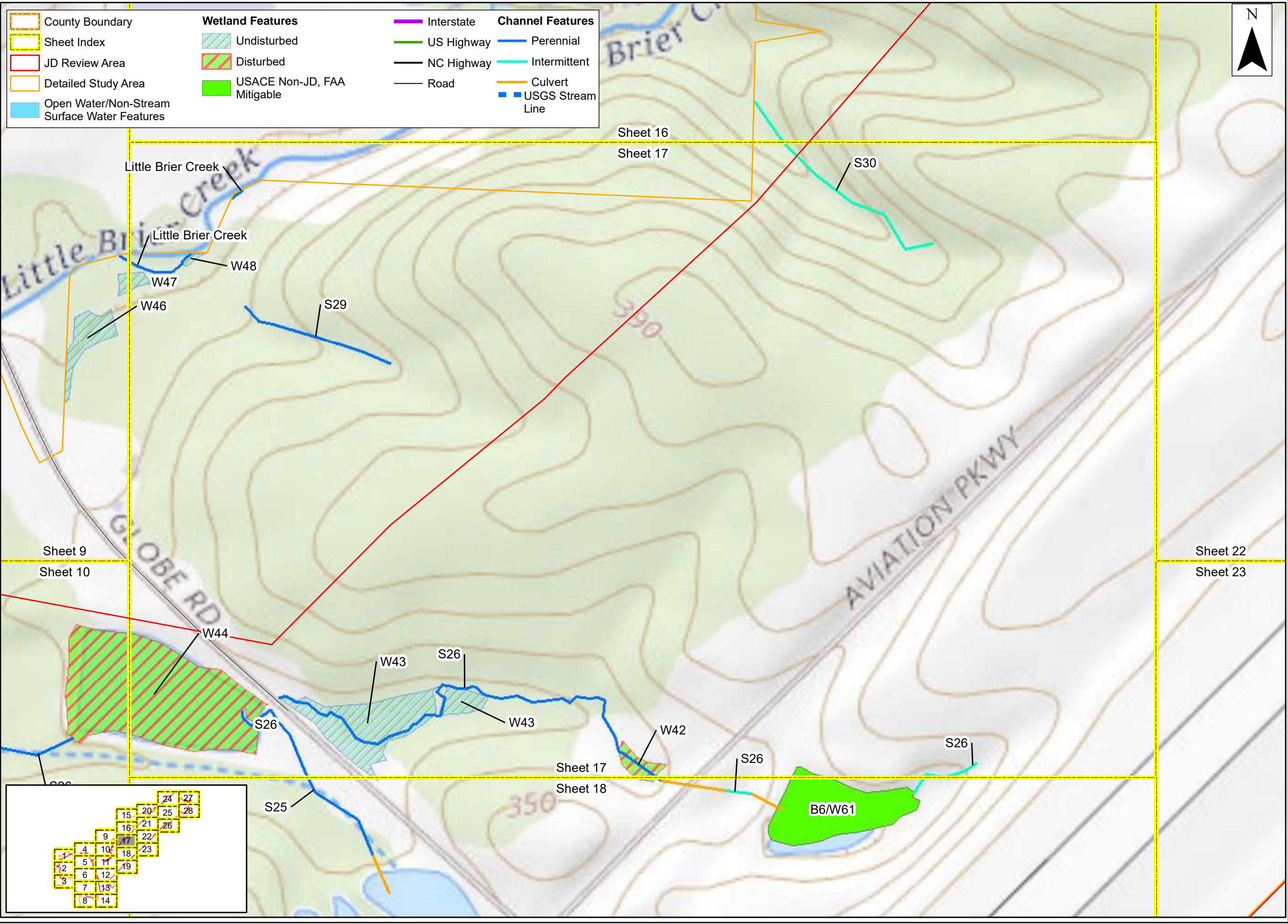
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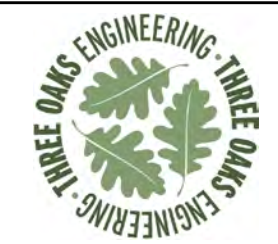
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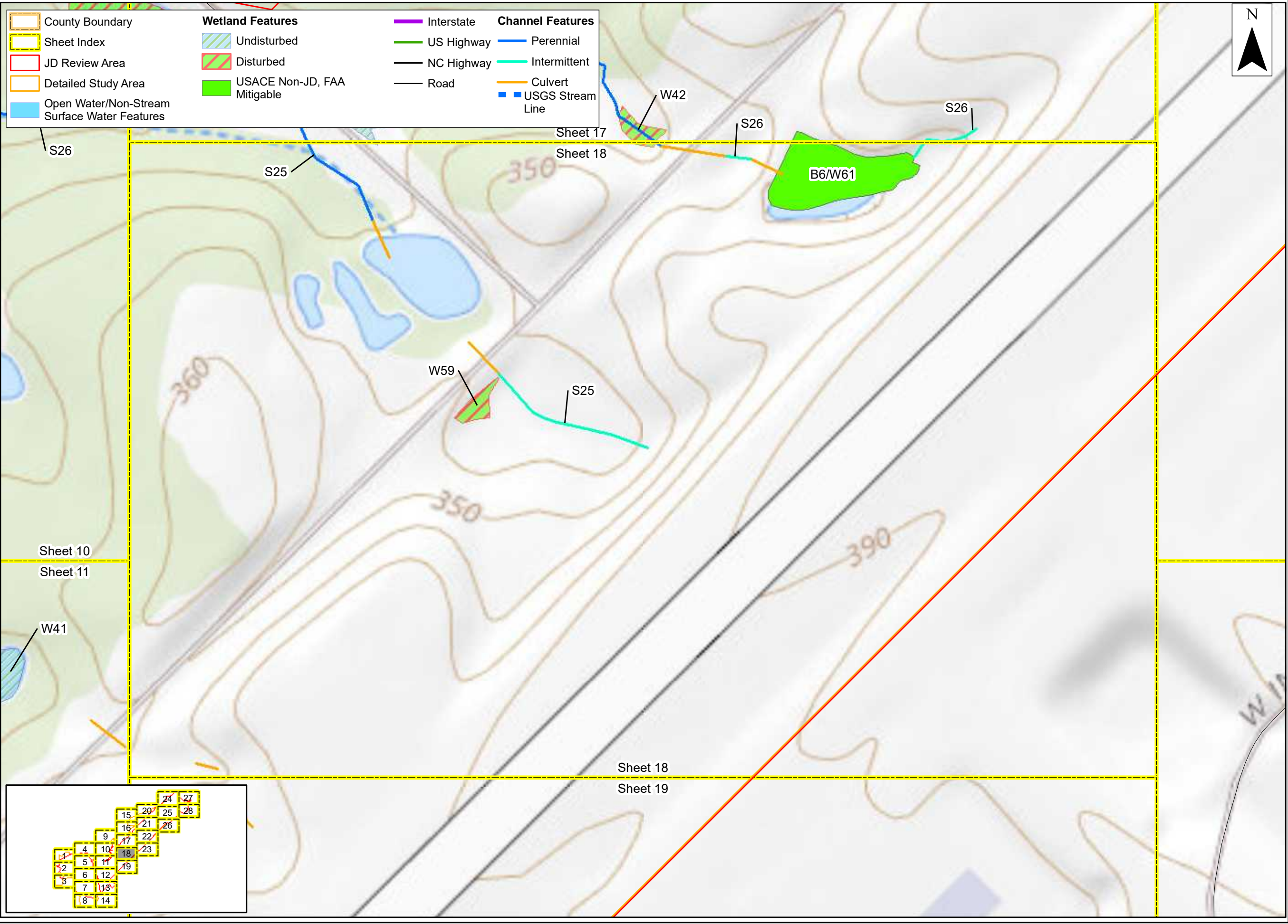
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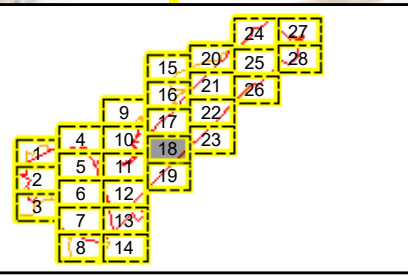
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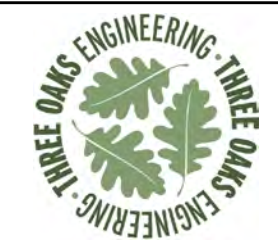
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County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			USGS Stream Line







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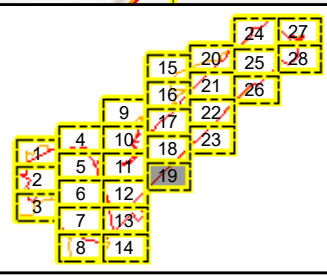
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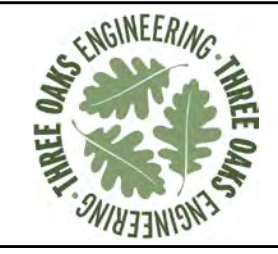
County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
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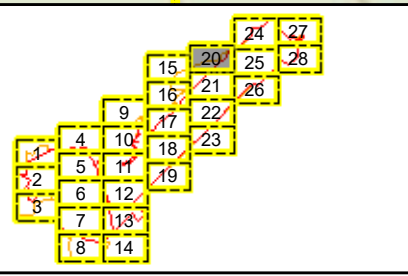
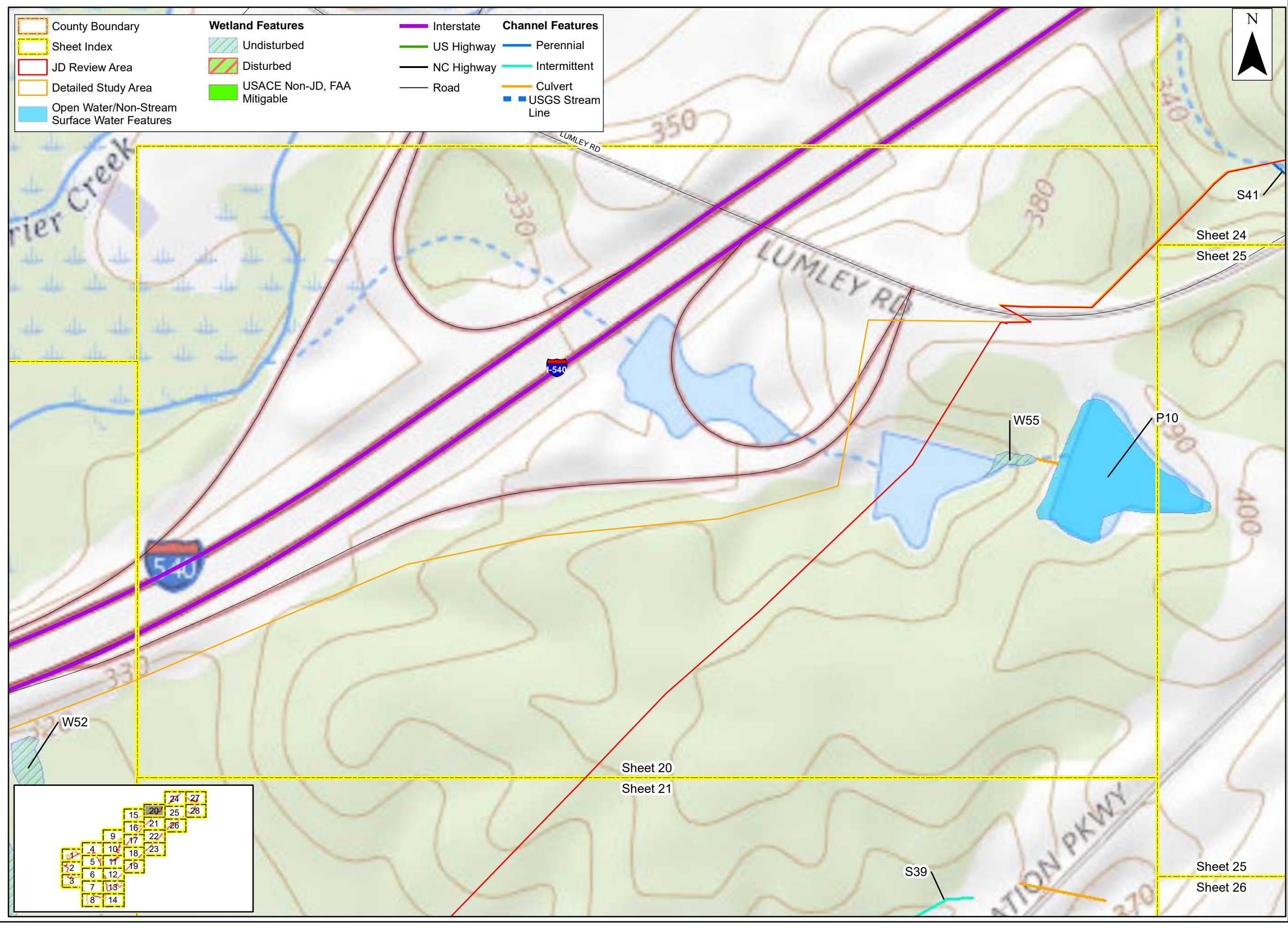
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County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
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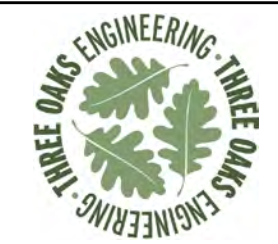


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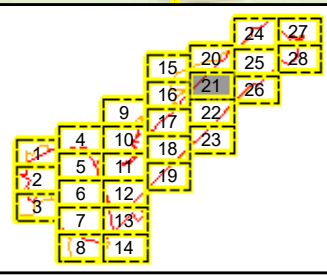
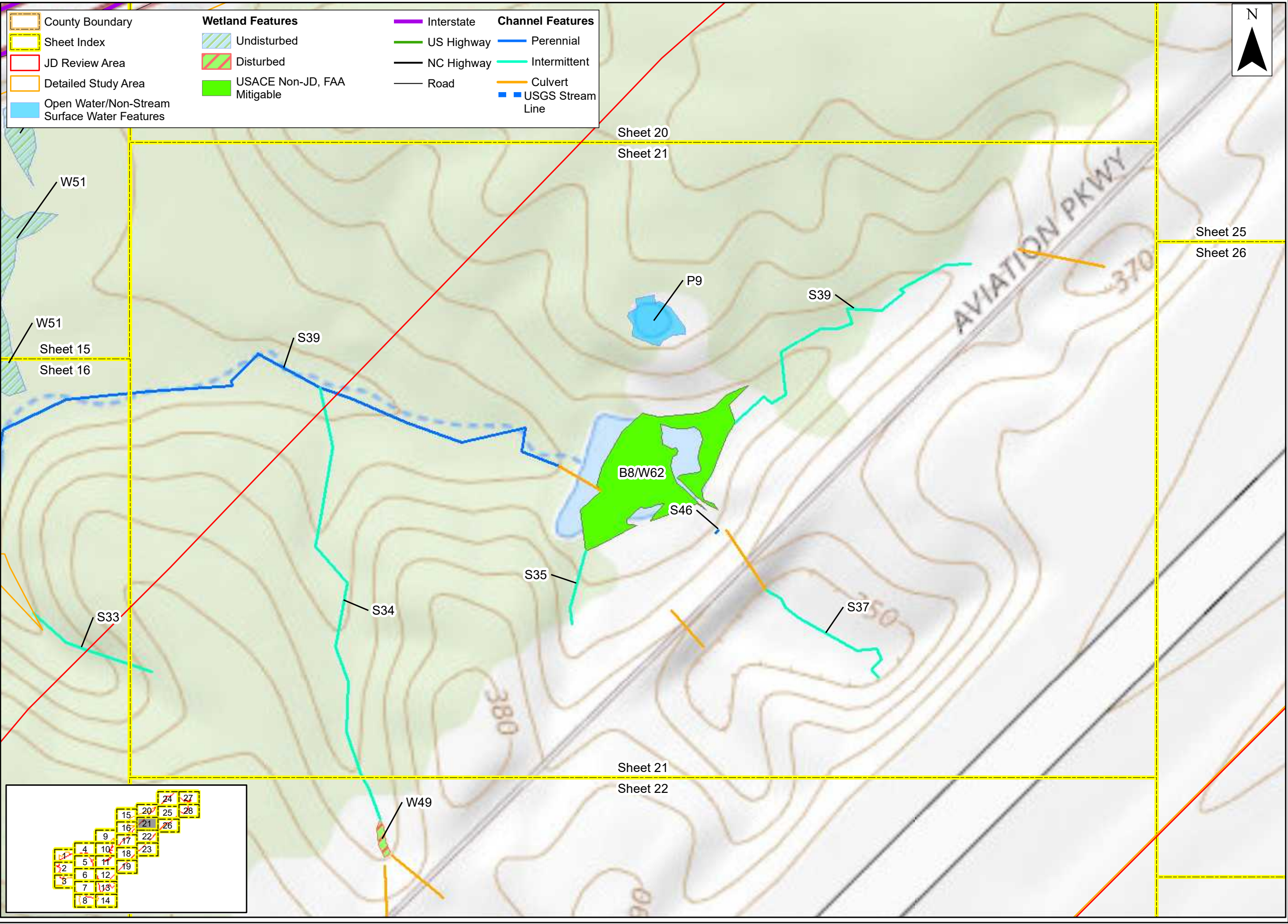
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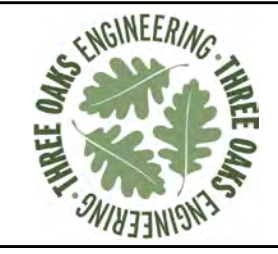
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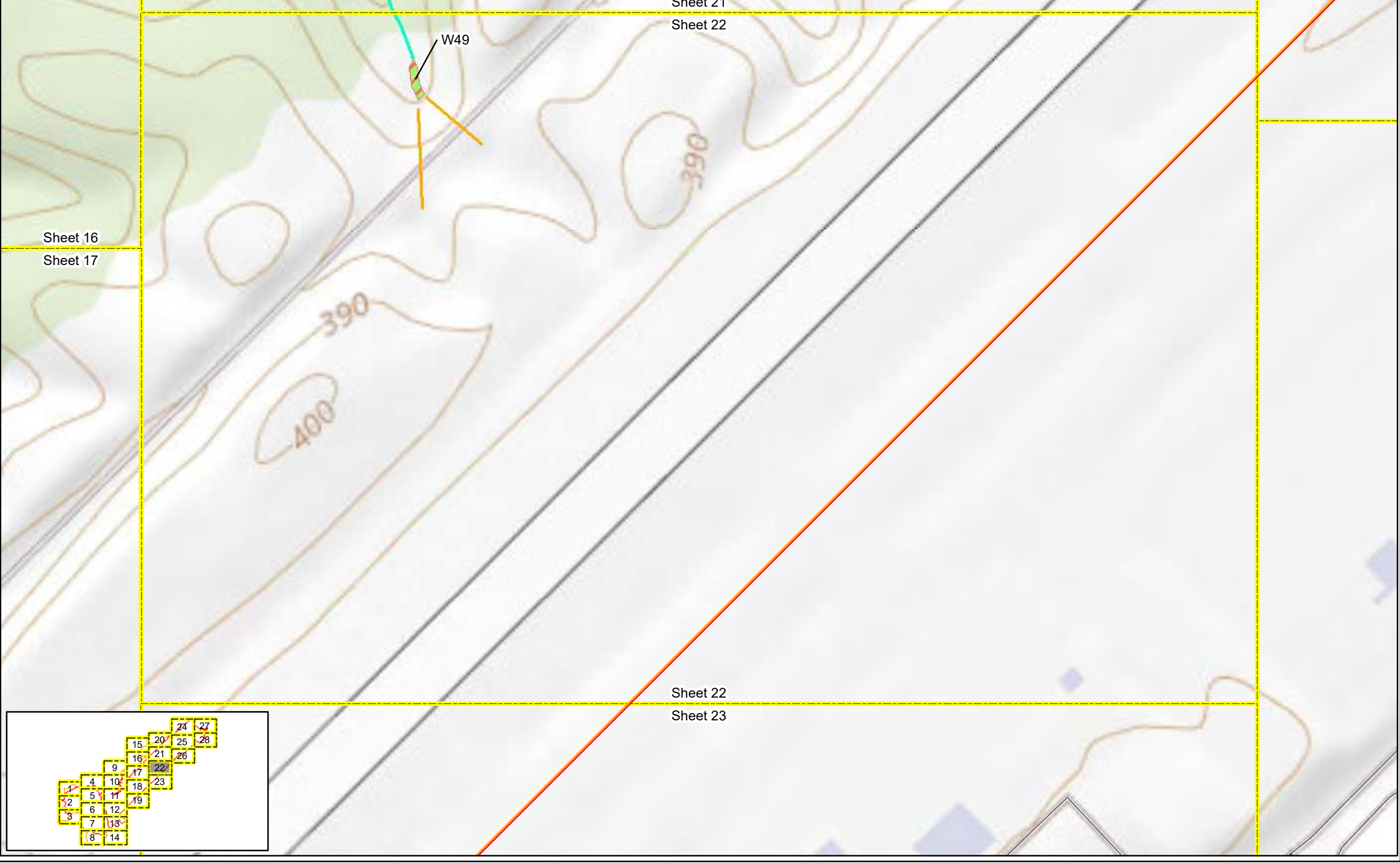
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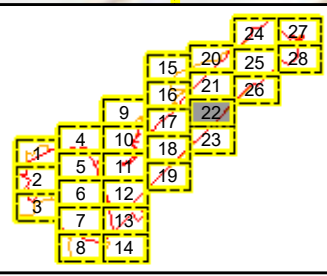
County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			USGS Stream Line

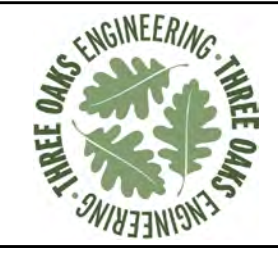


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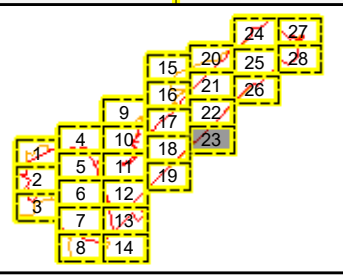
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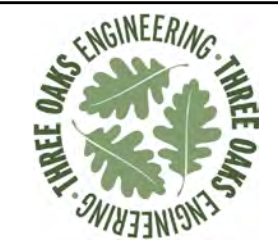
County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
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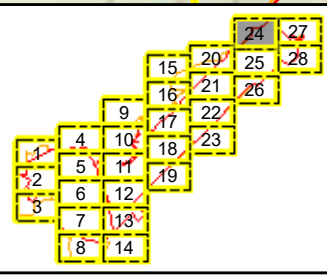
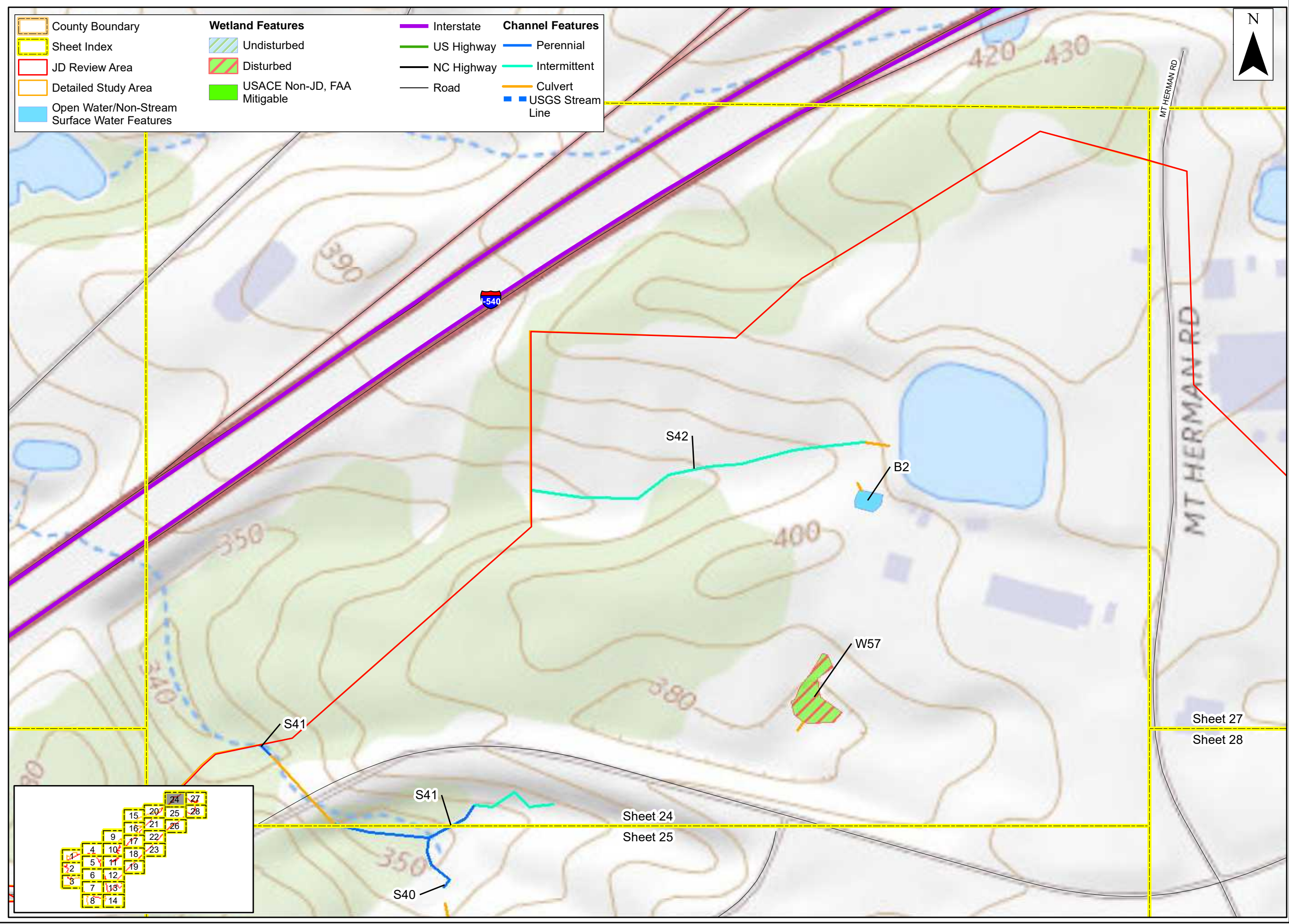
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County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
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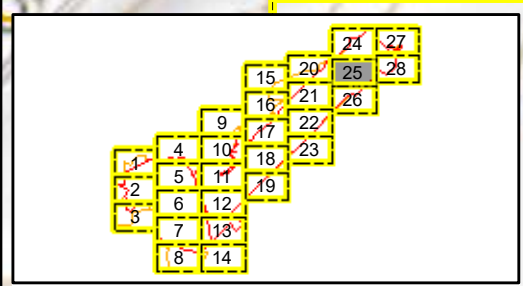
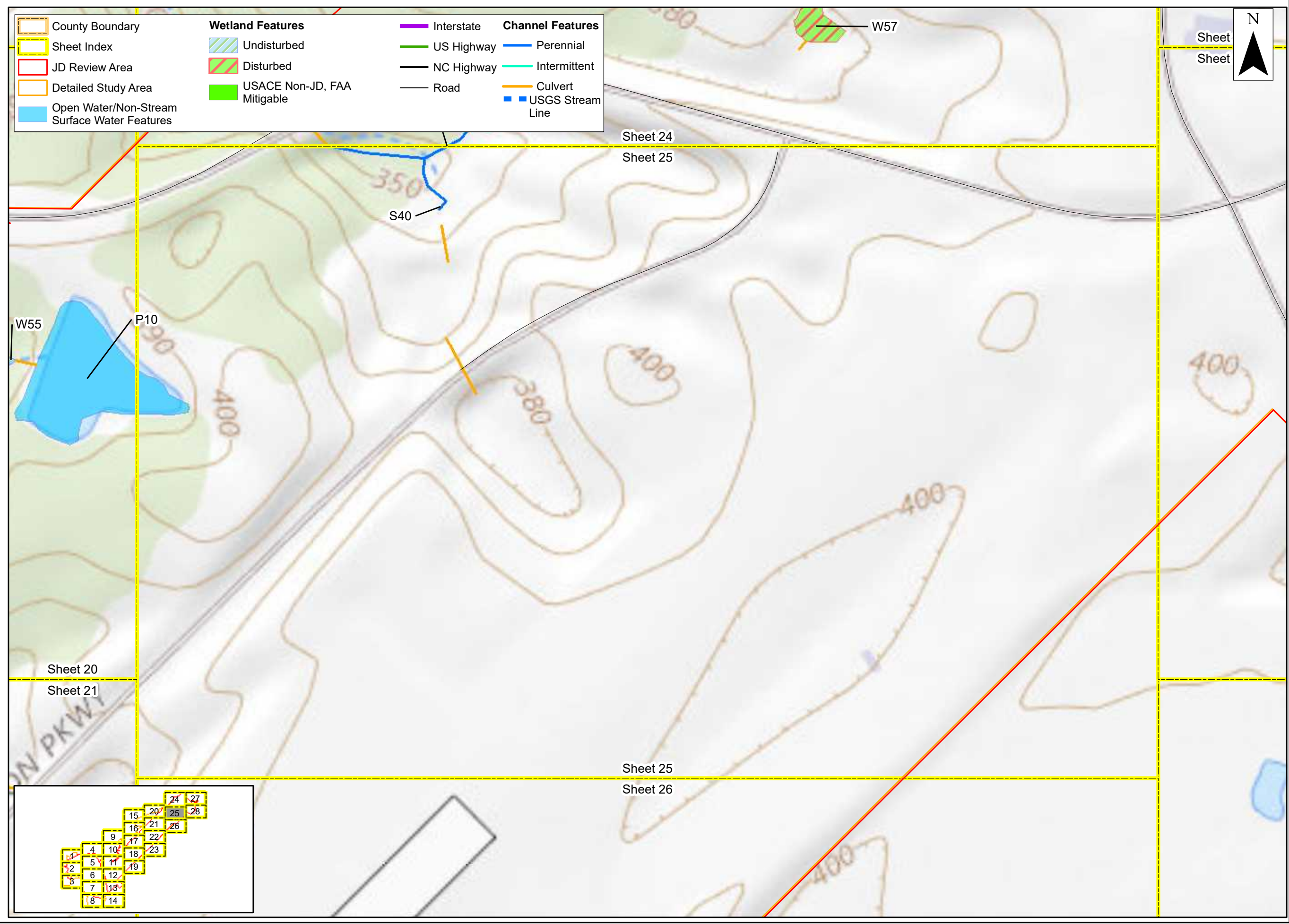
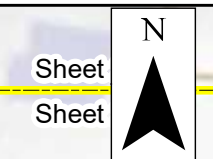
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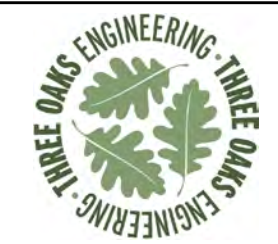
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County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
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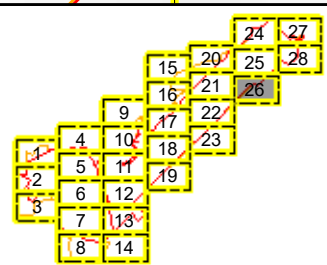
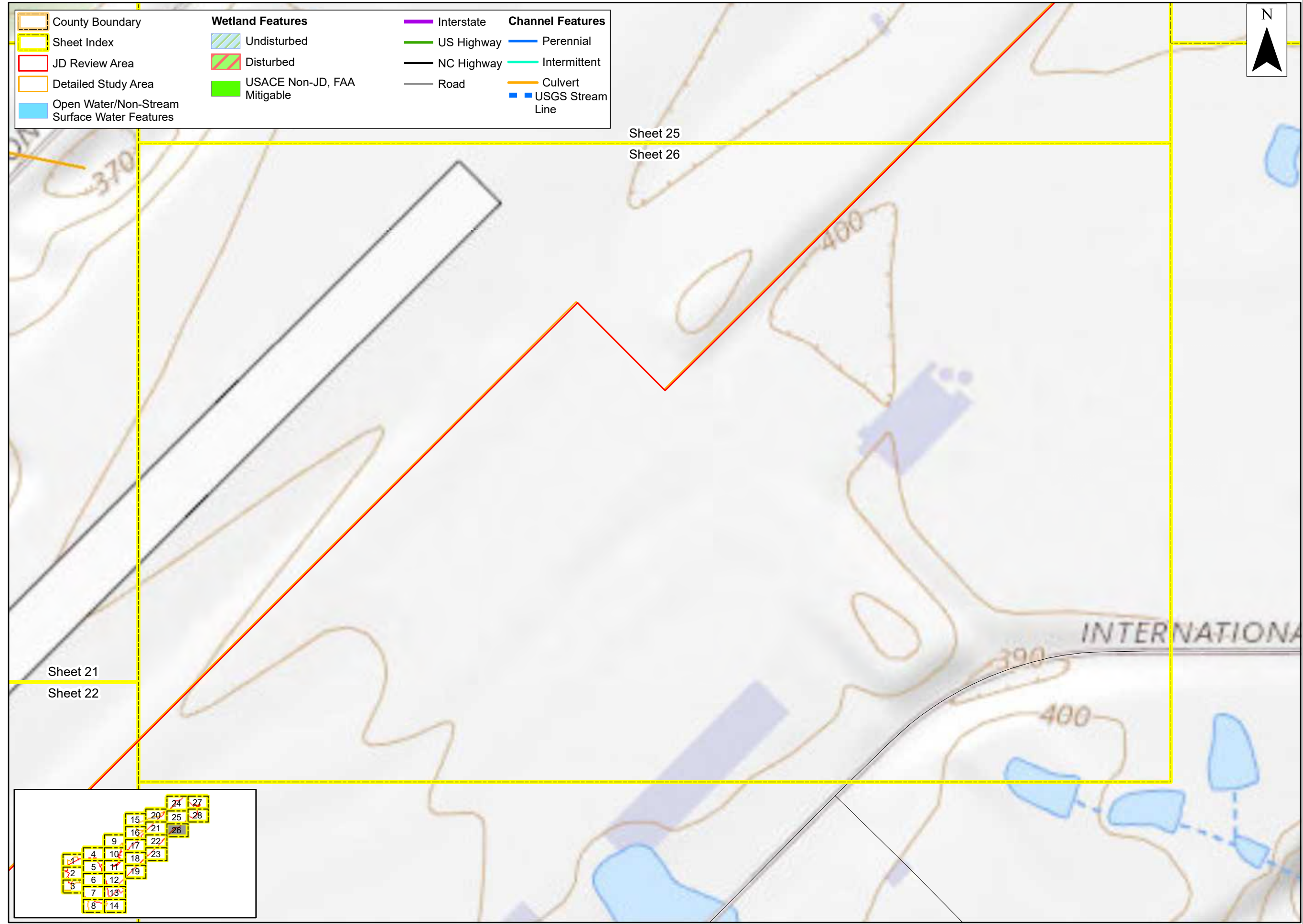
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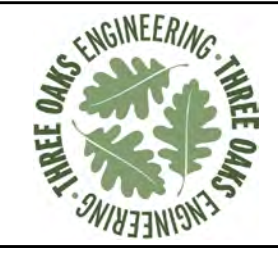
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County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
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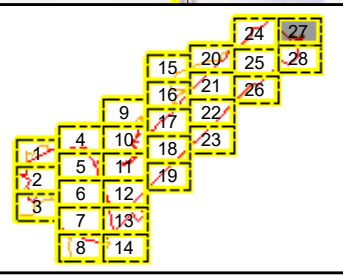
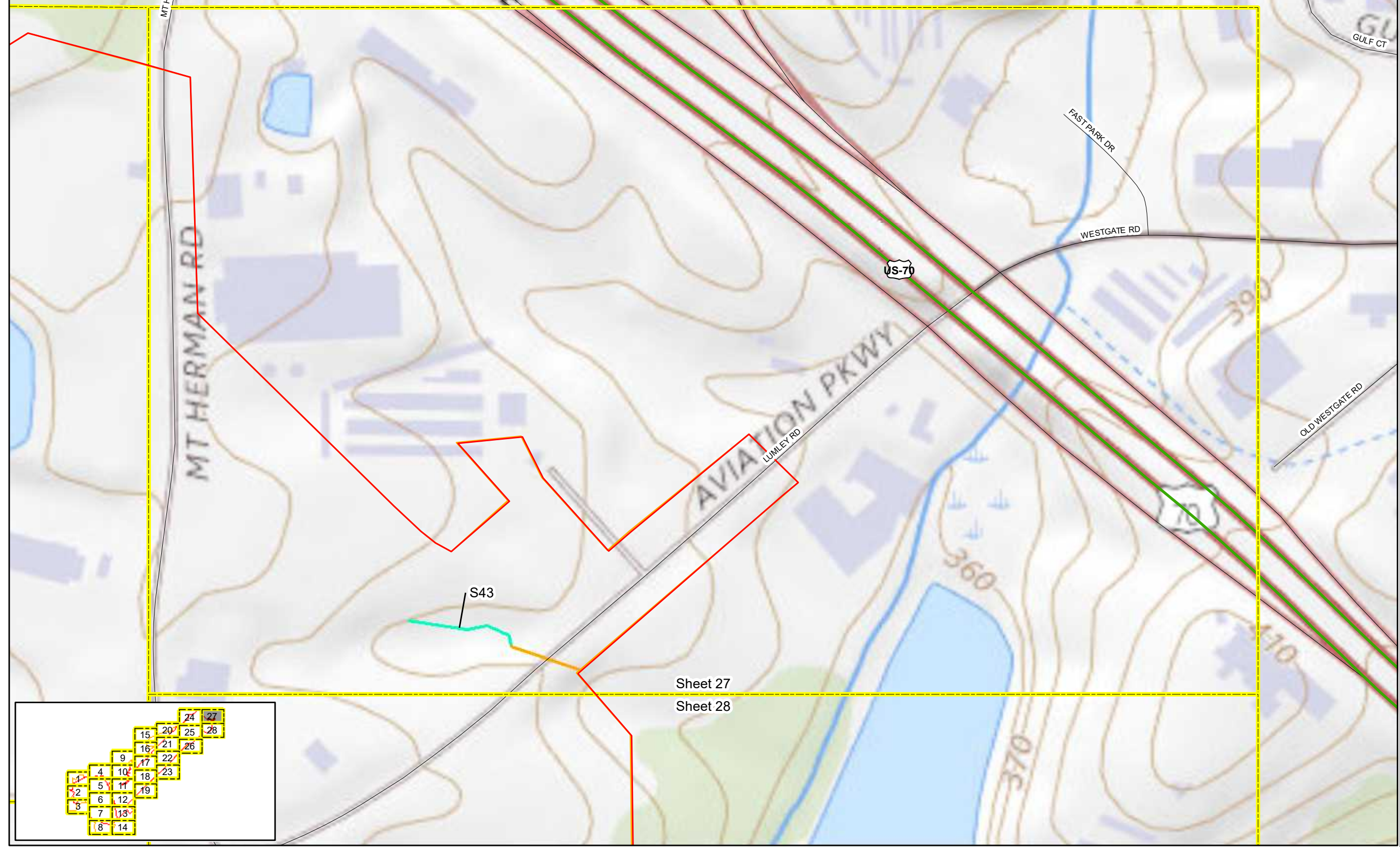
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County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
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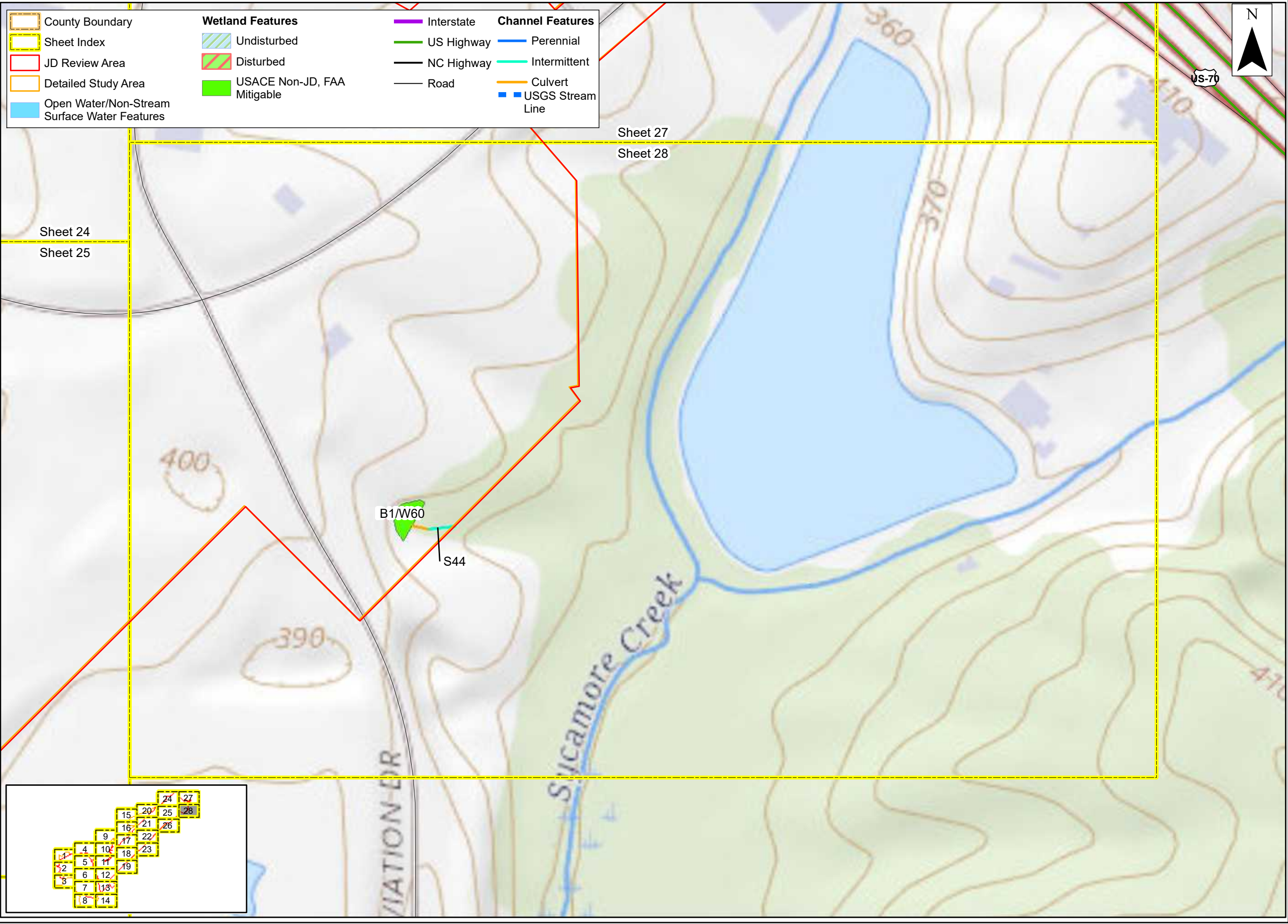
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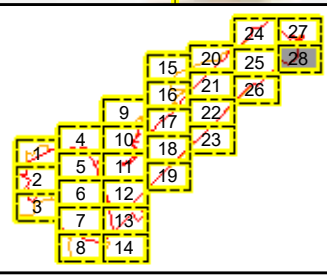
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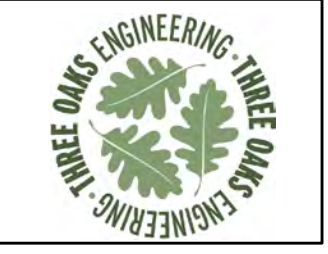
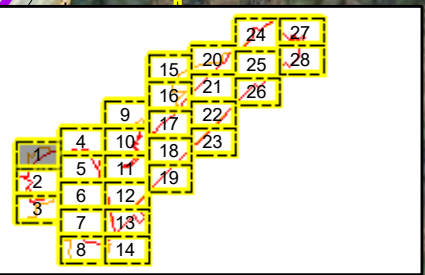
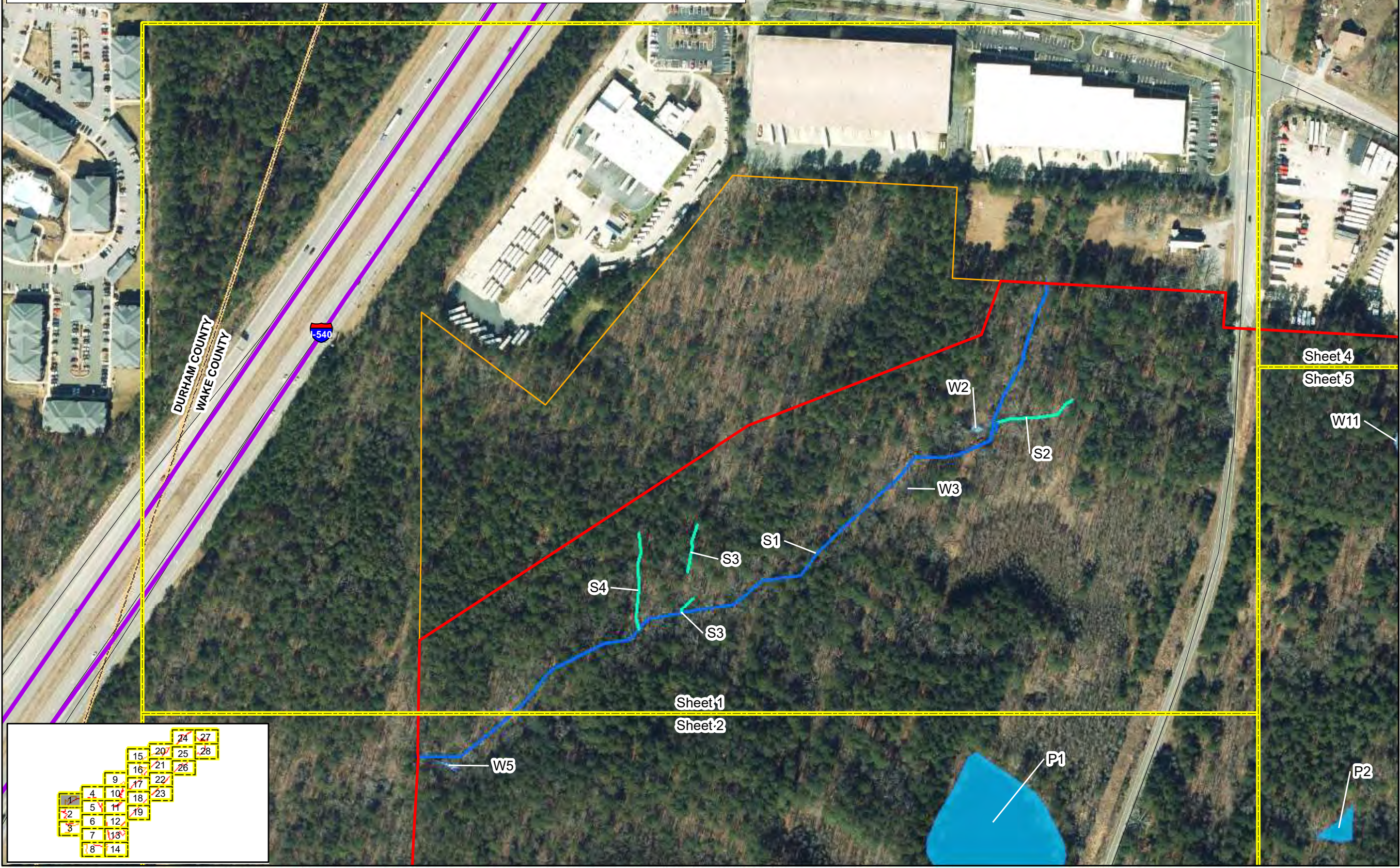
County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			USGS Stream Line

Sheet 24  
Sheet 25

Sheet 27  
Sheet 28



County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features		RDU Existing Stormwater Network	



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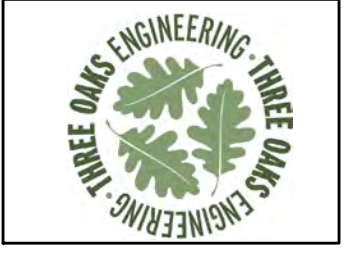
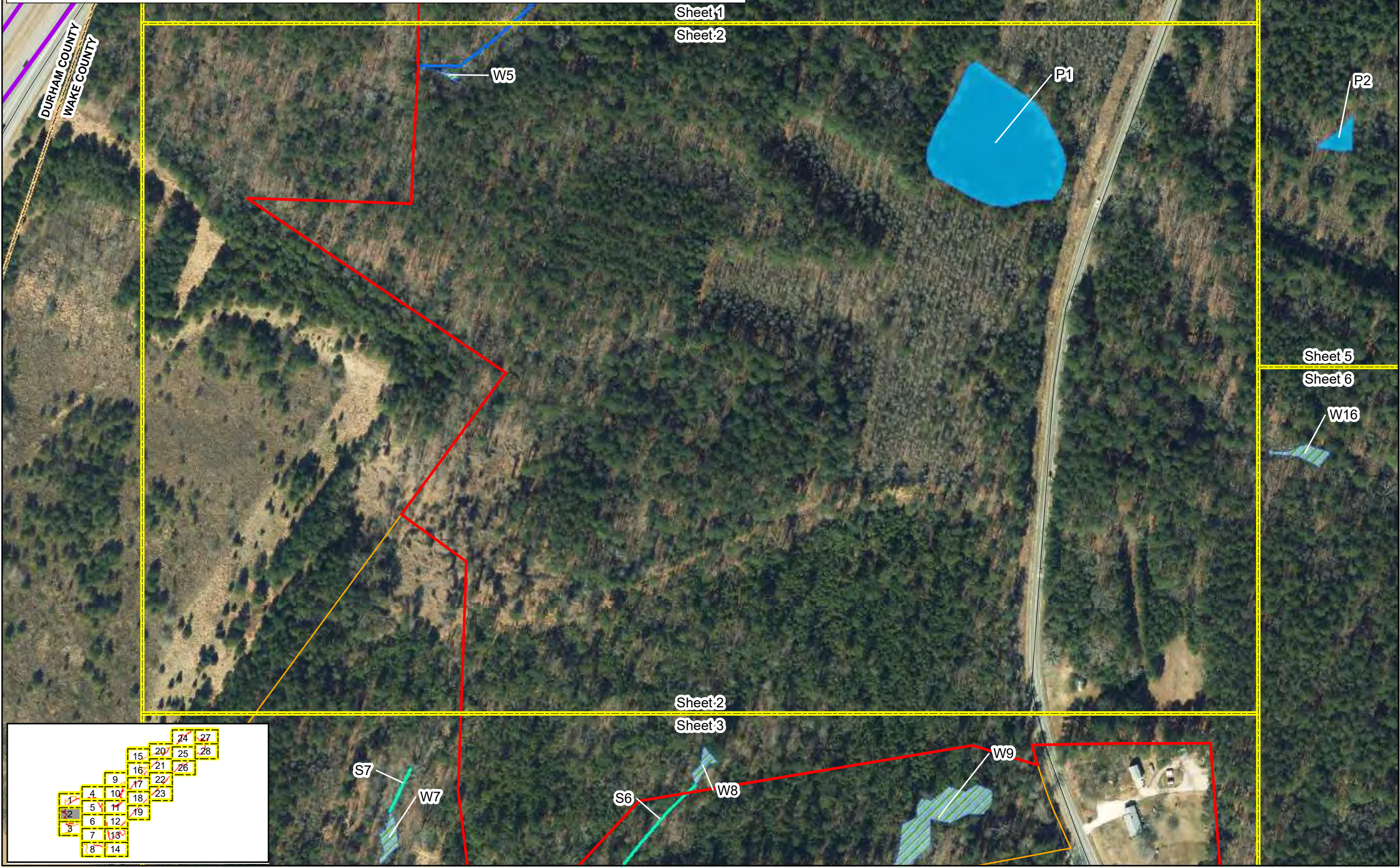
**Jurisdictional Features Map Over Orthoimagery**

**Wake County, North Carolina**

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KEMS	NDH

Figure  
**4**  
Sheet 1

	County Boundary	<b>Wetland Features</b>		Interstate	<b>Channel Features</b>	
	Sheet Index			US Highway		Perennial
	JD Review Area			NC Highway		Intermittent
	Detailed Study Area			Road		Culvert
	Open Water/Non-Stream Surface Water Features			RDU Existing Stormwater Network		



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**4**  
Sheet 2



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**Wake County, North Carolina**

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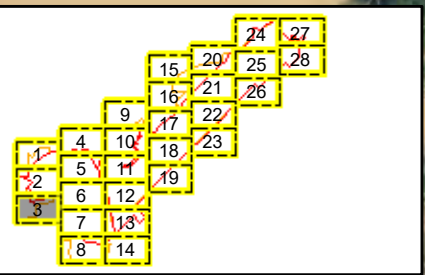
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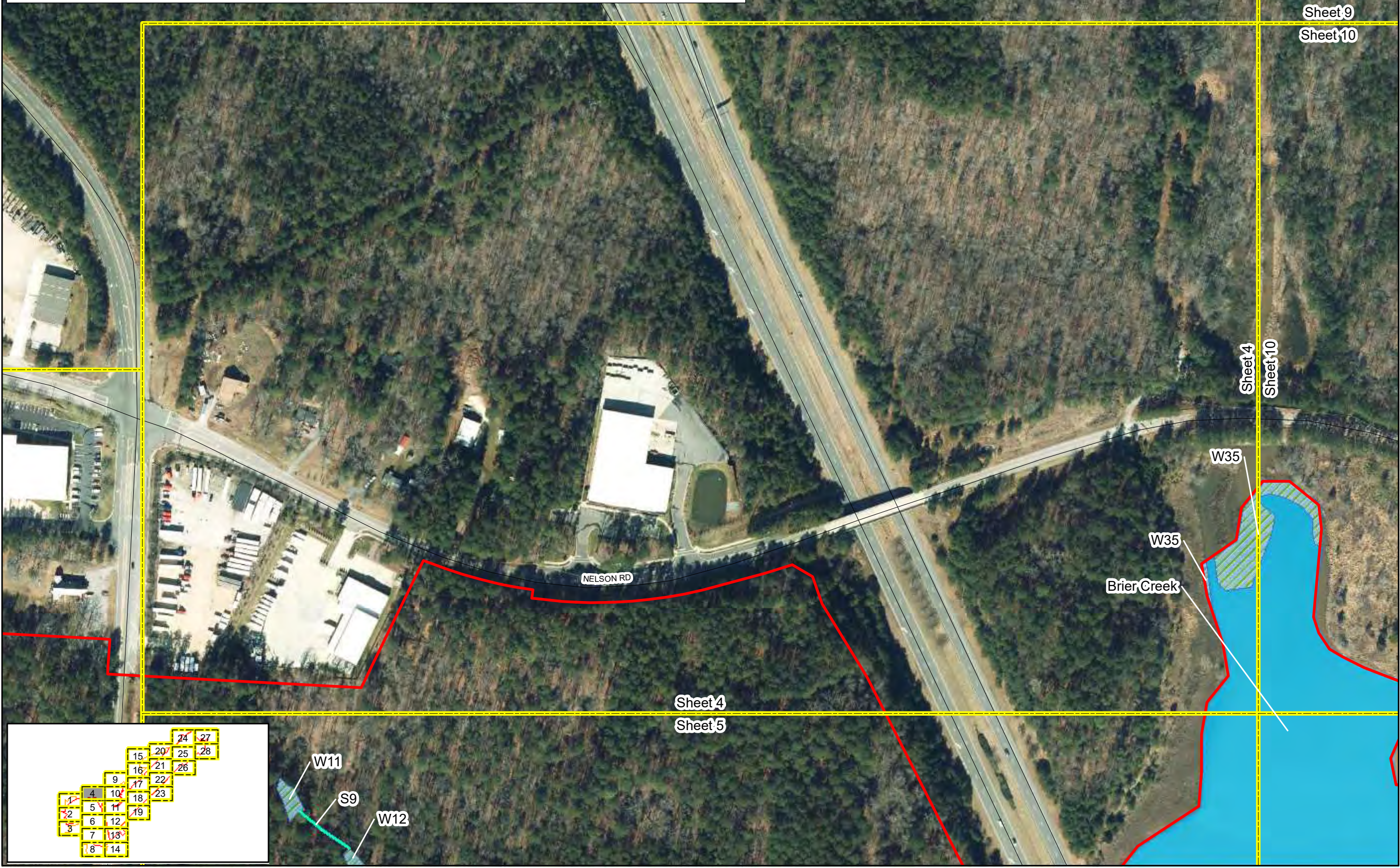
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Figure  
**4**  
Sheet 3

	County Boundary		Undisturbed		Interstate		Perennial
	Sheet Index		Disturbed		US Highway		Intermittent
	JD Review Area		USACE Non-JD, FAA Mitigable		NC Highway		Culvert
	Detailed Study Area				Road		
	Open Water/Non-Stream Surface Water Features				RDU Existing Stormwater Network		



	County Boundary	<b>Wetland Features</b>		Interstate	<b>Channel Features</b>	
	Sheet Index			US Highway		Perennial
	JD Review Area			NC Highway		Intermittent
	Detailed Study Area			Road		Culvert
	Open Water/Non-Stream Surface Water Features			RDU Existing Stormwater Network		



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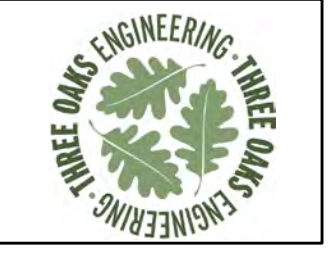
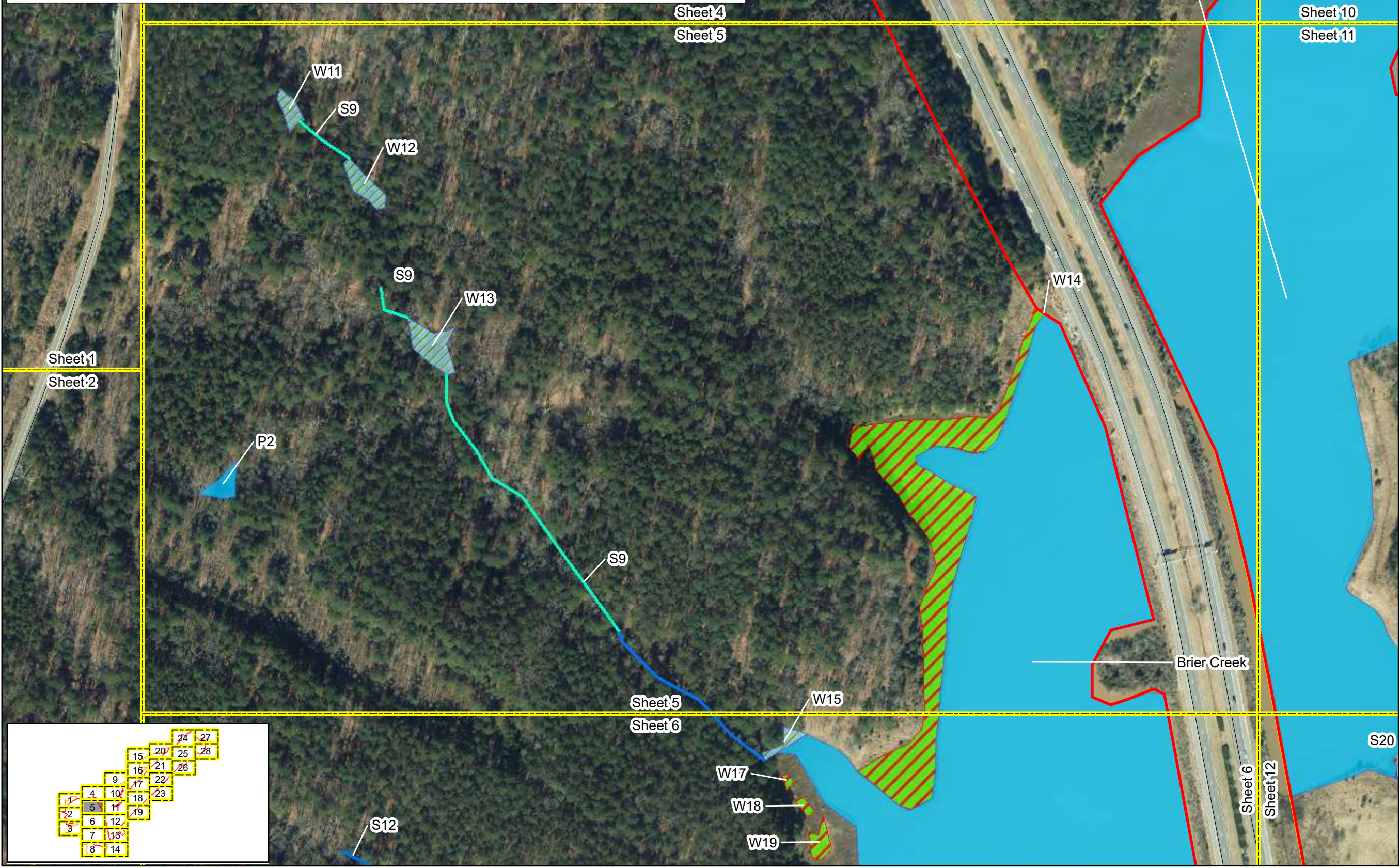
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Features Map Over  
Orthoimagery**

**Wake County,  
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Sheet 4

	County Boundary	<b>Wetland Features</b>		Interstate	<b>Channel Features</b>	
	Sheet Index			US Highway		Perennial
	JD Review Area			NC Highway		Intermittent
	Detailed Study Area			Road		Culvert
	Open Water/Non-Stream Surface Water Features			RDU Existing Stormwater Network		



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**4**  
Sheet 5

	County Boundary	<b>Wetland Features</b>		Interstate	<b>Channel Features</b>
	Sheet Index			US Highway	
	JD Review Area			NC Highway	
	Detailed Study Area			Road	
	Open Water/Non-Stream Surface Water Features			RDU Existing Stormwater Network	



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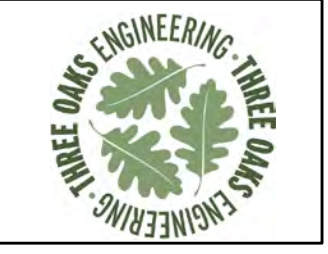
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Figure  
**4**  
Sheet 6



	County Boundary	<b>Wetland Features</b>		Interstate	<b>Channel Features</b>	
	Sheet Index			US Highway		Perennial
	JD Review Area			NC Highway		Intermittent
	Detailed Study Area			Road		Culvert
	Open Water/Non-Stream Surface Water Features			RDU Existing Stormwater Network		



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**4**  
Sheet 7



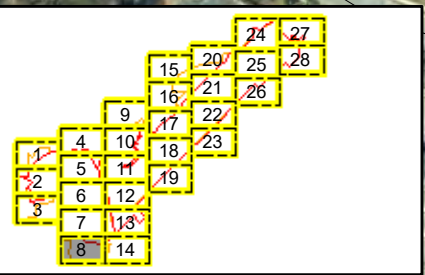
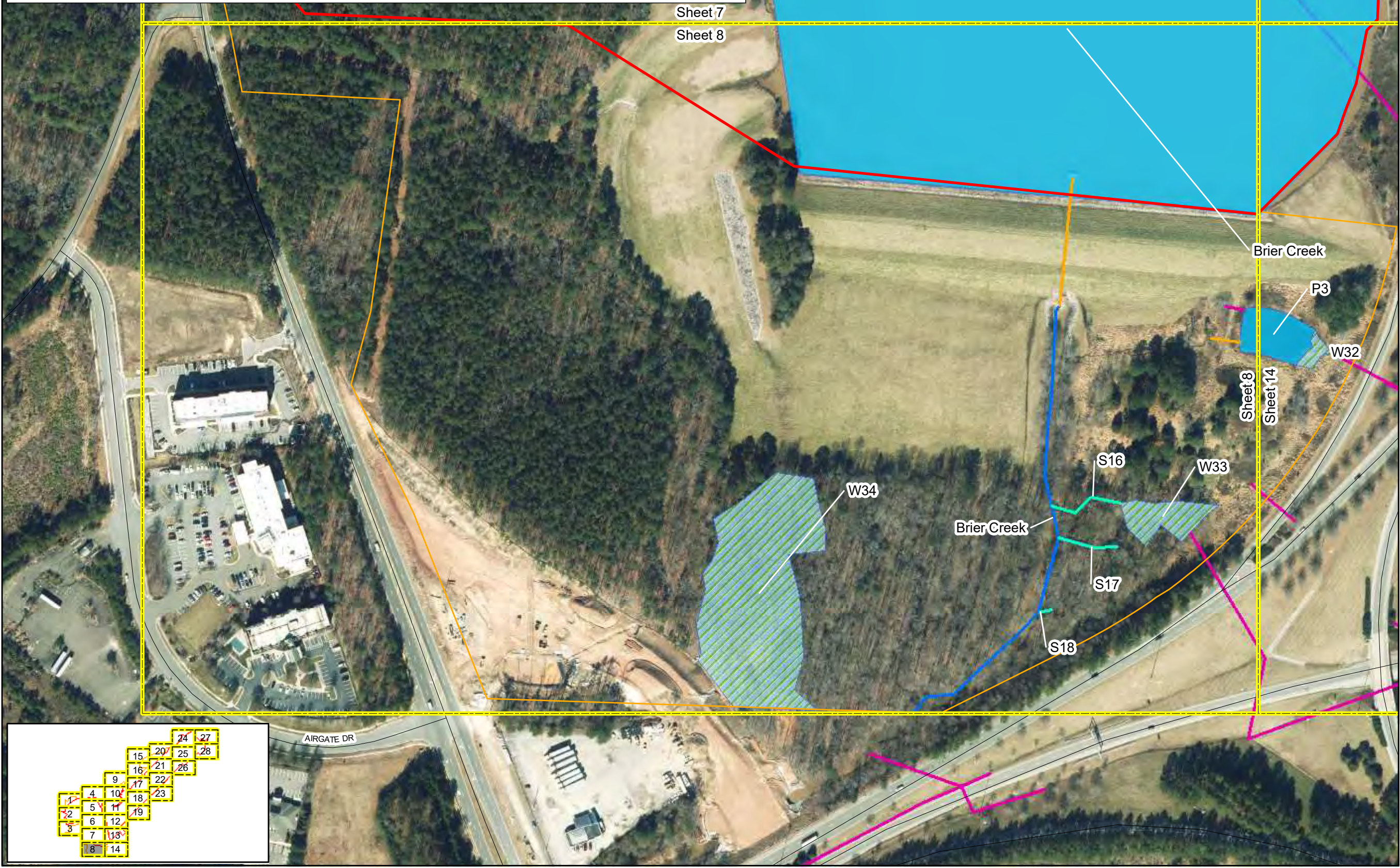
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**Jurisdictional  
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Figure  
**4**  
Sheet 8

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features		RDU Existing Stormwater Network	



	County Boundary	<b>Wetland Features</b>		Interstate	<b>Channel Features</b>	
	Sheet Index			US Highway		Perennial
	JD Review Area			NC Highway		Intermittent
	Detailed Study Area			Road		Culvert
	Open Water/Non-Stream Surface Water Features			RDU Existing Stormwater Network		



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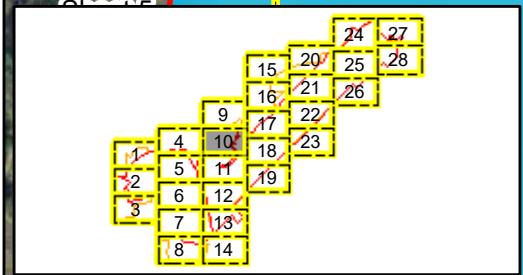
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Figure  
**4**  
Sheet 9

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features		RDU Existing Stormwater Network	



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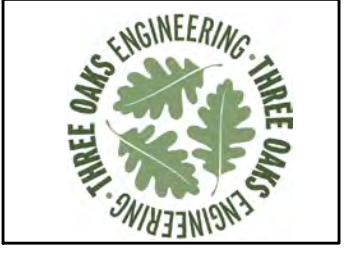
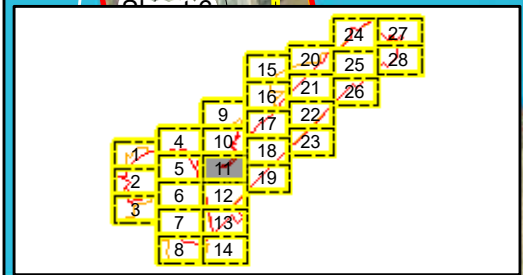
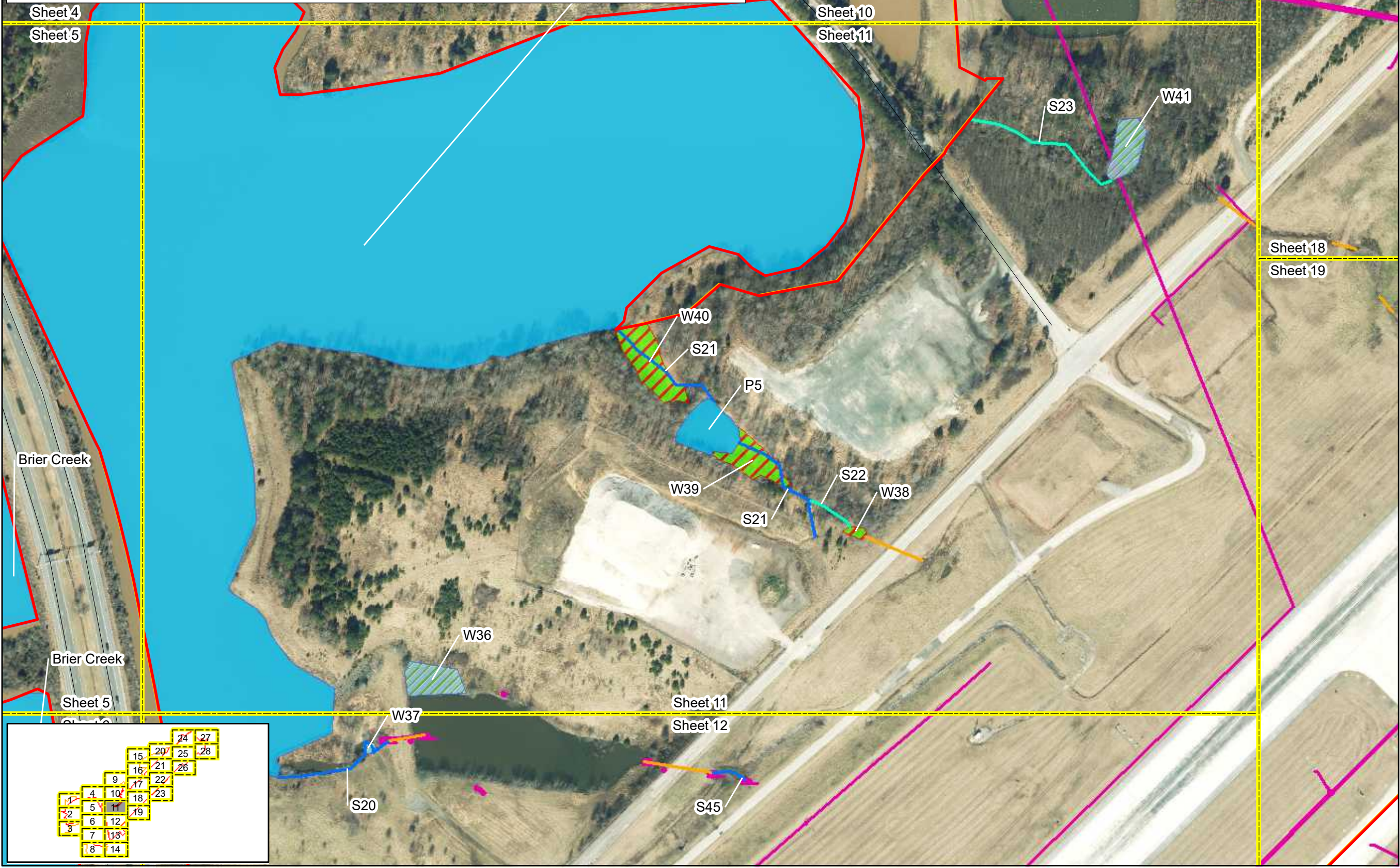
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**4**  
Sheet 10

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features		RDU Existing Stormwater Network	



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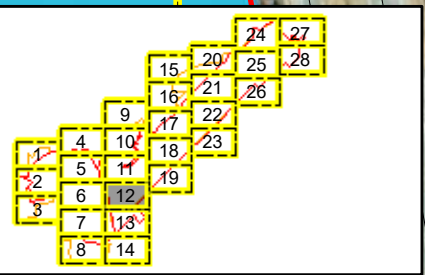
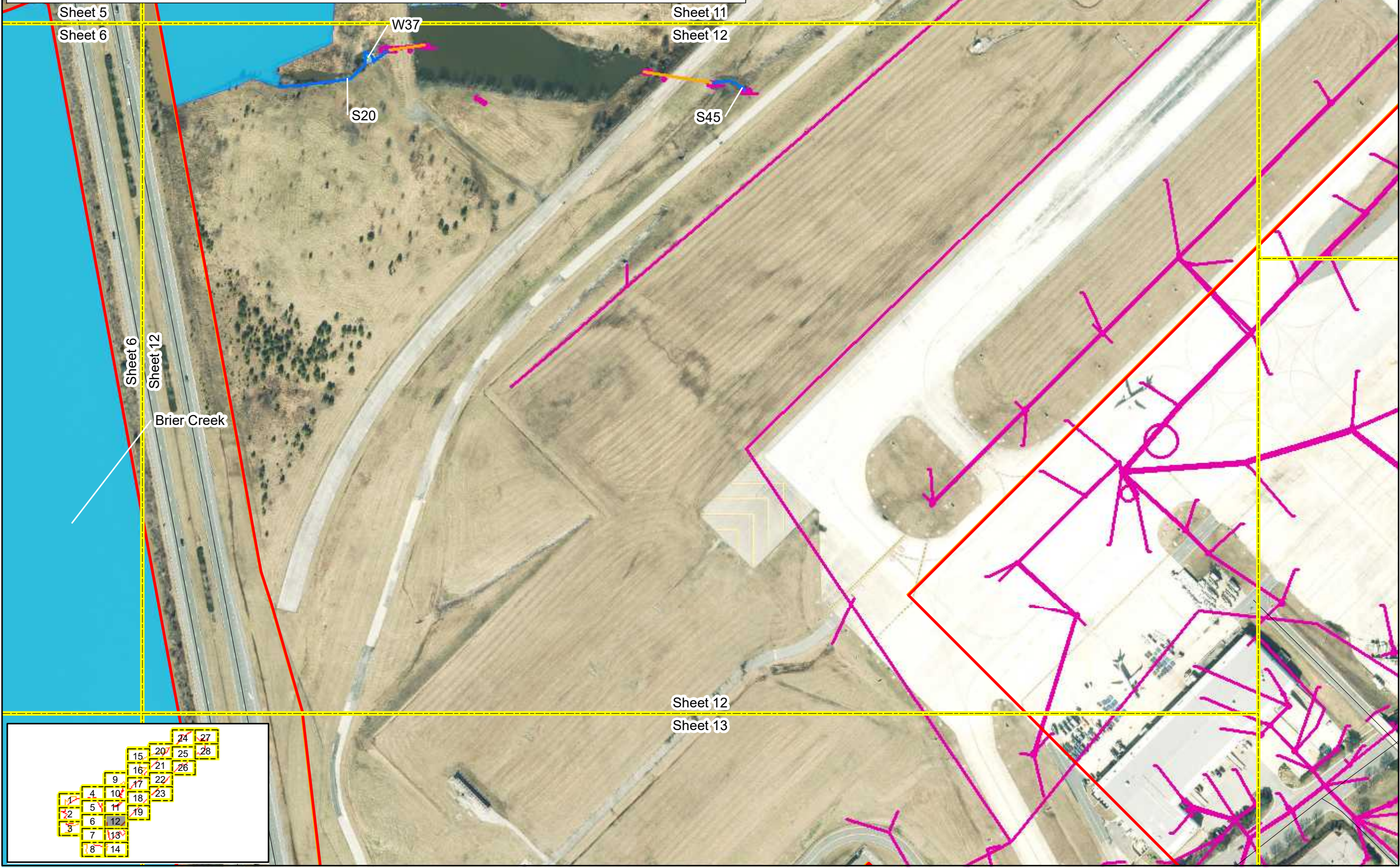
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Figure  
**4**  
Sheet 11

	County Boundary		Wetland Features Undisturbed		Interstate		Channel Features Perennial
	Sheet Index		Disturbed		US Highway		Intermittent
	JD Review Area		USACE Non-JD, FAA Mitigable		NC Highway		Culvert
	Detailed Study Area				Road		
	Open Water/Non-Stream Surface Water Features				RDU Existing Stormwater Network		



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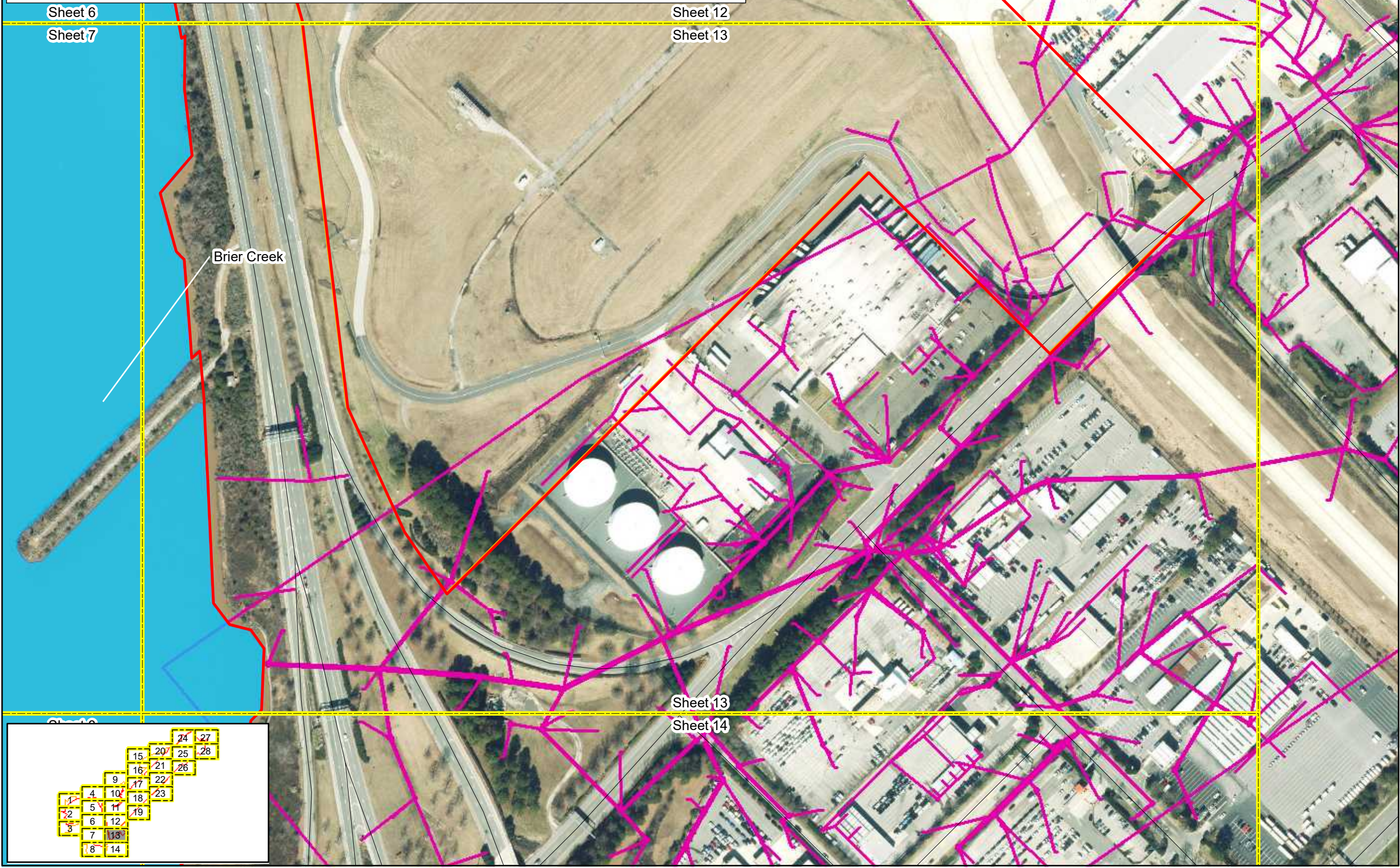
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**4**  
Sheet 12

	County Boundary	<b>Wetland Features</b>		Interstate	<b>Channel Features</b>		Perennial
	Sheet Index			US Highway			Intermittent
	JD Review Area			NC Highway			Culvert
	Detailed Study Area			Road			RDU Existing Stormwater Network
	Open Water/Non-Stream Surface Water Features						



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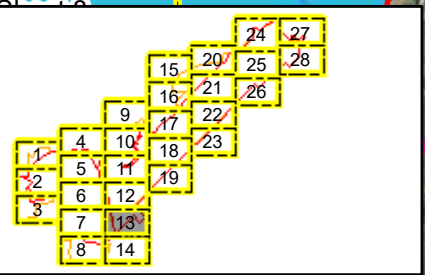
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Figure  
**4**  
Sheet 13






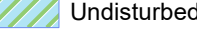



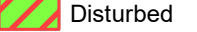










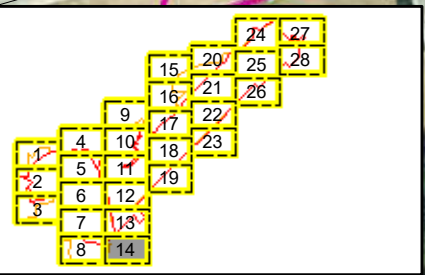
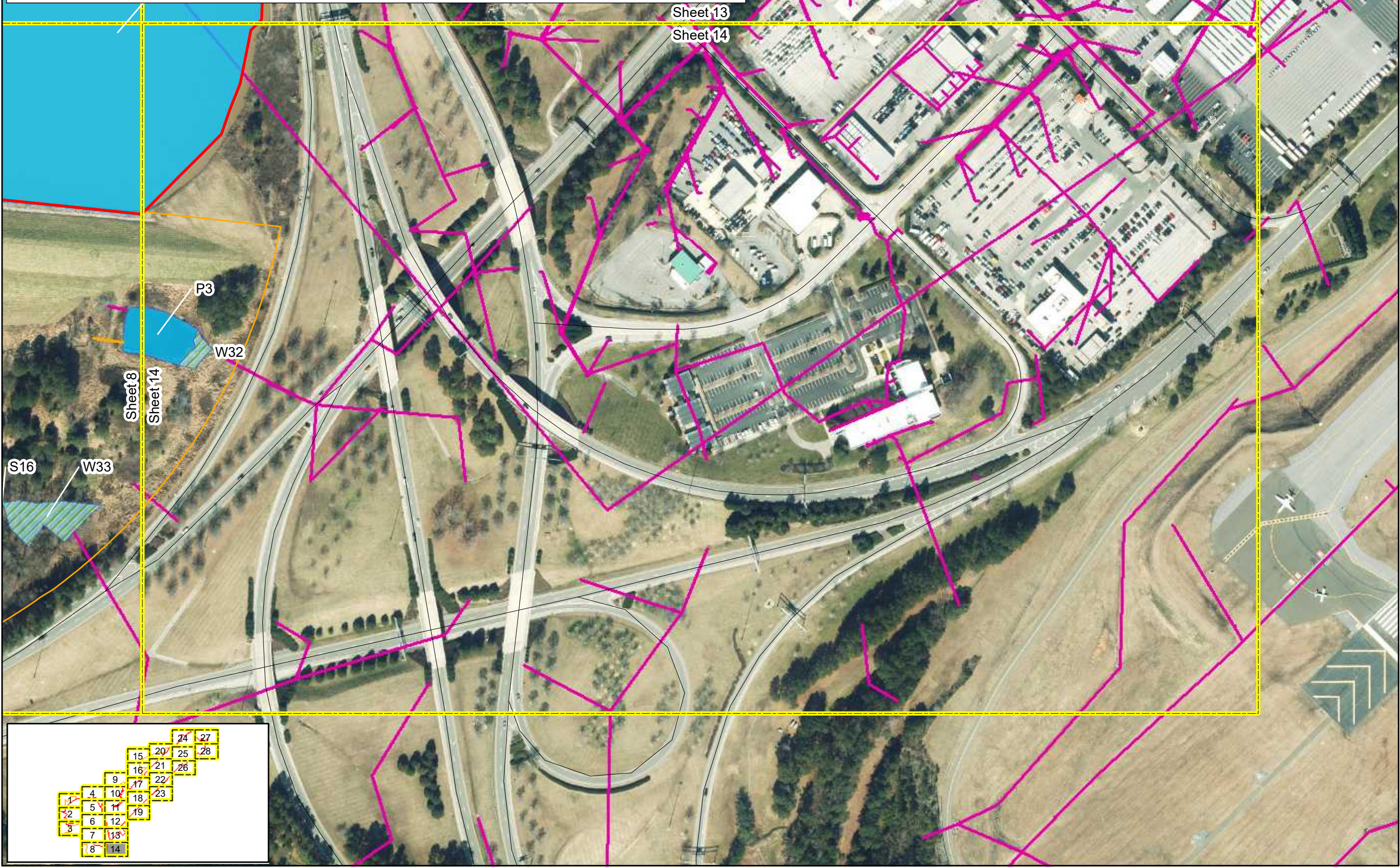
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5L/23R  
Replacement**  
  
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Assessment**  
  
**Jurisdictional  
Features Map Over  
Orthoimagery**  
  
**Wake County,  
North Carolina**

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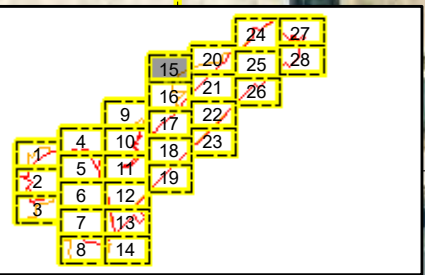
Figure  
**4**  
Sheet 14

 County Boundary	<b>Wetland Features</b>	 Interstate	<b>Channel Features</b>
 Sheet Index	 Undisturbed	 US Highway	 Perennial
 JD Review Area	 Disturbed	 NC Highway	 Intermittent
 Detailed Study Area	 USACE Non-JD, FAA Mitigable	 Road	 Culvert
 Open Water/Non-Stream Surface Water Features		 RDU Existing Stormwater Network	





	County Boundary	<b>Wetland Features</b>		Interstate	<b>Channel Features</b>
	Sheet Index			US Highway	
	JD Review Area			NC Highway	
	Detailed Study Area			Road	
	Open Water/Non-Stream Surface Water Features			RDU Existing Stormwater Network	



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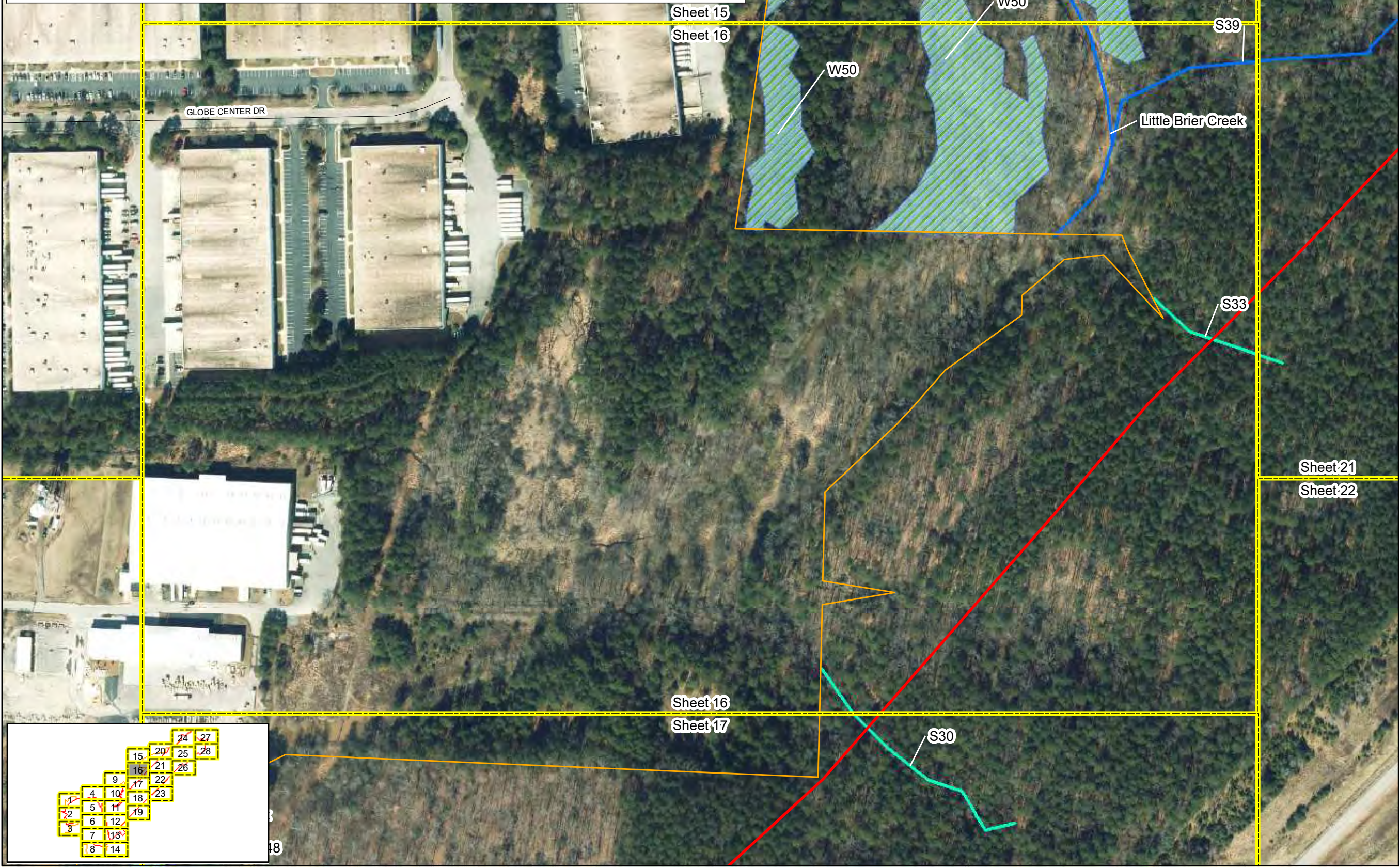
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**Wake County, North Carolina**

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Figure  
**4**  
Sheet 15

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features		RDU Existing Stormwater Network	



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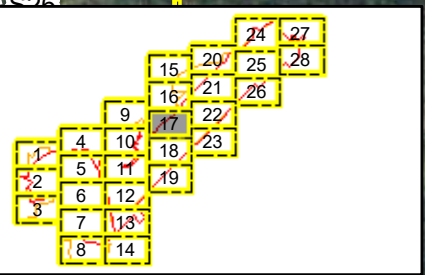
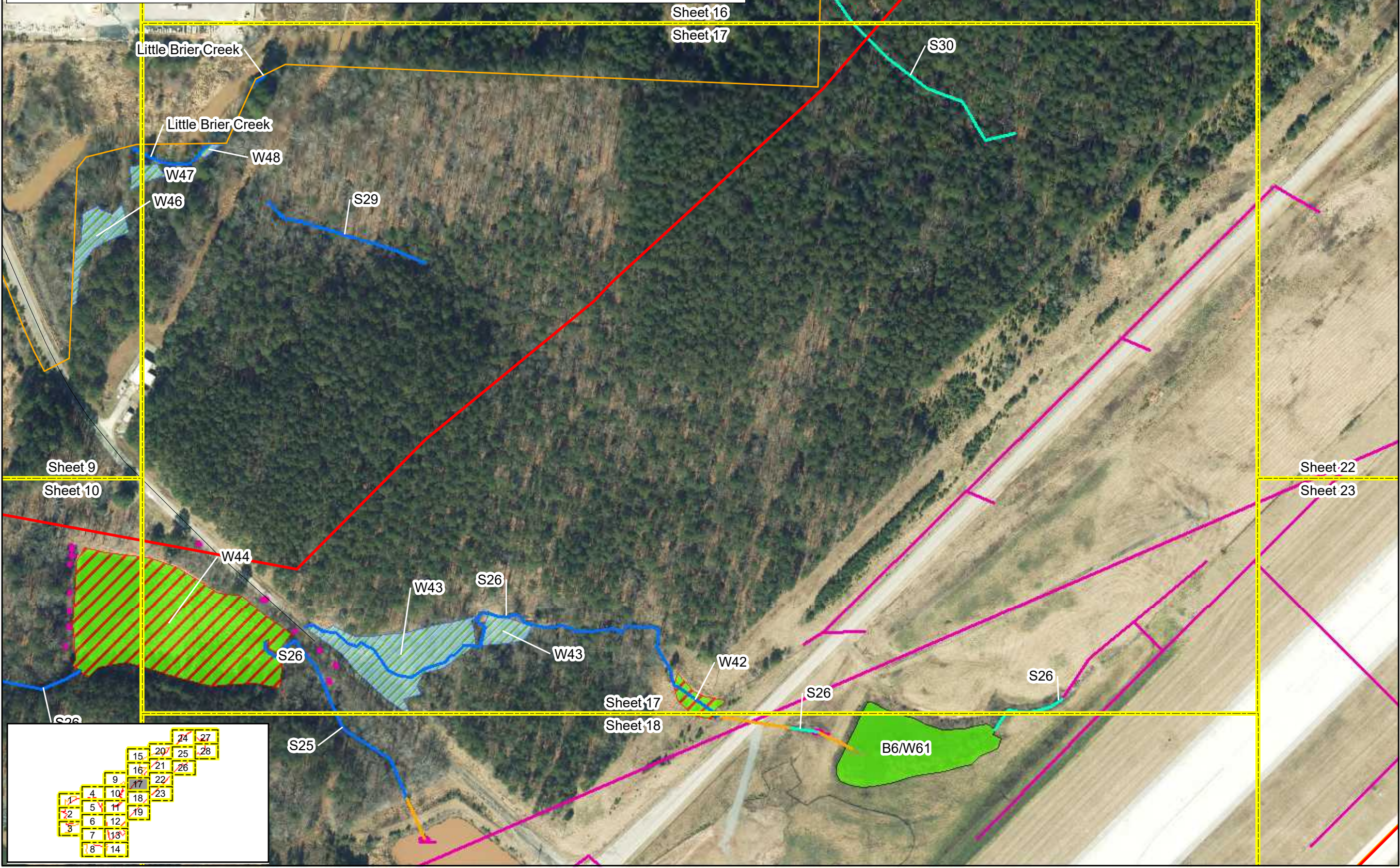
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**Wake County, North Carolina**

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Figure  
**4**  
Sheet 16

	County Boundary	<b>Wetland Features</b>		Interstate	<b>Channel Features</b>	
	Sheet Index			US Highway		Perennial
	JD Review Area			NC Highway		Intermittent
	Detailed Study Area			Road		Culvert
	Open Water/Non-Stream Surface Water Features			RDU Existing Stormwater Network		



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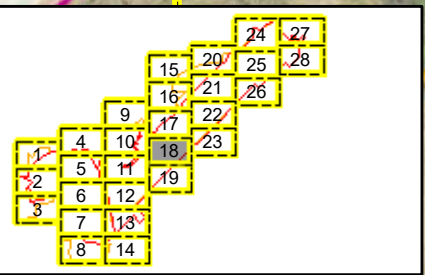
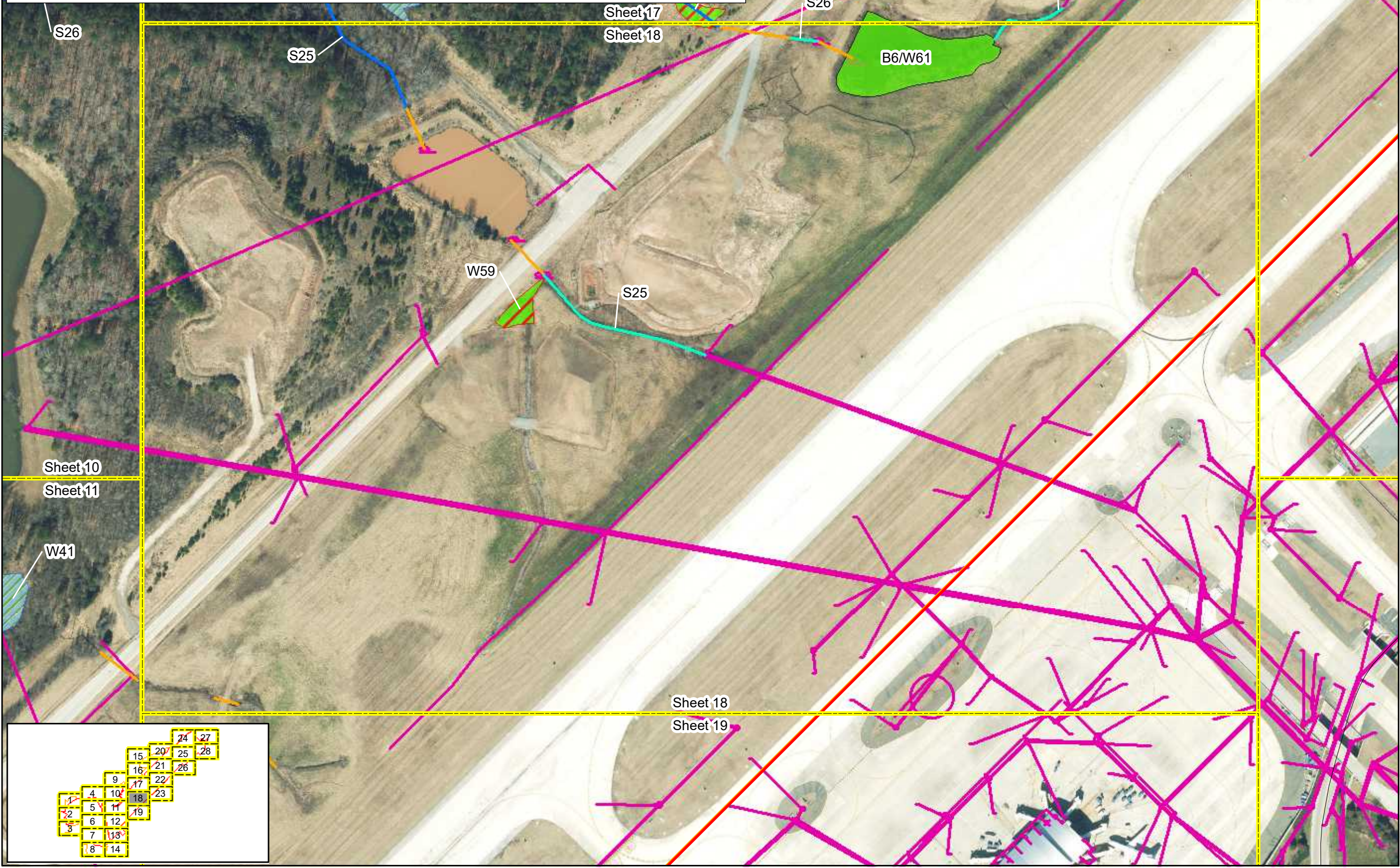
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**4**  
Sheet 17

	County Boundary	<b>Wetland Features</b>		Interstate	<b>Channel Features</b>	
	Sheet Index			US Highway		Perennial
	JD Review Area			NC Highway		Intermittent
	Detailed Study Area			Road		Culvert
	Open Water/Non-Stream Surface Water Features			RDU Existing Stormwater Network		



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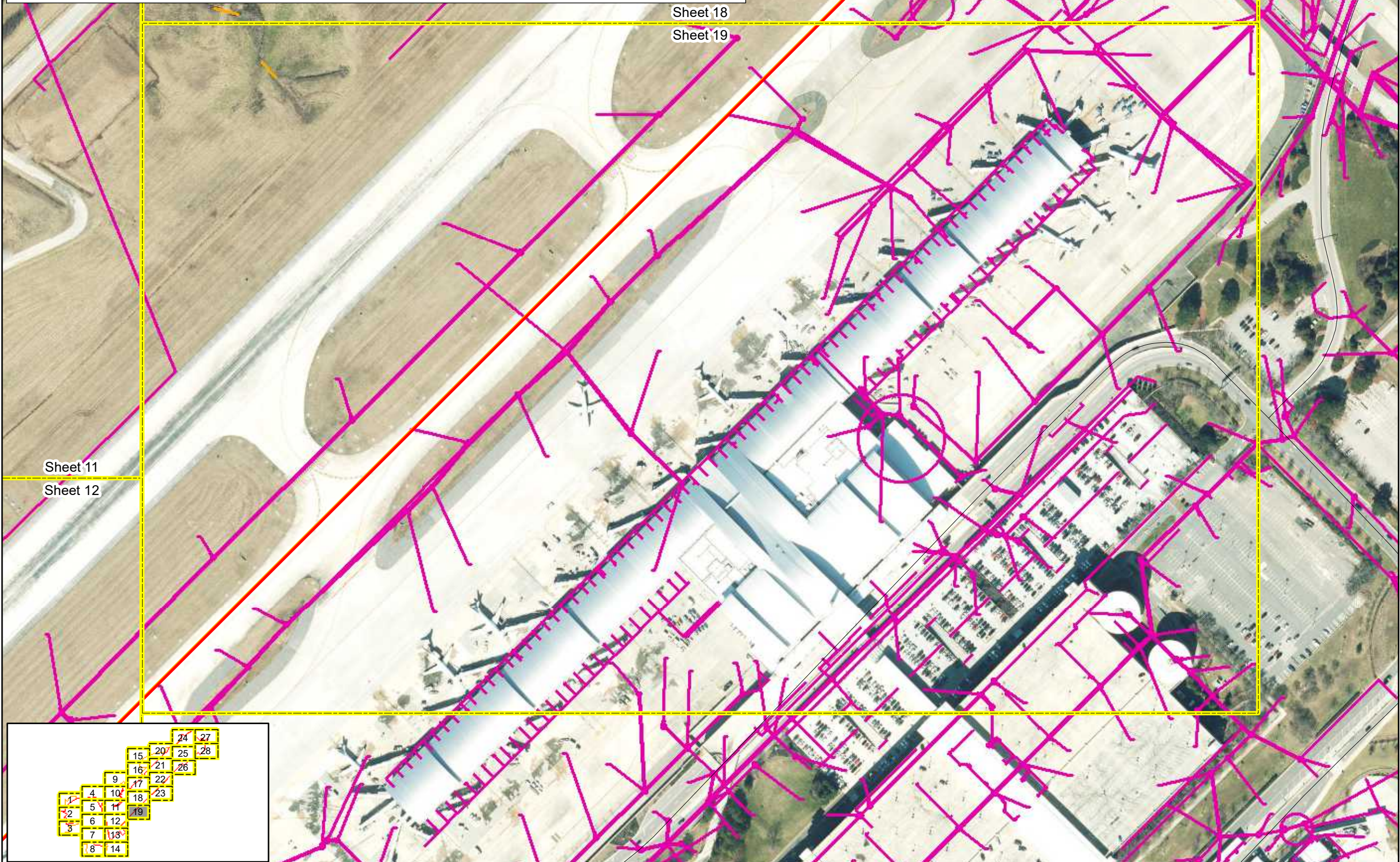
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**4**  
Sheet 18

	County Boundary		Undisturbed		Interstate		Perennial
	Sheet Index		Disturbed		US Highway		Intermittent
	JD Review Area		USACE Non-JD, FAA Mitigable		NC Highway		Culvert
	Detailed Study Area				Road		
	Open Water/Non-Stream Surface Water Features				RDU Existing Stormwater Network		



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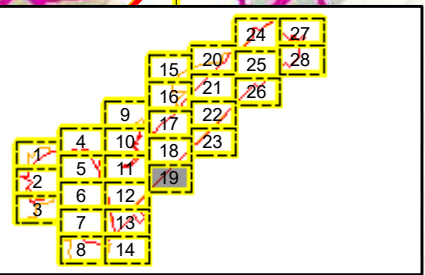
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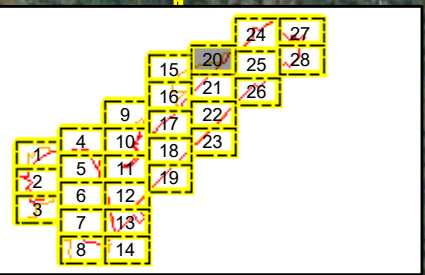
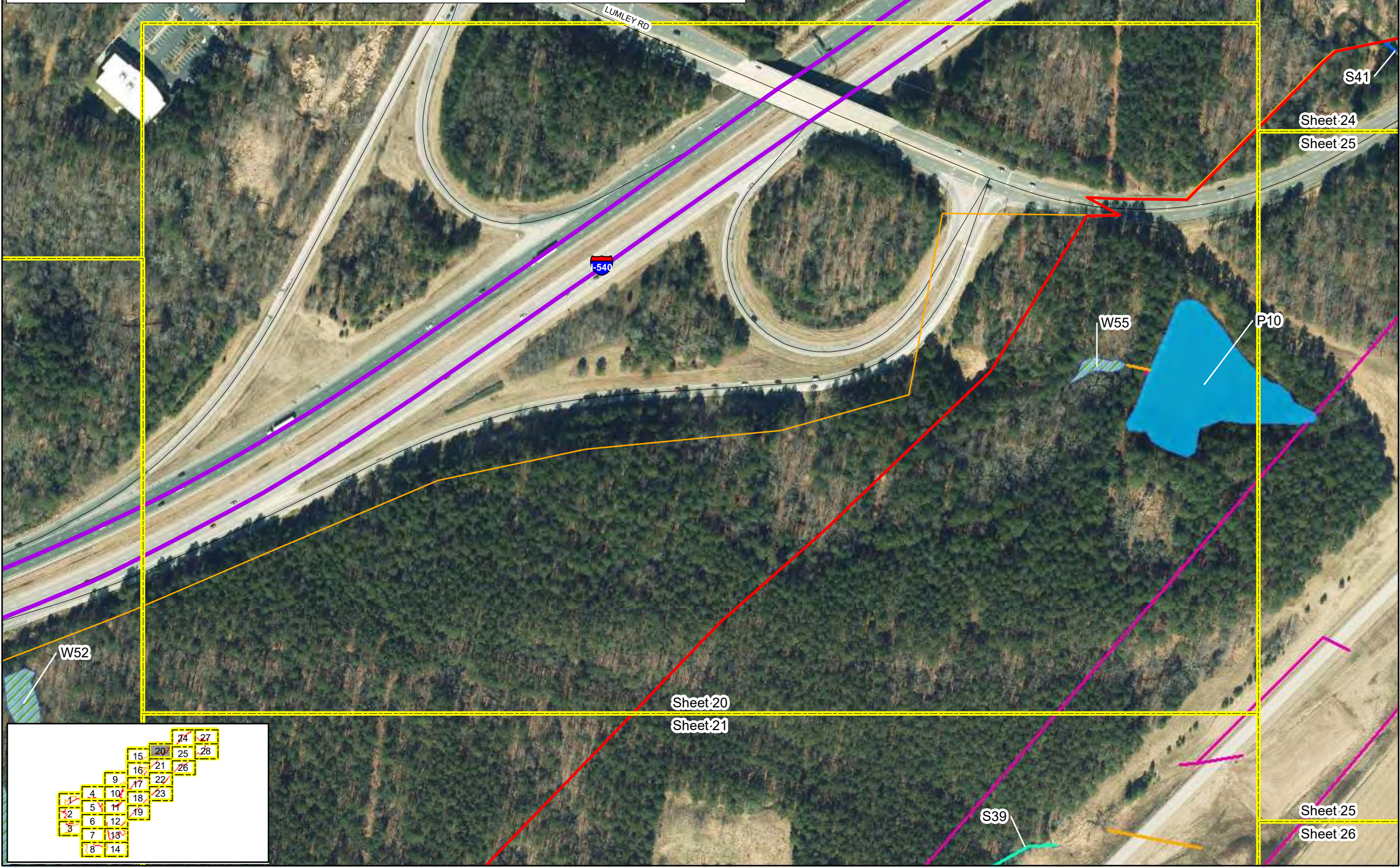
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Figure  
**4**  
Sheet 19



	County Boundary	<b>Wetland Features</b>		Interstate	<b>Channel Features</b>	
	Sheet Index			US Highway		Perennial
	JD Review Area			NC Highway		Intermittent
	Detailed Study Area			Road		Culvert
	Open Water/Non-Stream Surface Water Features			RDU Existing Stormwater Network		



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Sheet 20



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Features Map Over  
Orthoimagery**

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North Carolina**

Date: November 2022

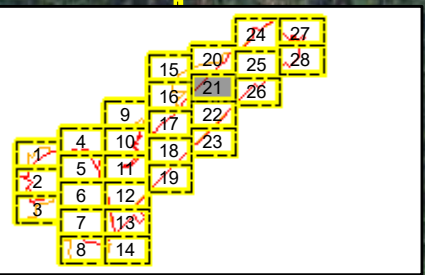
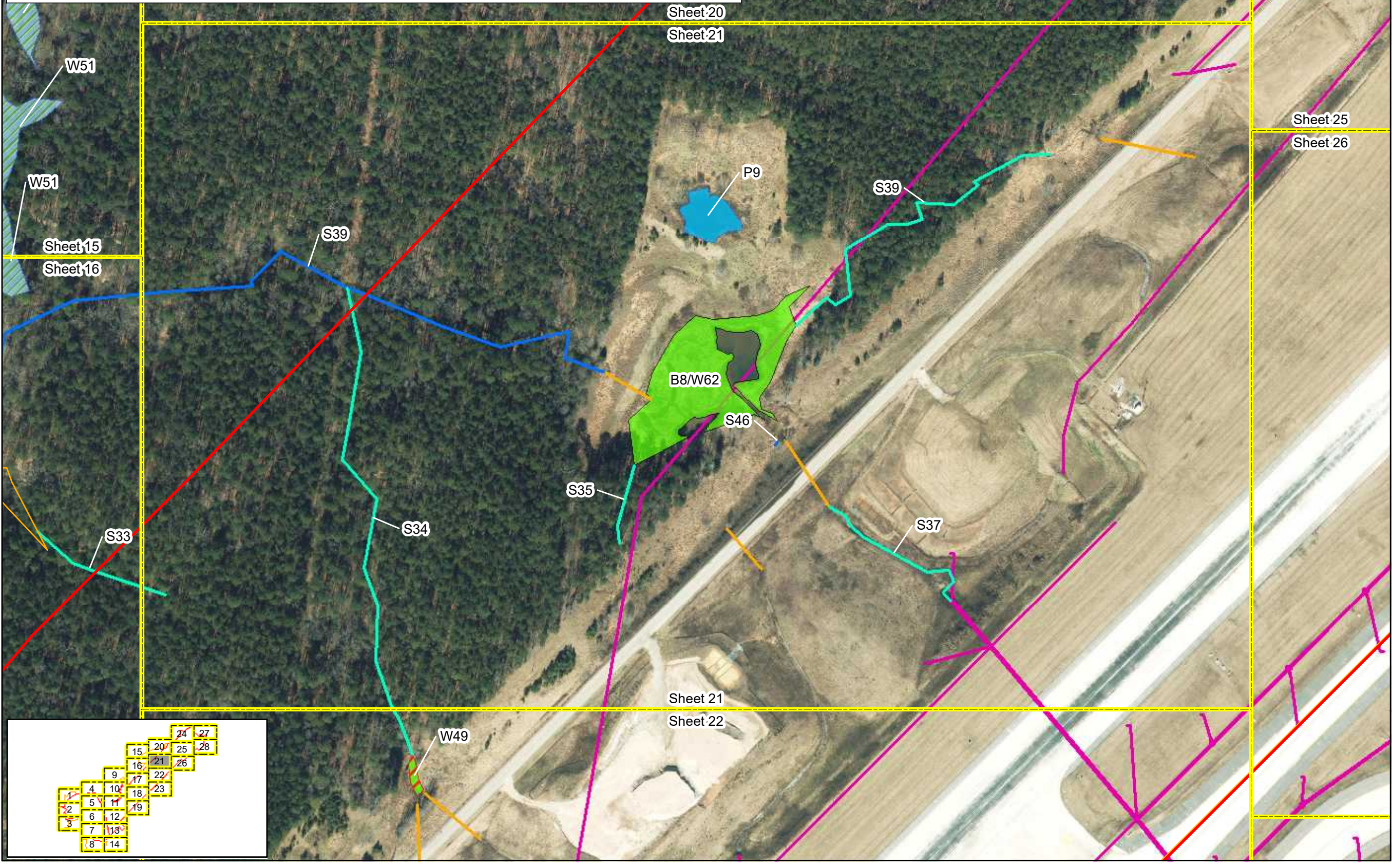
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**4**  
Sheet 21

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features		RDU Existing Stormwater Network	



	County Boundary	<b>Wetland Features</b>		Interstate	<b>Channel Features</b>		Perennial
	Sheet Index			US Highway			Intermittent
	JD Review Area			NC Highway			Culvert
	Detailed Study Area			Road			RDU Existing Stormwater Network
	Open Water/Non-Stream Surface Water Features						



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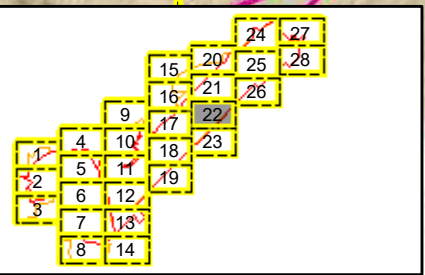
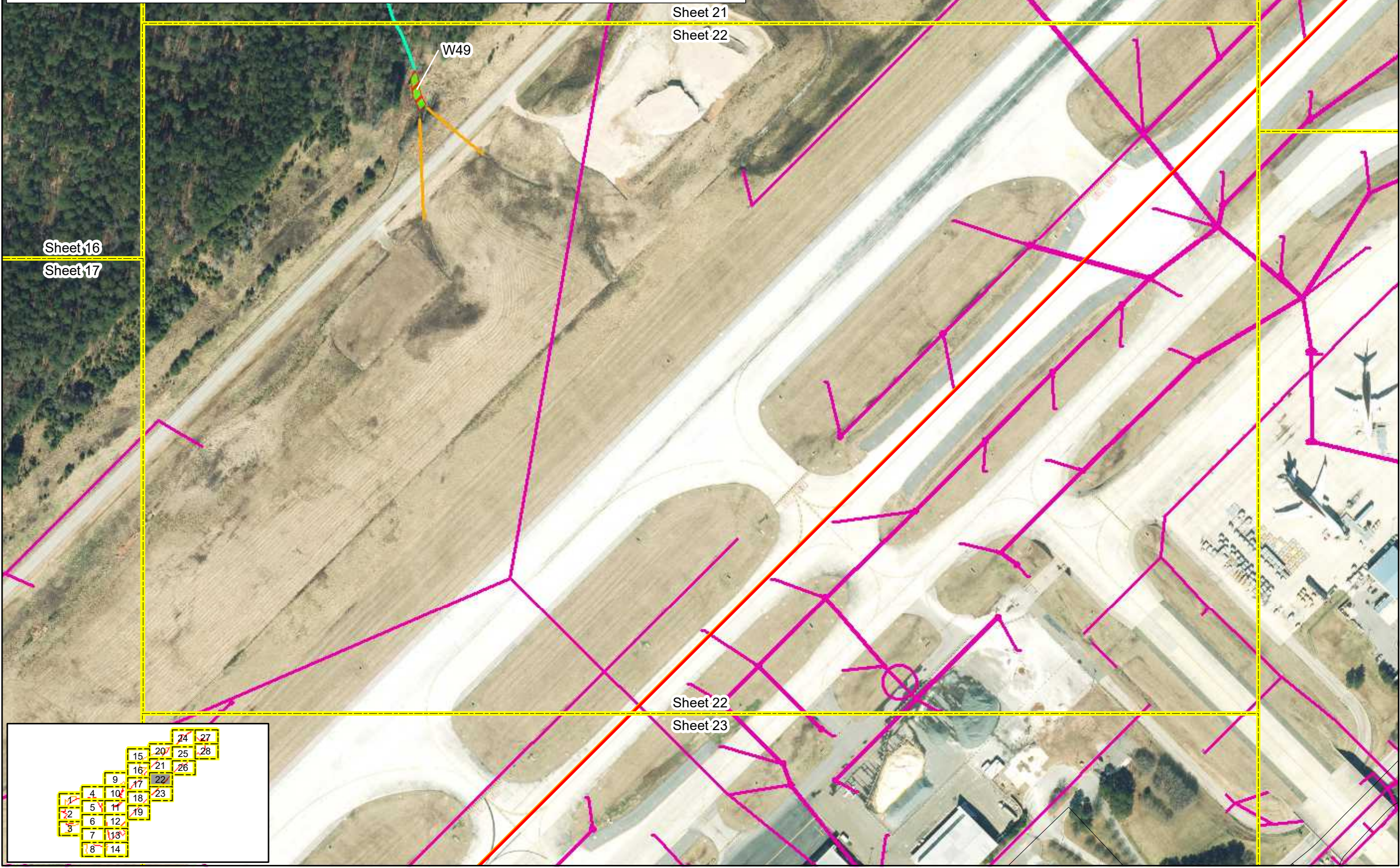
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Figure  
**4**  
Sheet 22







Prepared For:



**Raleigh-Durham  
International  
Airport**

**Proposed Runway  
5L/23R  
Replacement**

**Federal  
Environmental  
Assessment**

**Jurisdictional  
Features Map Over  
Orthoimagery**

**Wake County,  
North Carolina**

Date: November 2022

Scale: 0 100 200 Ft

Job No.: 19-018

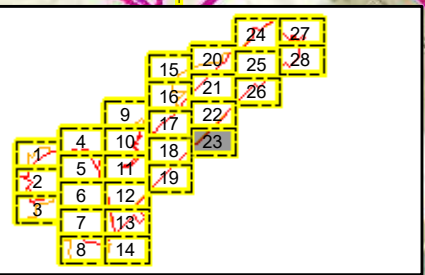
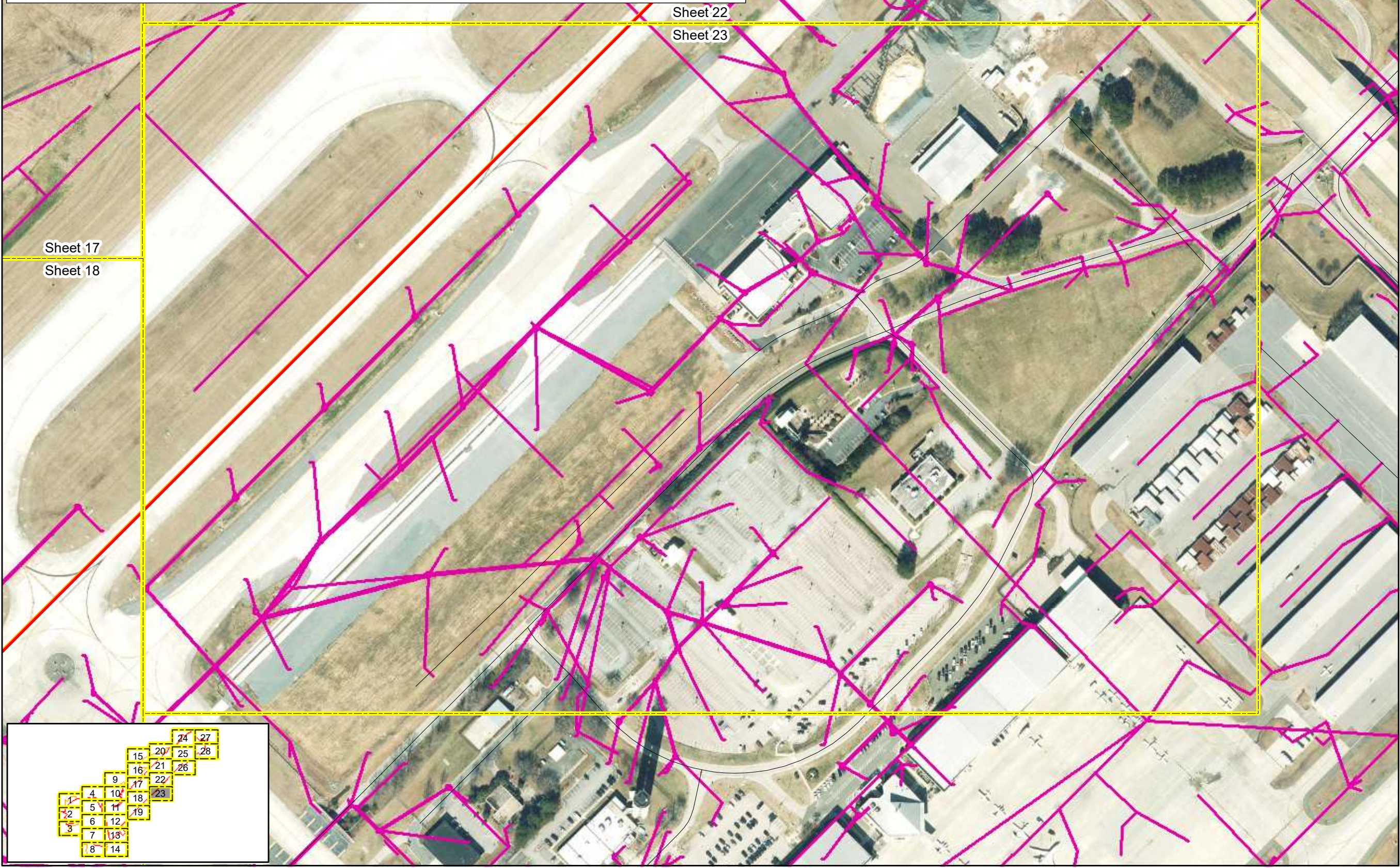
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Checked By: NDH

Figure

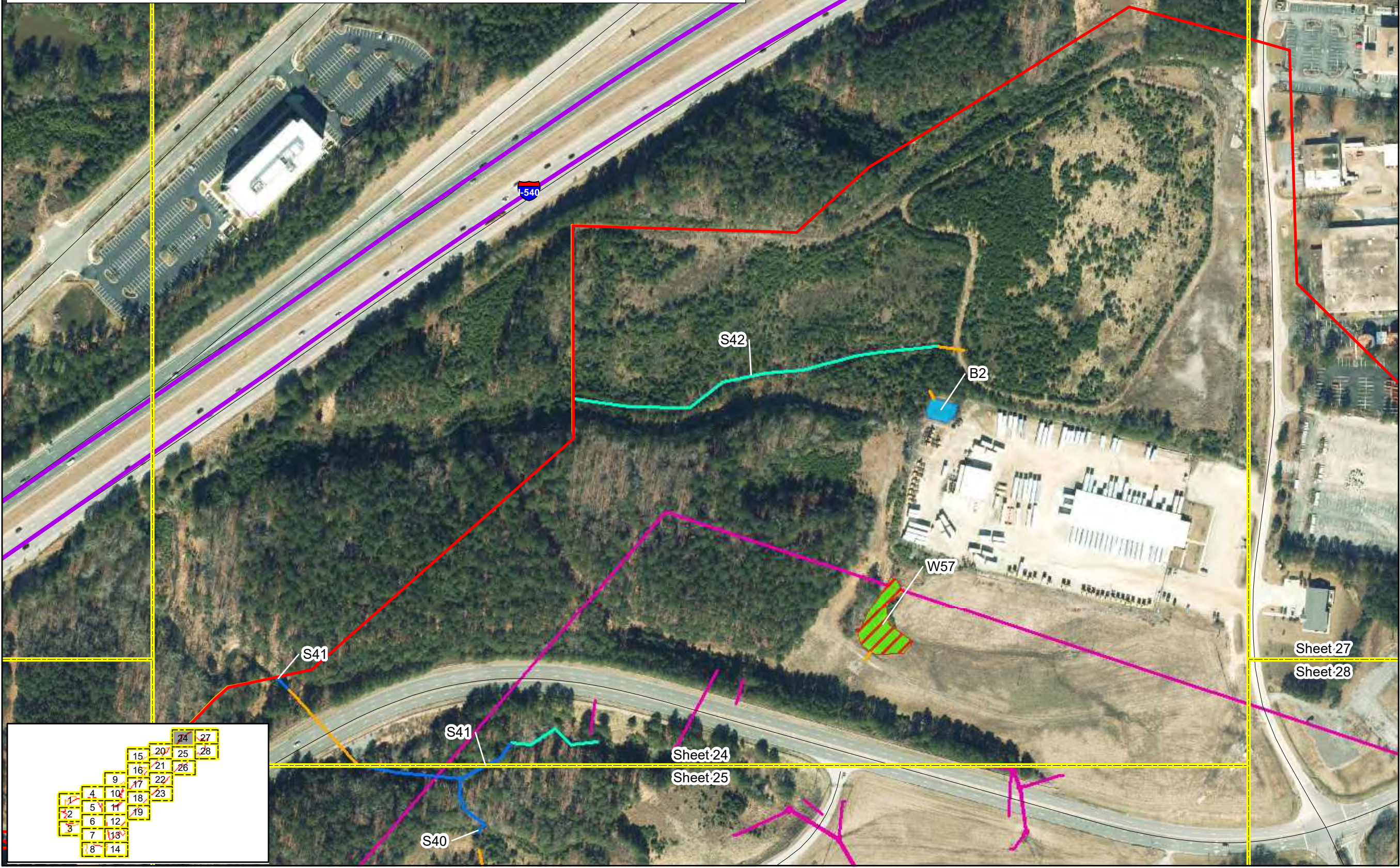
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Sheet 23

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features		RDU Existing Stormwater Network	



	County Boundary	<b>Wetland Features</b>		Interstate	<b>Channel Features</b>		Perennial
	Sheet Index			US Highway		Intermittent	
	JD Review Area			NC Highway		Culvert	
	Detailed Study Area			Road		RDU Existing Stormwater Network	
	Open Water/Non-Stream Surface Water Features						



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**Raleigh-Durham International Airport**

**Proposed Runway 5L/23R Replacement**

**Federal Environmental Assessment**

**Jurisdictional Features Map Over Orthoimagery**

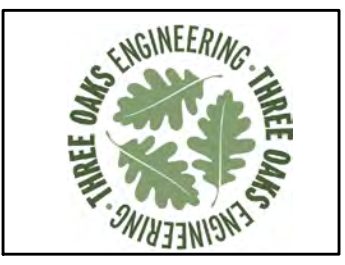
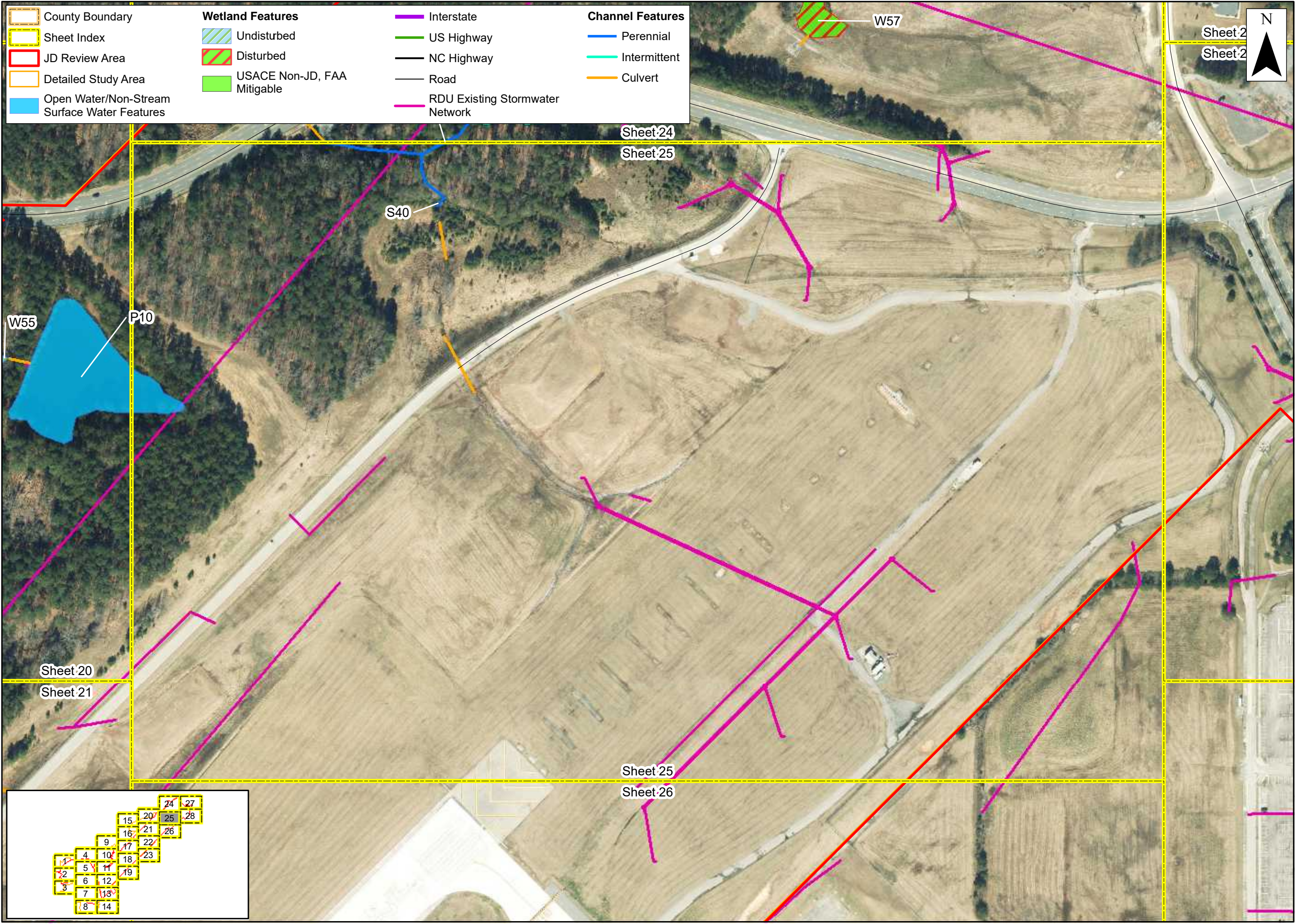
**Wake County, North Carolina**

Date:	November 2022
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Job No.:	19-018
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Figure  
**4**  
Sheet 24



	County Boundary	<b>Wetland Features</b>		Interstate	<b>Channel Features</b>		Perennial
	Sheet Index			US Highway			Intermittent
	JD Review Area			NC Highway			Culvert
	Detailed Study Area			Road			RDU Existing Stormwater Network
	Open Water/Non-Stream Surface Water Features						



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**Proposed Runway 5L/23R Replacement**

**Federal Environmental Assessment**

**Jurisdictional Features Map Over Orthoimagery**

**Wake County, North Carolina**

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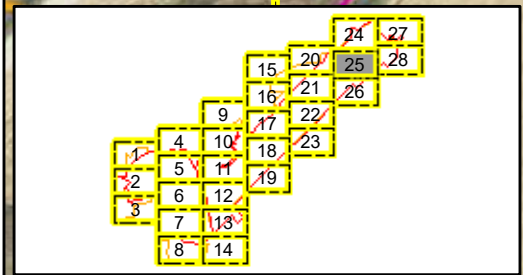
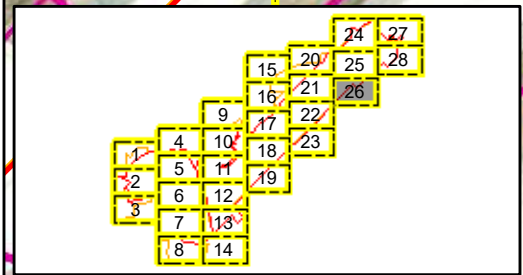
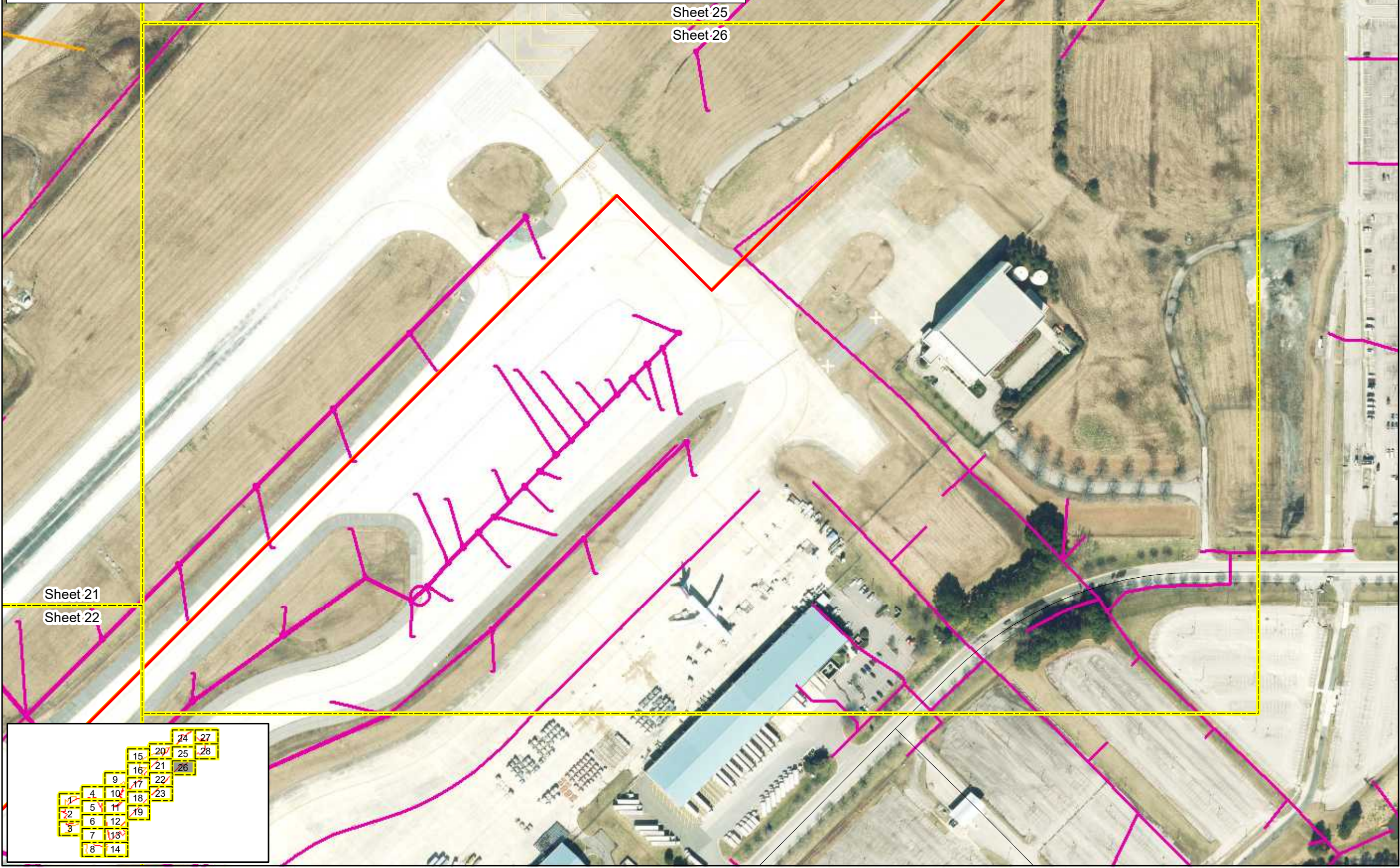


Figure  
**4**  
Sheet 25

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features		RDU Existing Stormwater Network	



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**Federal Environmental Assessment**

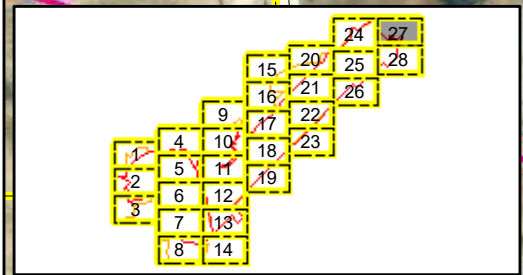
**Jurisdictional Features Map Over Orthoimagery**

**Wake County, North Carolina**

Date:	November 2022
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Figure  
**4**  
Sheet 26

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features		RDU Existing Stormwater Network	



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**Proposed Runway 5L/23R Replacement**

**Federal Environmental Assessment**

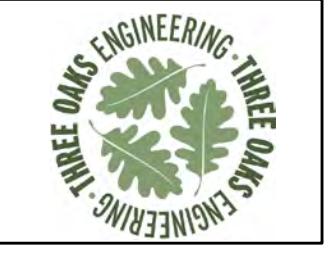
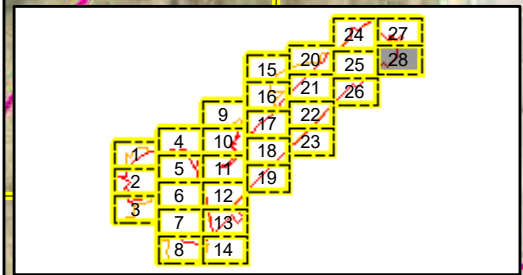
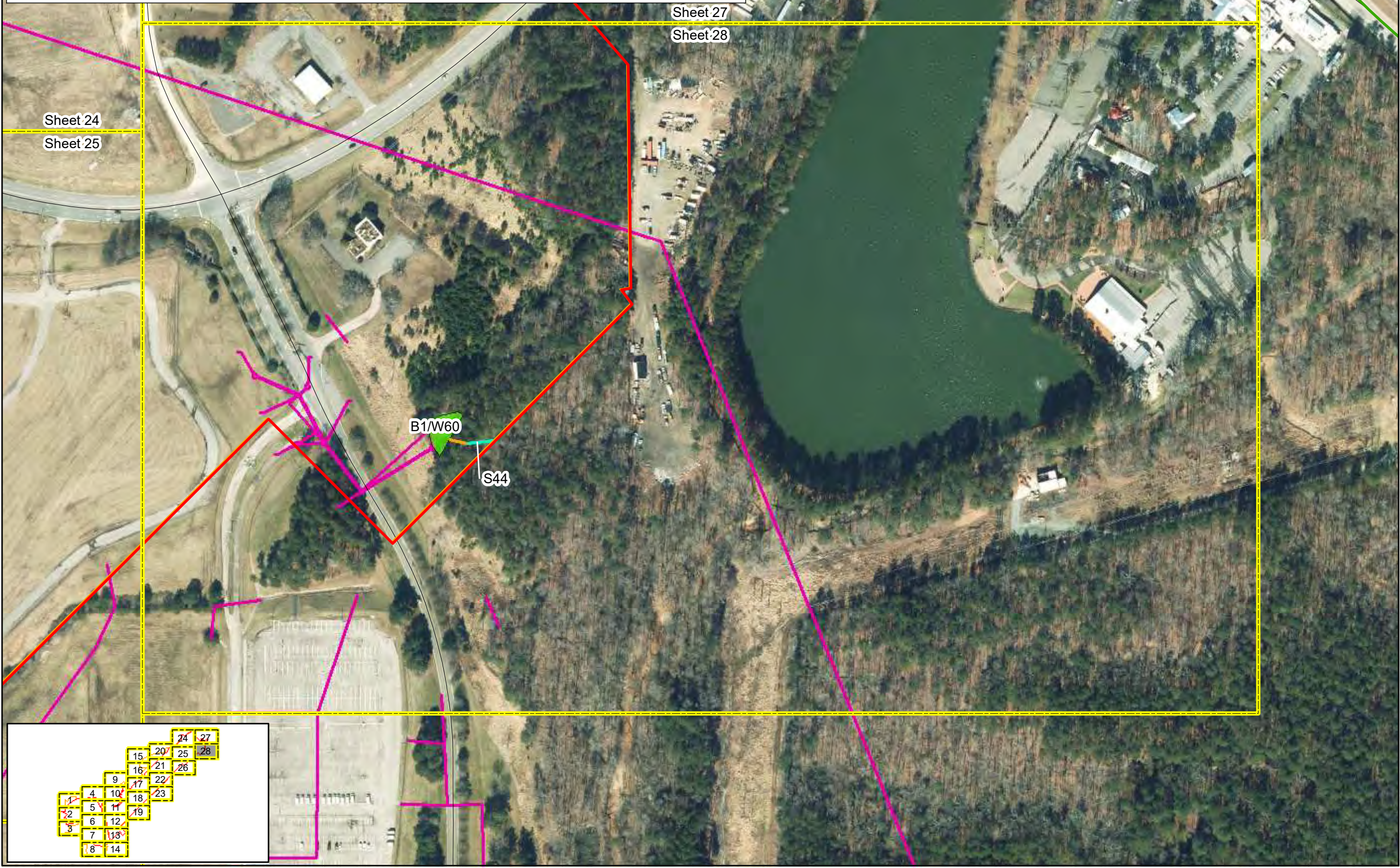
**Jurisdictional Features Map Over Orthoimagery**

**Wake County, North Carolina**

Date:	November 2022
Scale:	0 100 200 Ft
Job No.:	19-018
Drawn By:	Checked By:
KEMS	NDH

Figure  
**4**  
Sheet 27

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features		RDU Existing Stormwater Network	



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**Wake County, North Carolina**

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Figure  
**4**  
Sheet 28

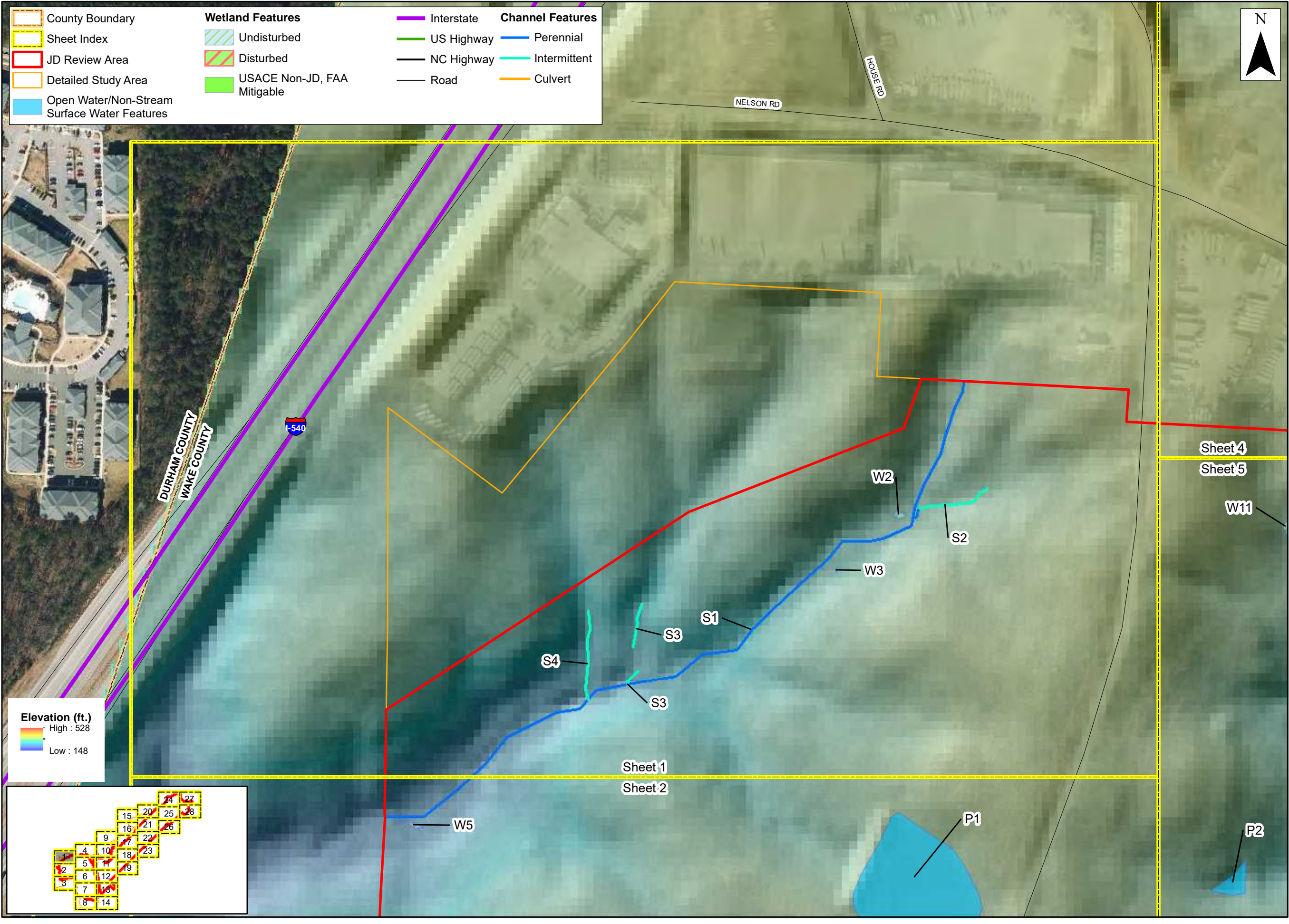


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**Jurisdictional Features Map over LiDAR**  
**Wake County, North Carolina**

Date: November 2022  
Scale: 0 100 200 Ft  
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Figure  
**5**  
Sheet 1

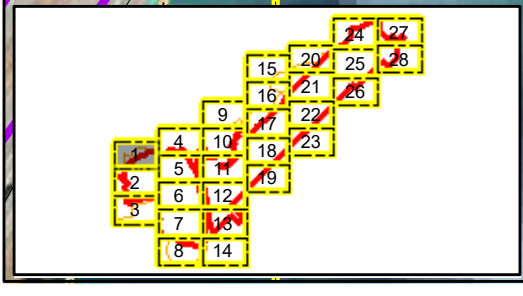
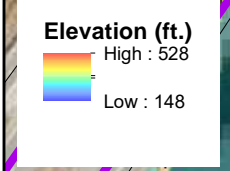


- County Boundary
- Sheet Index
- JD Review Area
- Detailed Study Area
- Open Water/Non-Stream Surface Water Features

- Wetland Features**
- Undisturbed
  - Disturbed
  - USACE Non-JD, FAA Mitigable

- Interstate**
- US Highway
  - NC Highway
  - Road

- Channel Features**
- Perennial
  - Intermittent
  - Culvert



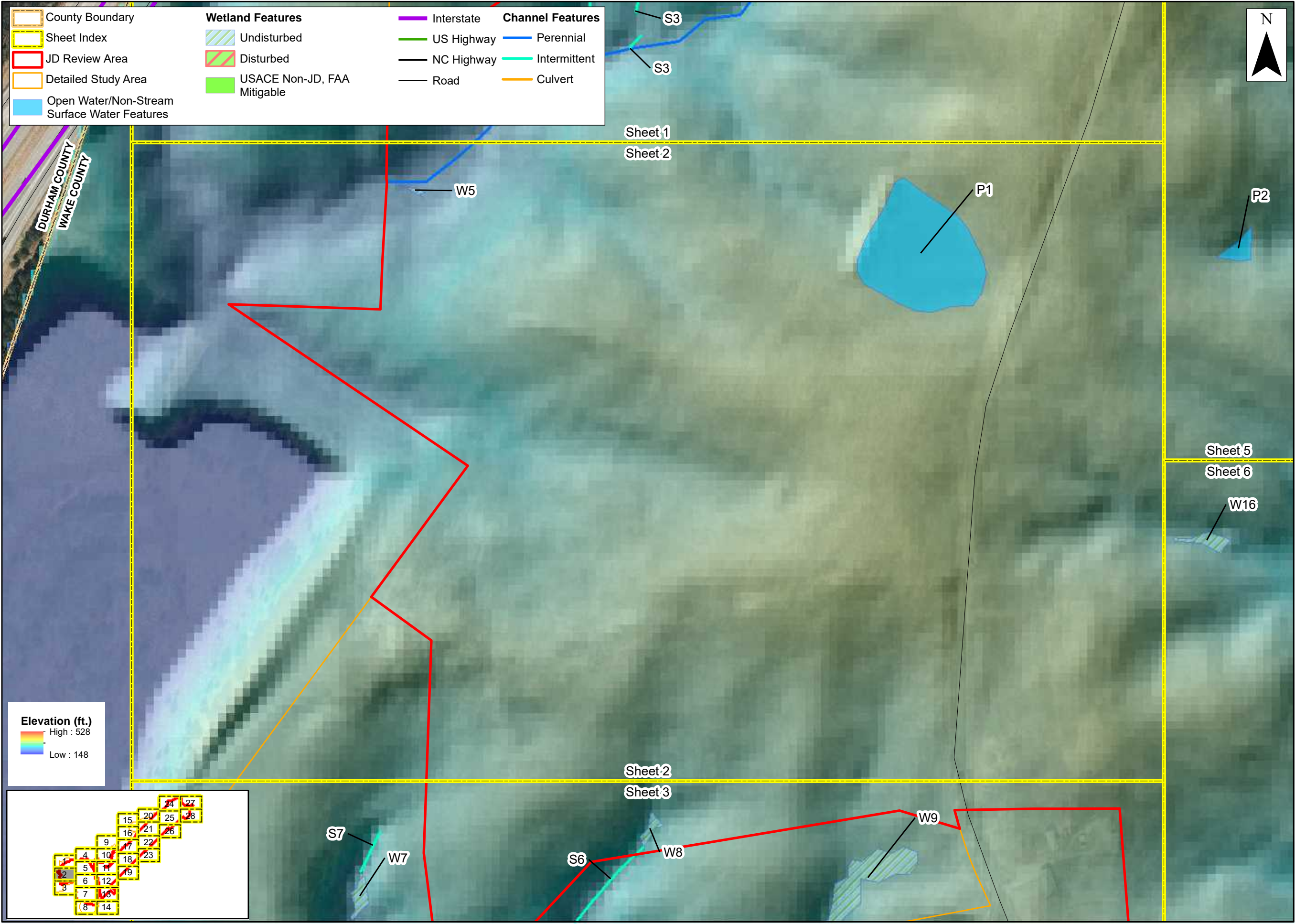


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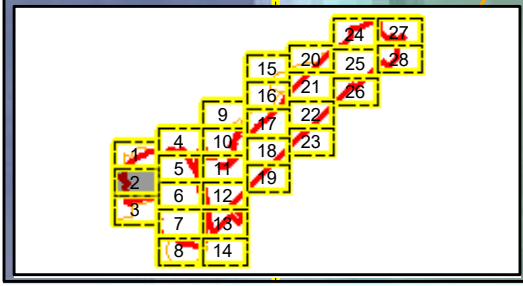
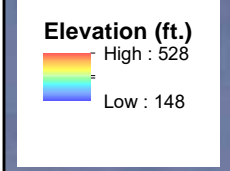
Figure  
**5**  
Sheet 2



- County Boundary
- Sheet Index
- JD Review Area
- Detailed Study Area
- Open Water/Non-Stream Surface Water Features

- Wetland Features**
- Undisturbed
  - Disturbed
  - USACE Non-JD, FAA Mitigable

- Channel Features**
- Interstate
  - US Highway
  - NC Highway
  - Road
  - Perennial
  - Intermittent
  - Culvert







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**Federal Environmental Assessment**

**Jurisdictional Features Map over LiDAR**

**Wake County, North Carolina**

Date: November 2022

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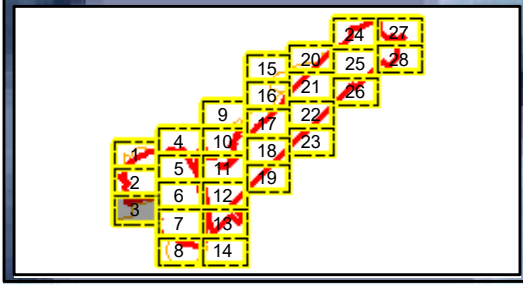
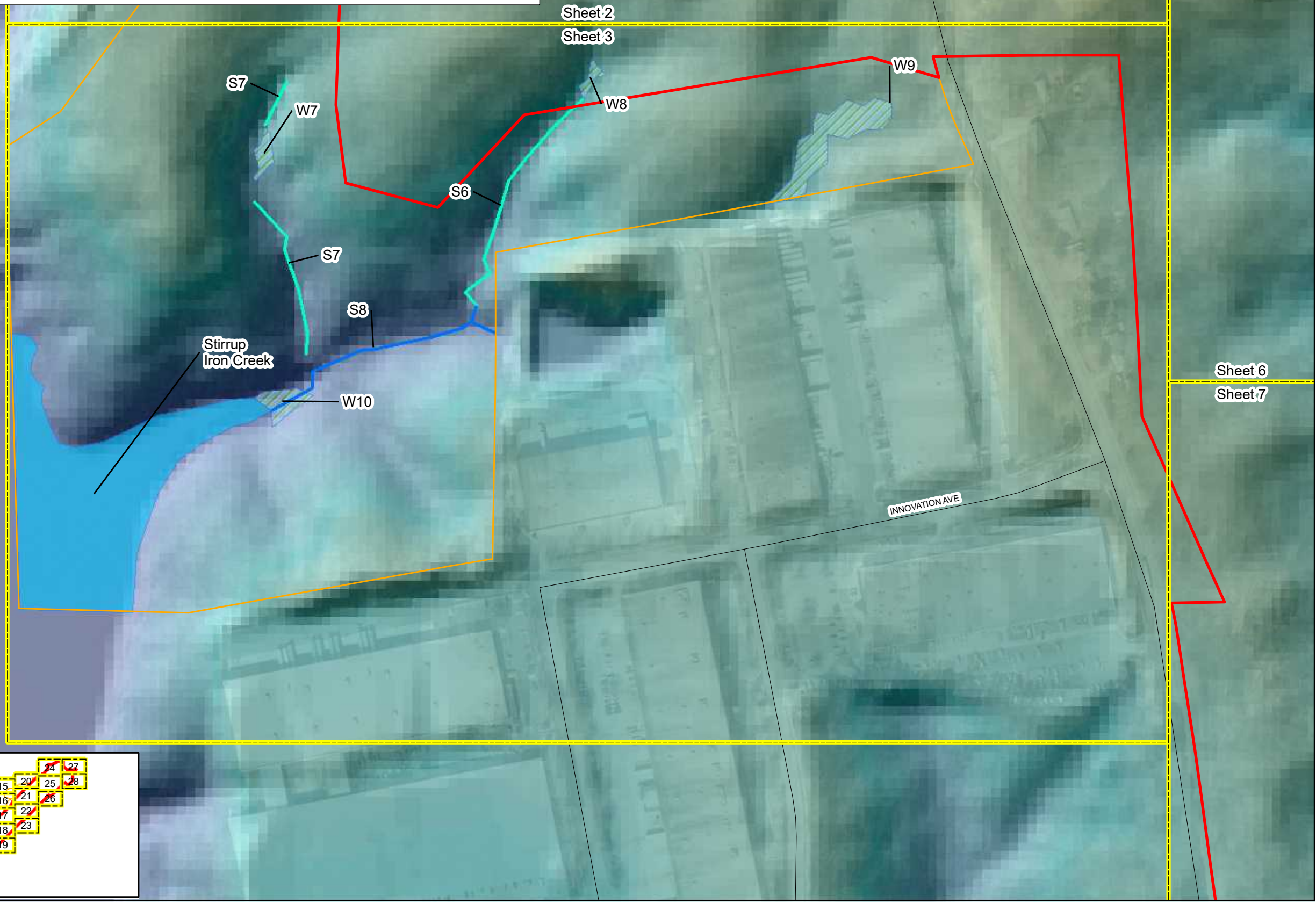
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Figure

# 5

Sheet 3

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			





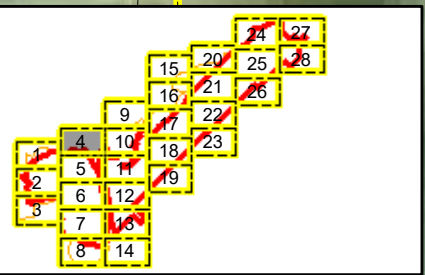
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**Jurisdictional Features Map over LiDAR**  
**Wake County, North Carolina**

Date: November 2022  
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Job No.: 19-018  
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Figure  
**5**  
Sheet 4

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			





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**Jurisdictional Features Map over LiDAR**

**Wake County, North Carolina**

Date: November 2022

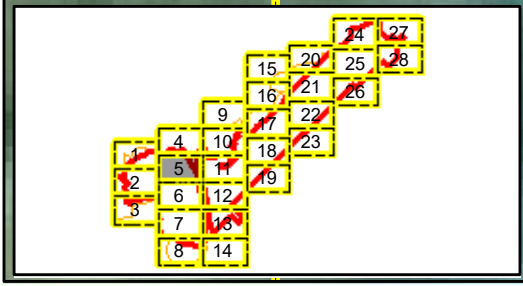
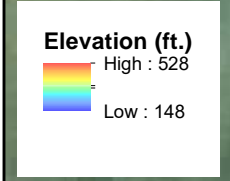
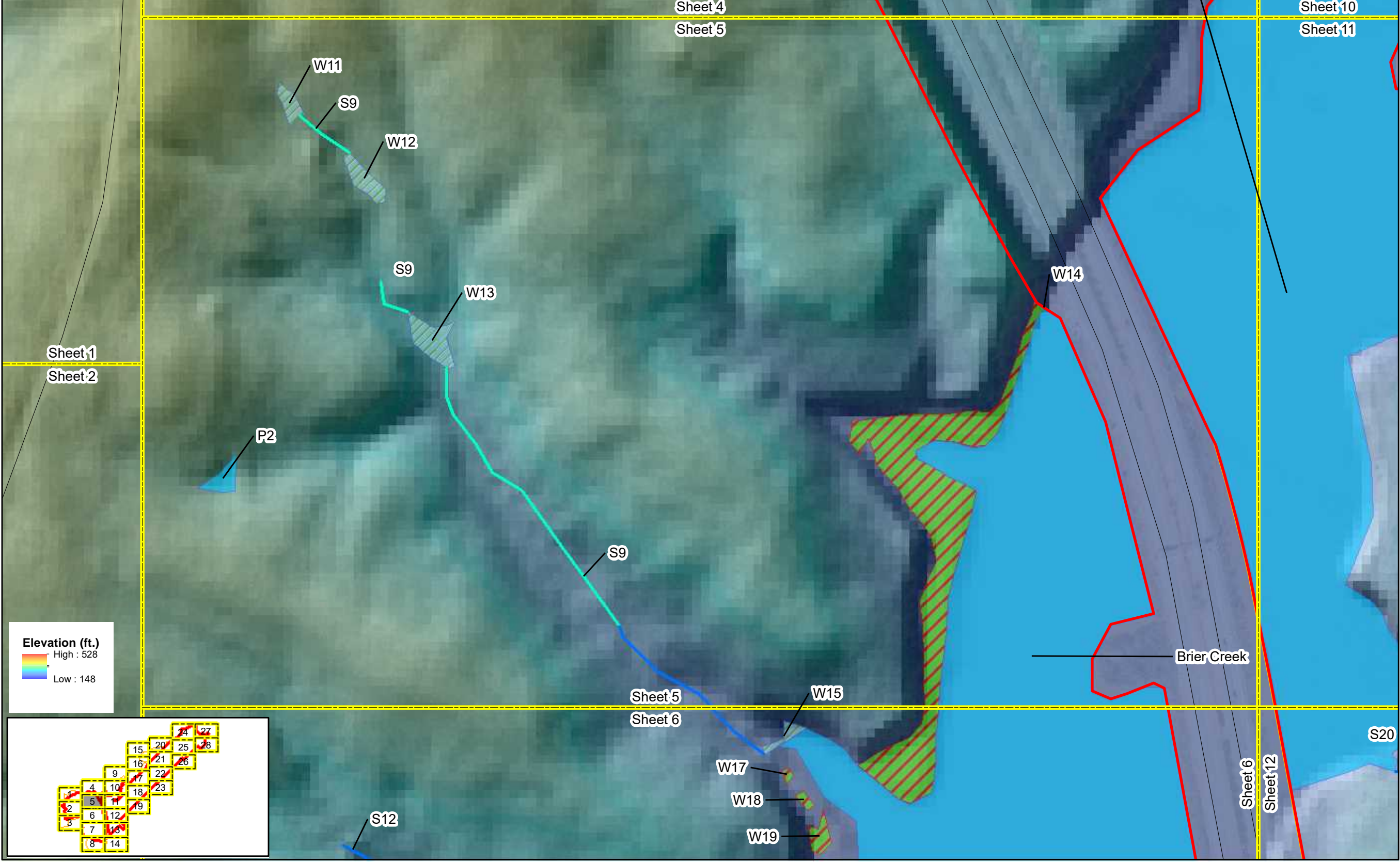
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Figure  
**5**  
Sheet 5

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			



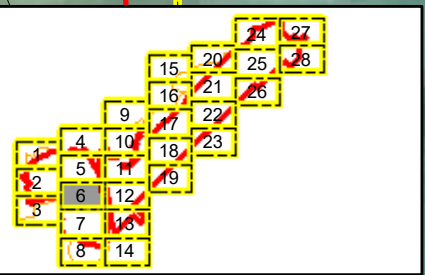
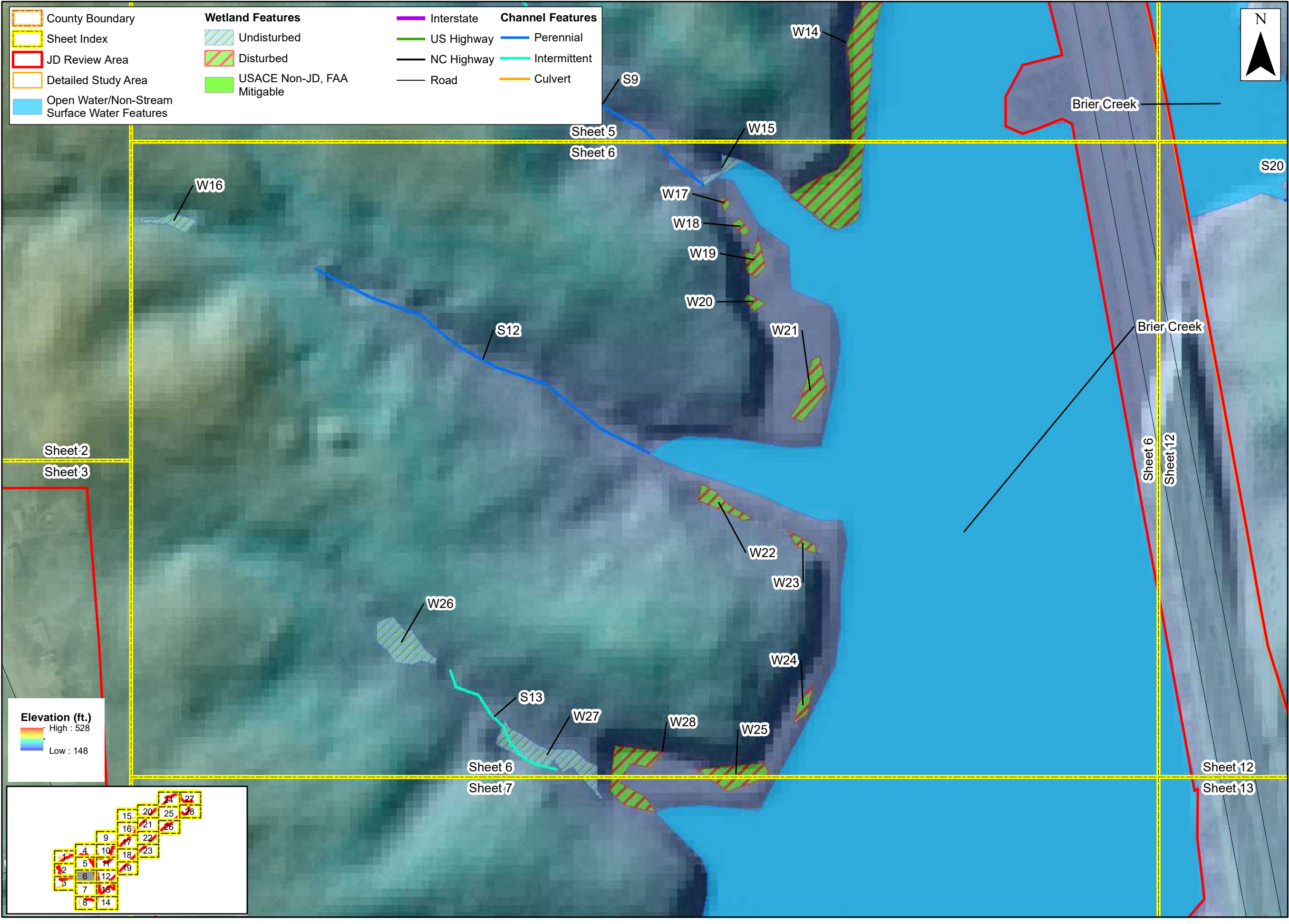


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**Wake County, North Carolina**

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Figure  
**5**  
Sheet 6





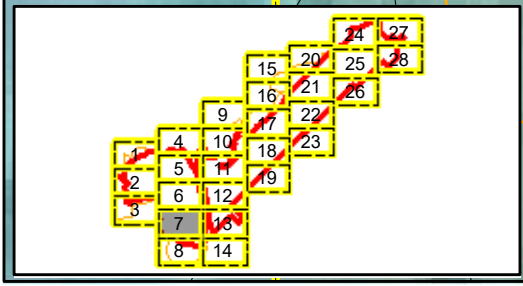
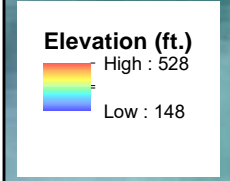
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**Federal Environmental Assessment**  
**Jurisdictional Features Map over LiDAR**  
**Wake County, North Carolina**

Date: November 2022  
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Job No.: 19-018  
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Figure  
**5**  
Sheet 7

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			





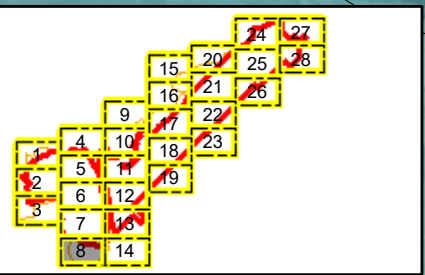
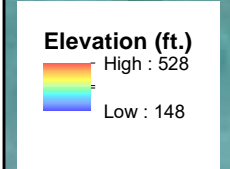
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**Jurisdictional Features Map over LiDAR**  
**Wake County, North Carolina**

Date: November 2022  
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Job No.: 19-018  
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Figure  
**5**  
Sheet 8

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			





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5L/23R  
Replacement**

**Federal  
Environmental  
Assessment**

**Jurisdictional  
Features Map  
over  
LiDAR**

**Wake County,  
North Carolina**

Date: November 2022

Scale: 0 100 200 Ft

Job No.: 19-018

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Figure

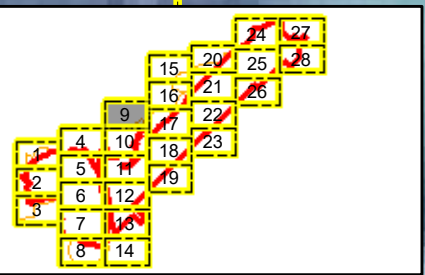
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Sheet 9

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			



**Elevation (ft.)**  
High : 528  
Low : 148



Sheet 9  
Sheet 10

Sheet 16  
Sheet 17  
Little Brier Creek  
Little Brier Creek  
W47  
W46  
W48  
S29

Little Brier Creek

W44



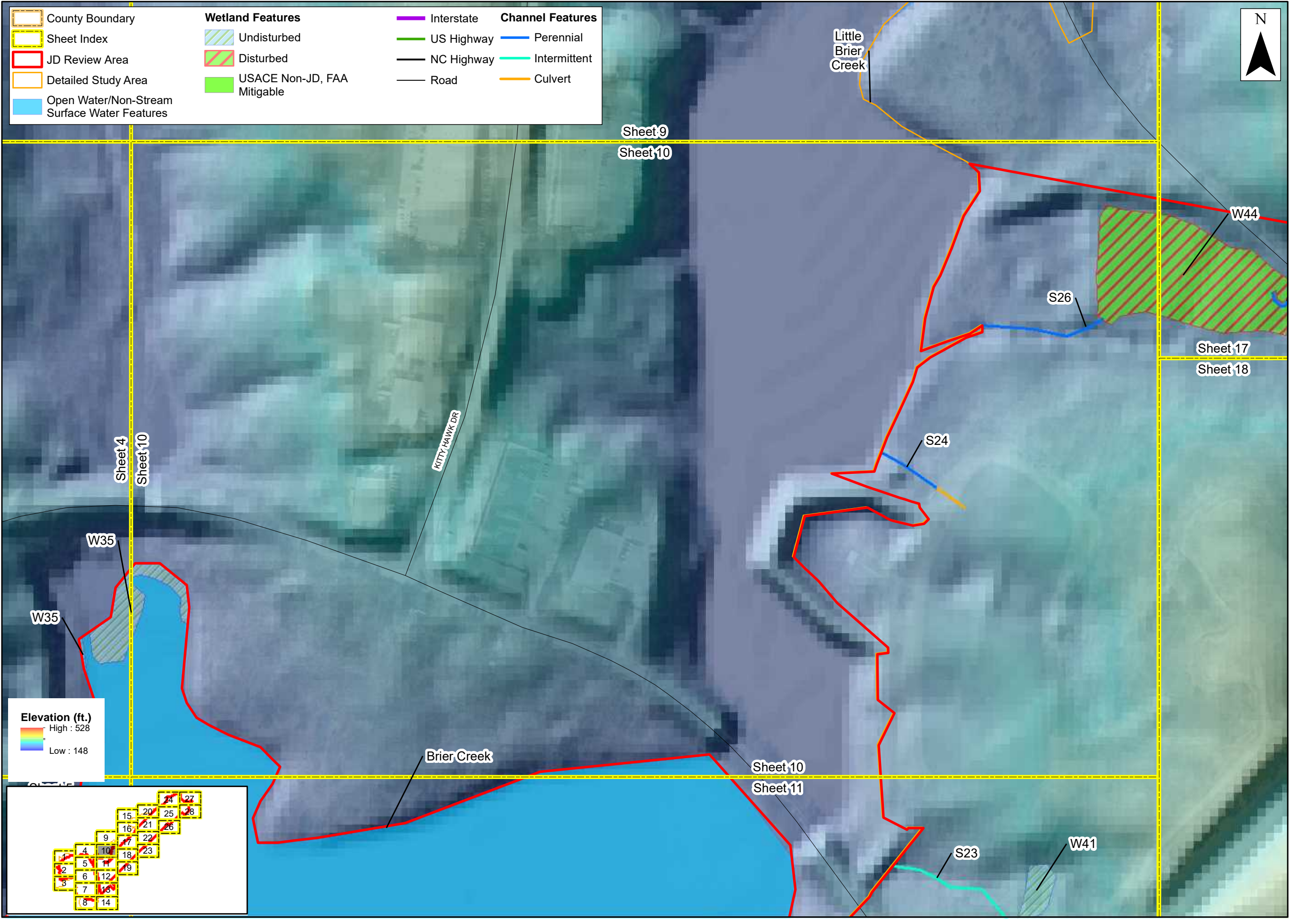
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**Federal Environmental Assessment**  
**Jurisdictional Features Map over LiDAR**  
**Wake County, North Carolina**

Date: November 2022  
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 Job No.: 19-018  
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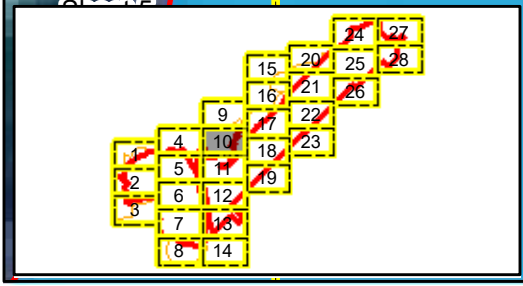
Figure  
**5**  
 Sheet 10



- County Boundary
- Sheet Index
- JD Review Area
- Detailed Study Area
- Open Water/Non-Stream Surface Water Features

- Wetland Features**
- Undisturbed
  - Disturbed
  - USACE Non-JD, FAA Mitigable

- Channel Features**
- Interstate
  - US Highway
  - NC Highway
  - Road
  - Perennial
  - Intermittent
  - Culvert





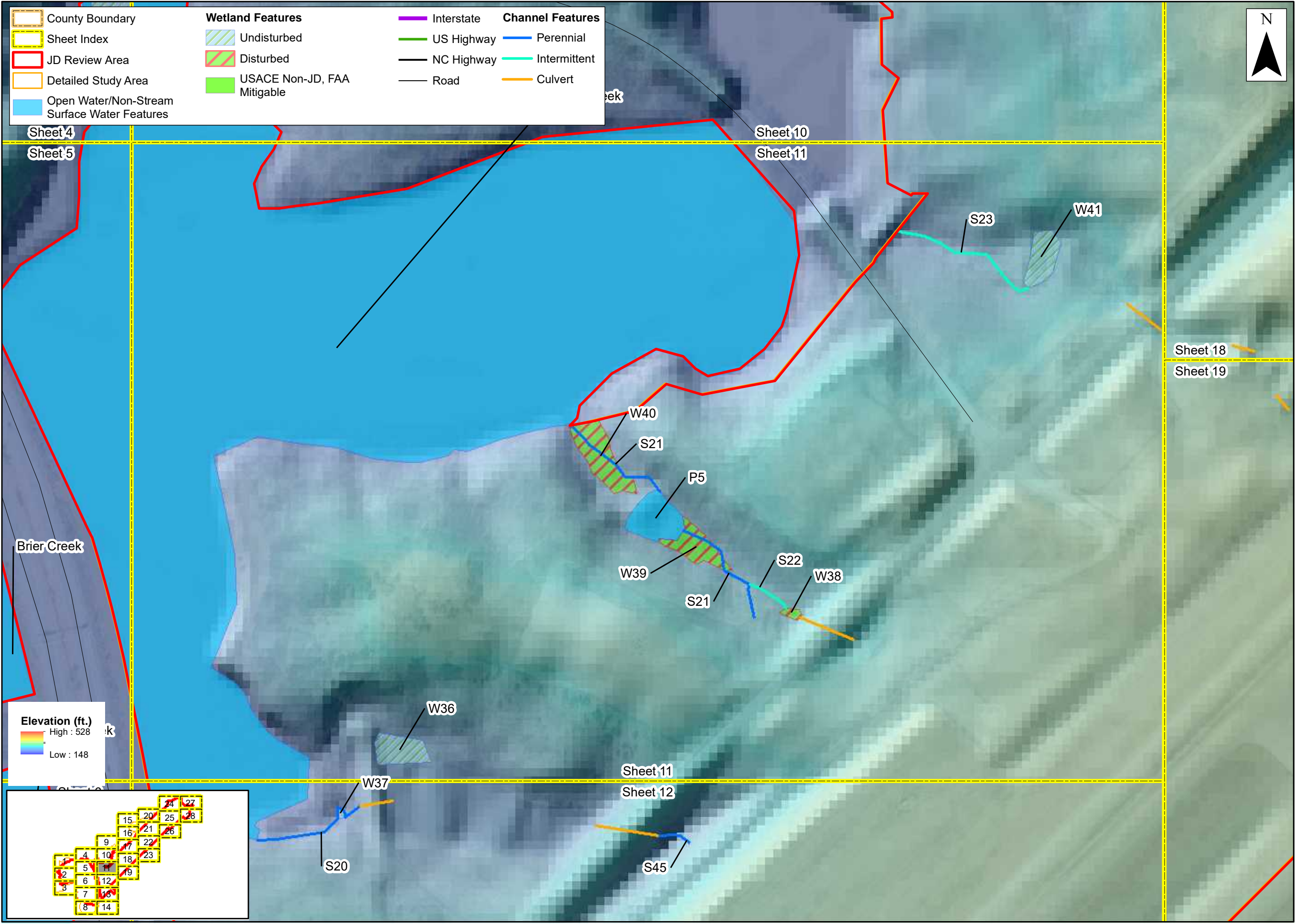


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**Federal Environmental Assessment**  
**Jurisdictional Features Map over LiDAR**  
**Wake County, North Carolina**

Date: November 2022  
Scale: 0 100 200 Ft  
Job No.: 19-018  
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Figure  
**5**  
Sheet 11

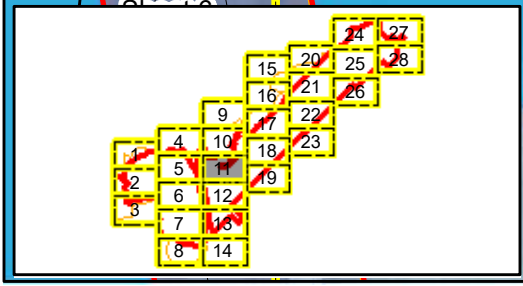


- County Boundary
- Sheet Index
- JD Review Area
- Detailed Study Area
- Open Water/Non-Stream Surface Water Features

- Wetland Features**
- Undisturbed
  - Disturbed
  - USACE Non-JD, FAA Mitigable

- Interstate
- US Highway
- NC Highway
- Road

- Channel Features**
- Perennial
  - Intermittent
  - Culvert



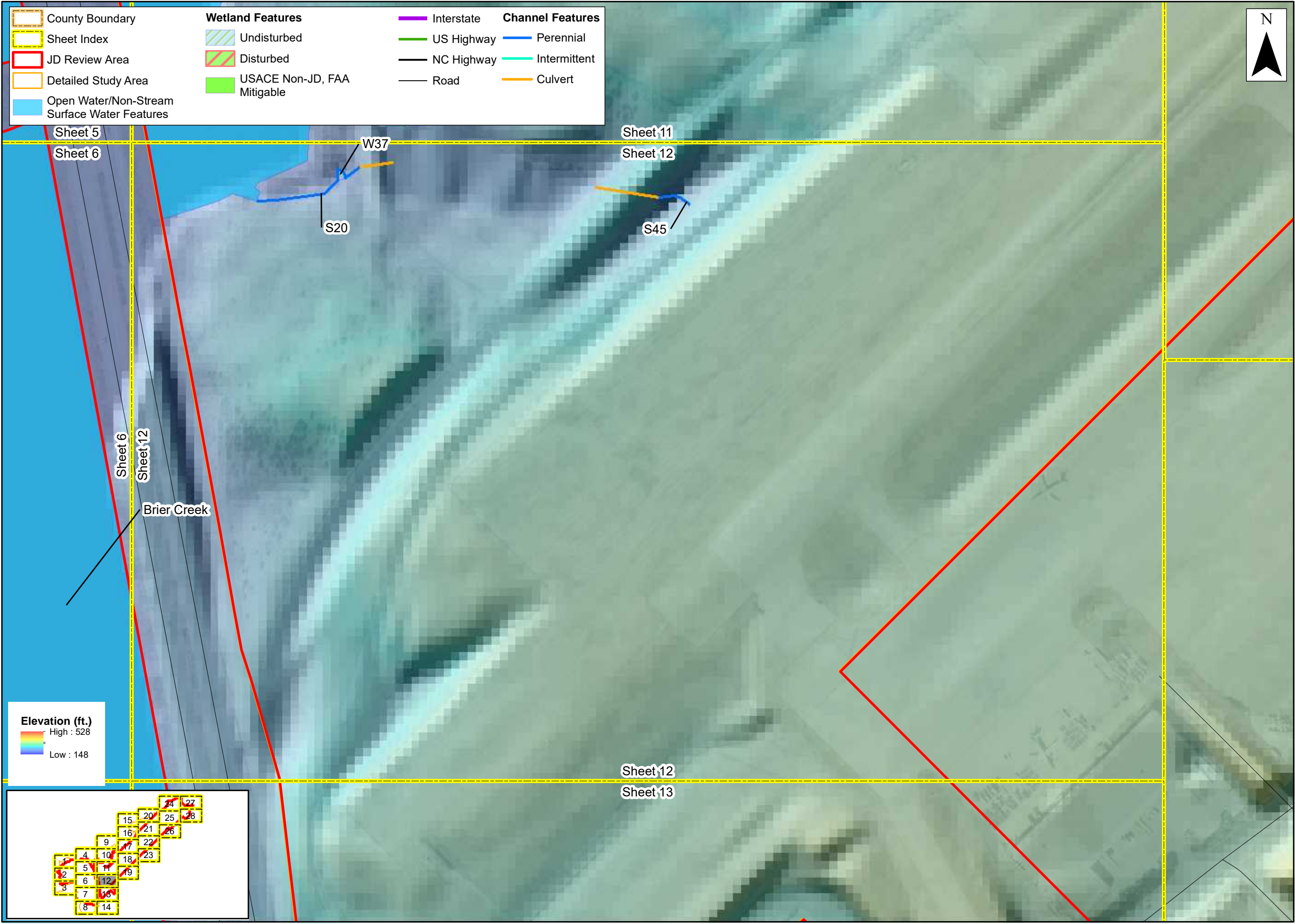


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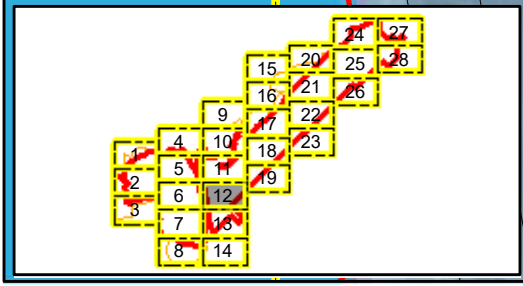

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**Proposed Runway 5L/23R Replacement**  
**Federal Environmental Assessment**  
**Jurisdictional Features Map over LiDAR**  
**Wake County, North Carolina**

Date: November 2022  
Scale: 0 100 200 Ft  
Job No.: 19-018  
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Figure  
**5**  
Sheet 12



County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			





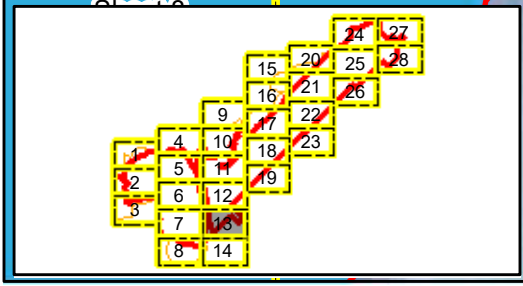
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**Wake County, North Carolina**

Date: November 2022  
Scale: 0 100 200 Ft  
Job No.: 19-018  
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Figure  
**5**  
Sheet 13

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			



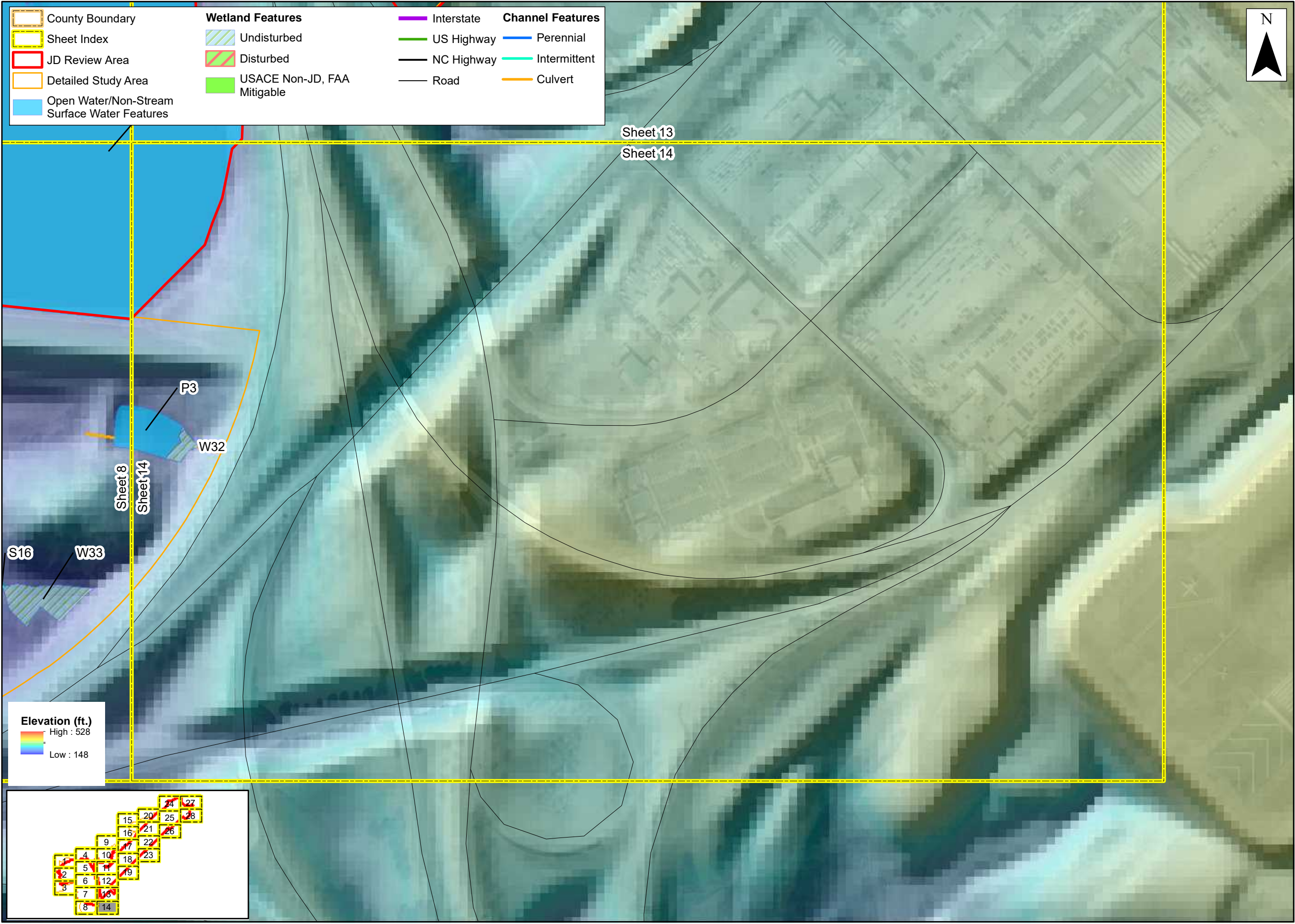


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International  
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**Proposed Runway  
5L/23R  
Replacement**  
**Federal  
Environmental  
Assessment**  
**Jurisdictional  
Features Map  
over  
LiDAR**  
**Wake County,  
North Carolina**

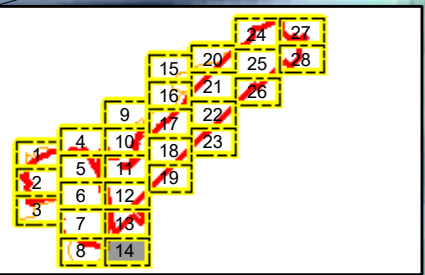
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Job No.: 19-018  
Drawn By: KEMS      Checked By: NDH

Figure  
**5**  
Sheet 14




County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			

**Elevation (ft.)**  
High : 528  
  
Low : 148





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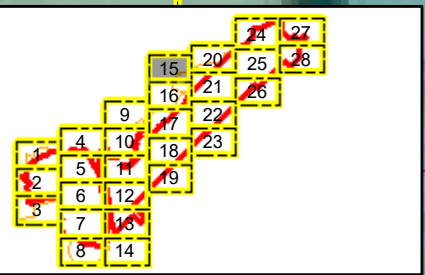
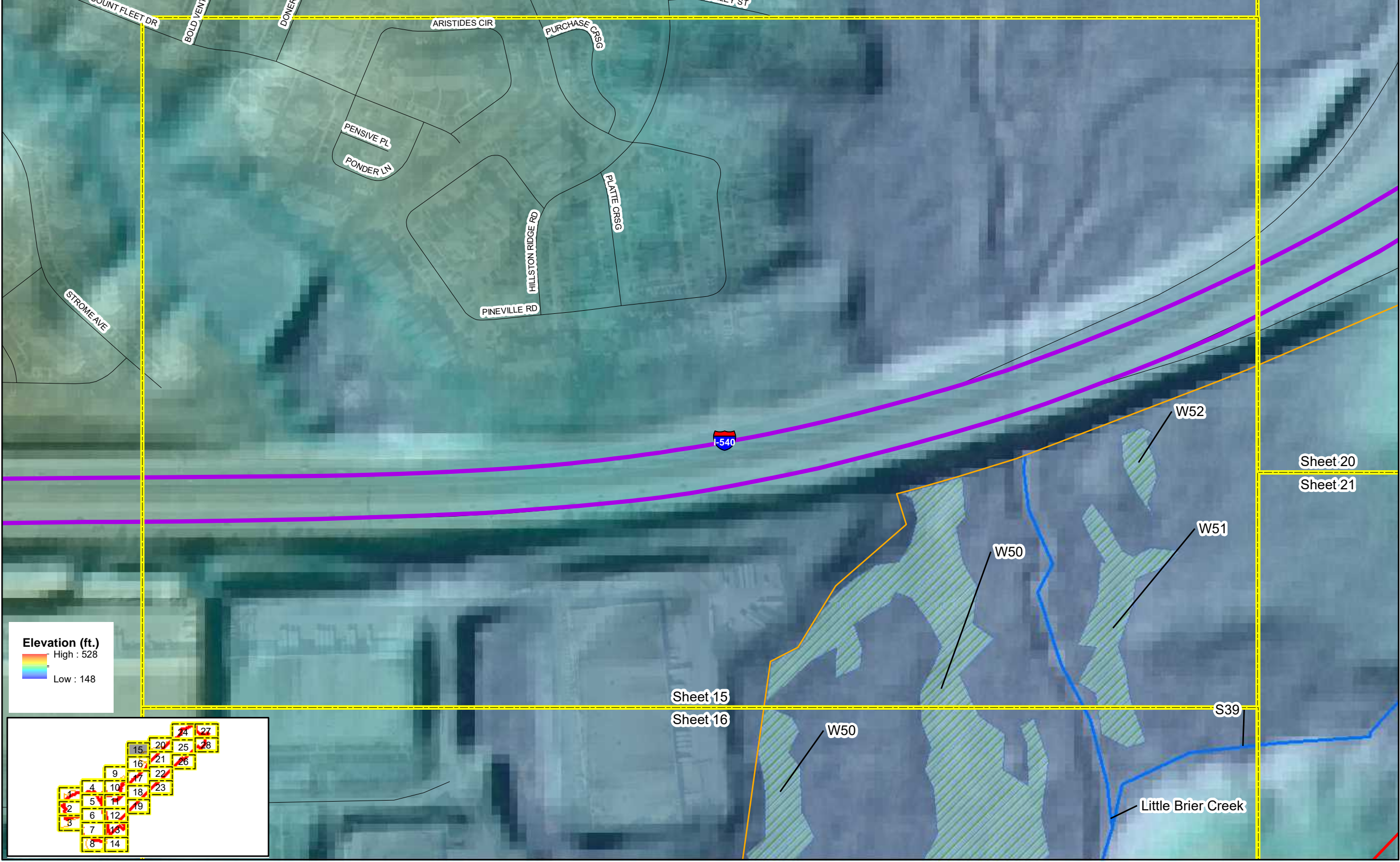


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**Federal Environmental Assessment**  
**Jurisdictional Features Map over LiDAR**  
**Wake County, North Carolina**

Date: November 2022  
Scale: 0 100 200 Ft  
Job No.: 19-018  
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Figure  
**5**  
Sheet 15

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			





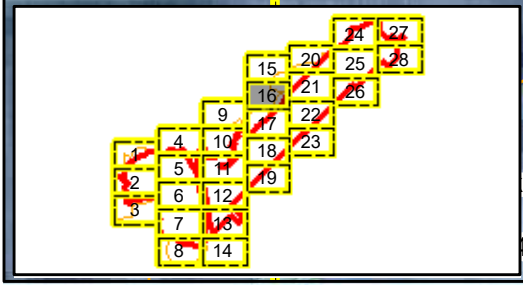
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**Federal Environmental Assessment**  
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Checked By: NDH

Figure  
**5**  
Sheet 16

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			



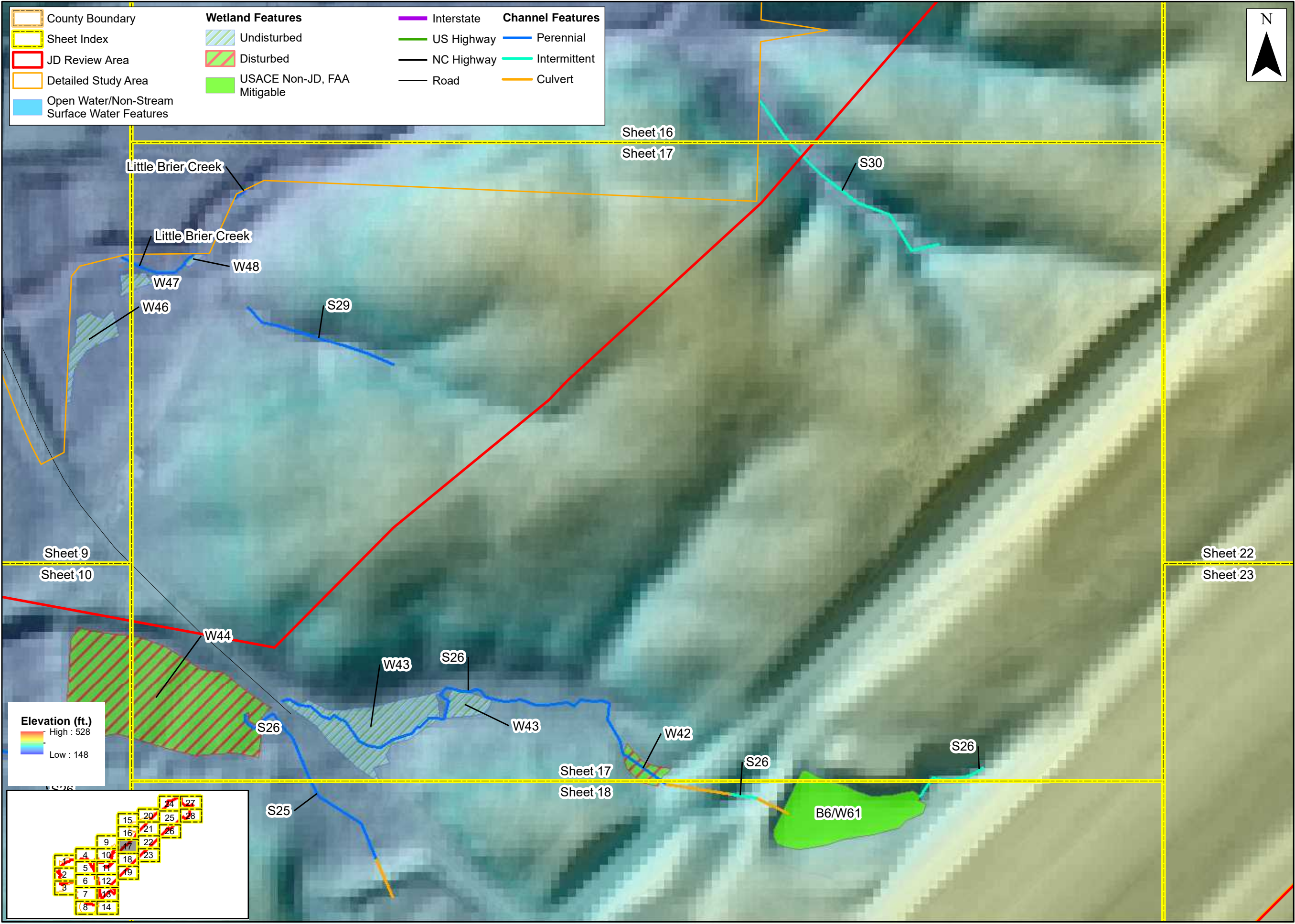


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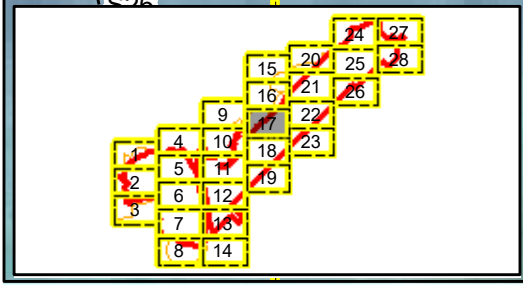
Figure  
**5**  
Sheet 17



County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			



**Elevation (ft.)**  
High : 528  
  
Low : 148



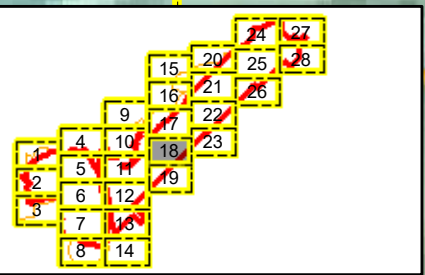
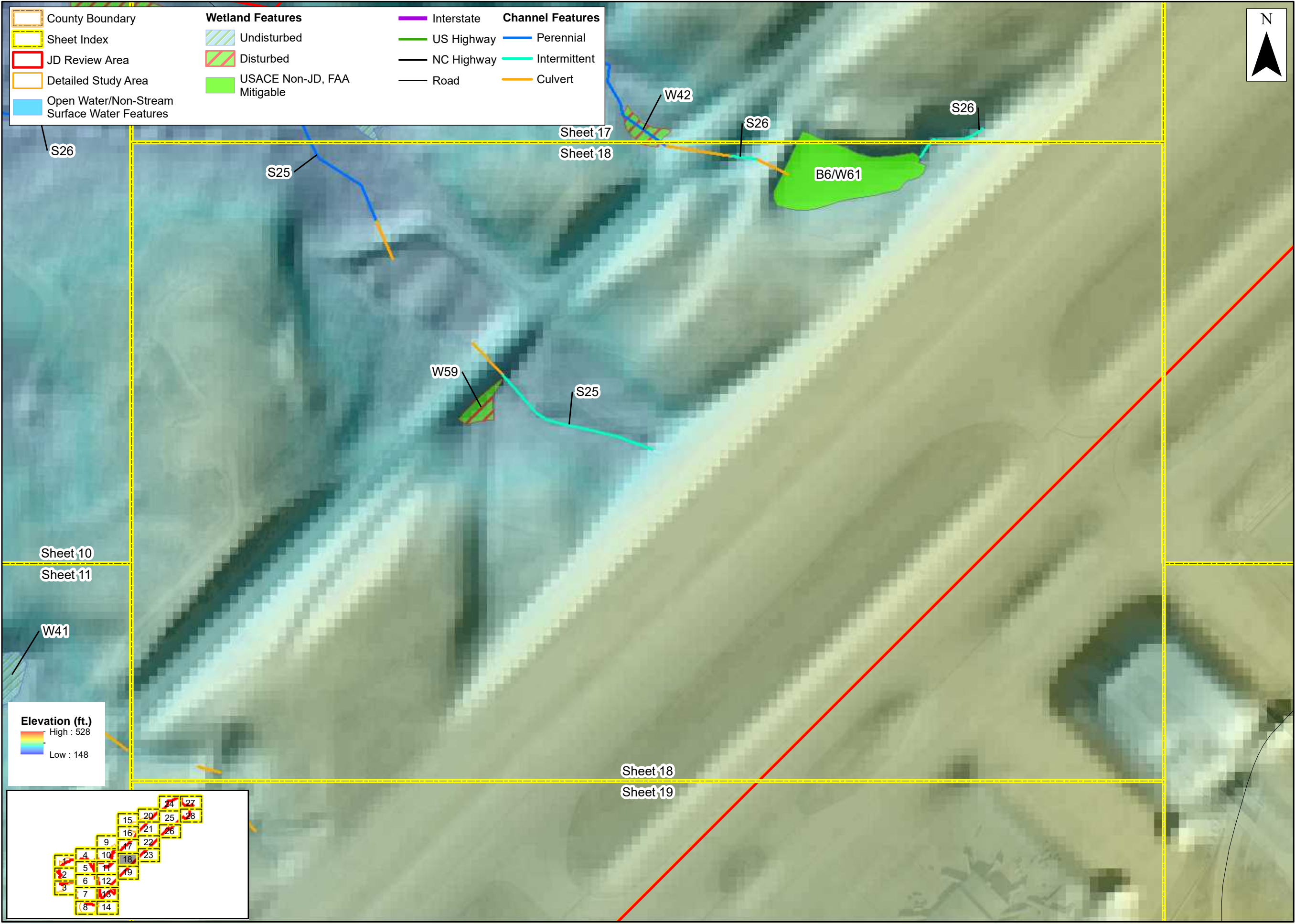


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Figure  
**5**  
Sheet 18







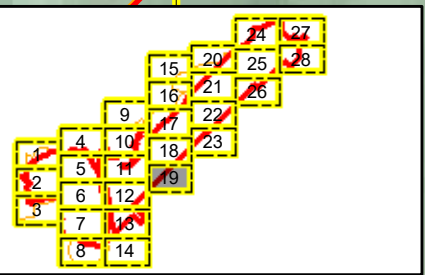
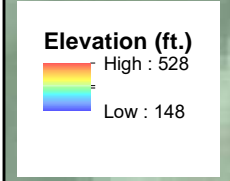
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Figure  
**5**  
Sheet 19

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			





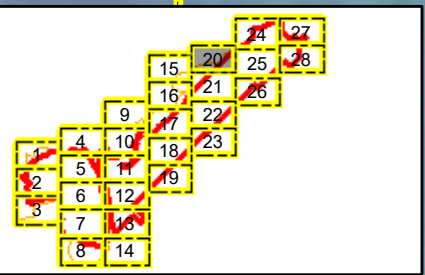
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**Wake County, North Carolina**

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Figure  
**5**  
Sheet 20

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			



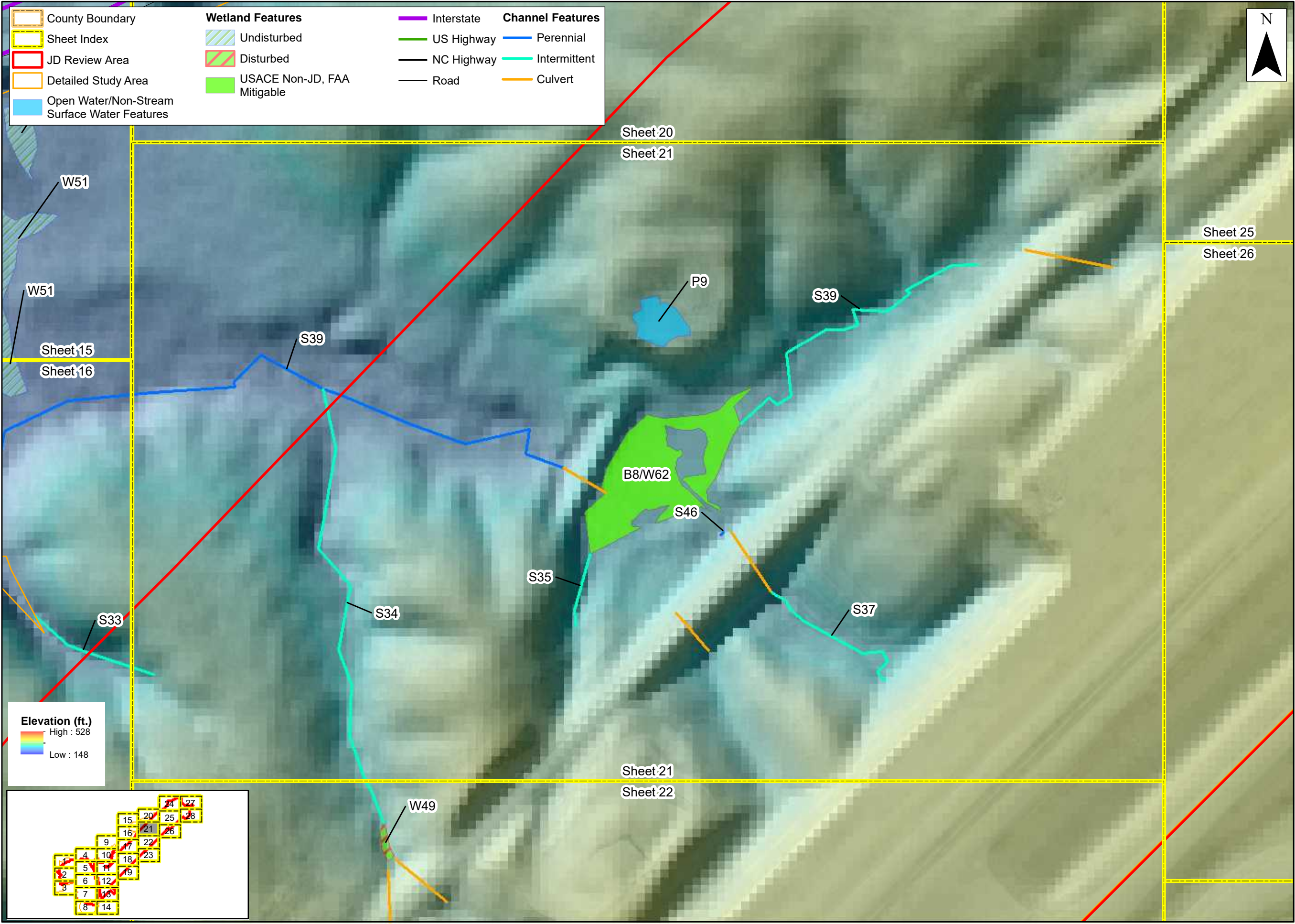


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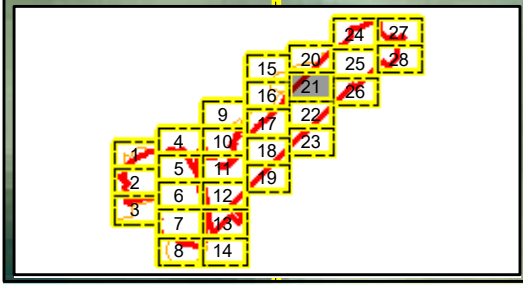
Figure  
**5**  
Sheet 21



- County Boundary
- Sheet Index
- JD Review Area
- Detailed Study Area
- Open Water/Non-Stream Surface Water Features

- Wetland Features**
- Undisturbed
  - Disturbed
  - USACE Non-JD, FAA Mitigable

- Channel Features**
- Perennial
  - Intermittent
  - Culvert
- Other Features**
- Interstate
  - US Highway
  - NC Highway
  - Road





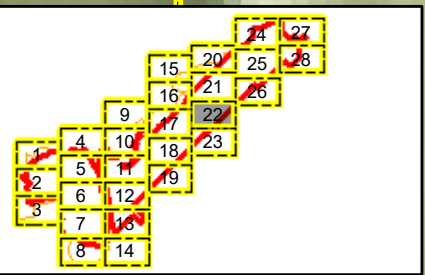
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Figure  
**5**  
Sheet 22

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			





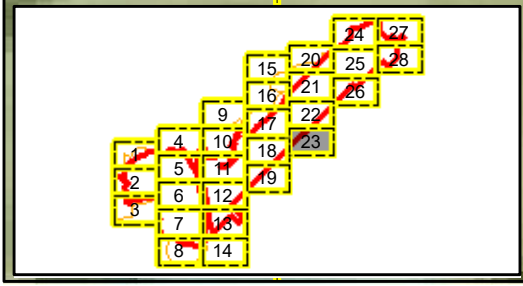
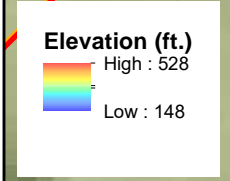
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Figure  
**5**  
Sheet 23

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			





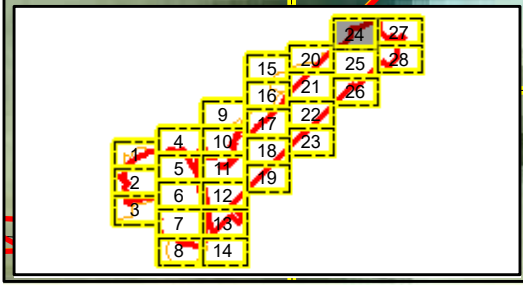
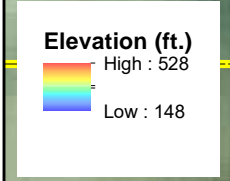
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Figure  
**5**  
Sheet 24

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			



Sheet 27  
Sheet 28

Sheet 24  
Sheet 25



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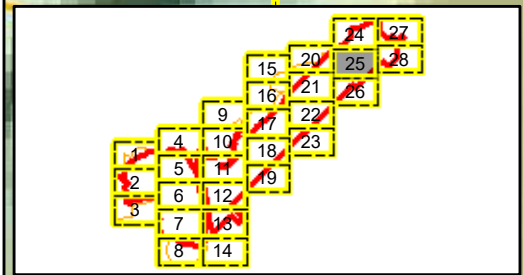
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Figure  
**5**  
Sheet 25

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			



**Elevation (ft.)**  
High : 528  
  
Low : 148




















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Figure  
**5**  
Sheet 26

 County Boundary	<b>Wetland Features</b>	 Interstate	<b>Channel Features</b>
 Sheet Index	 Undisturbed	 US Highway	 Perennial
 JD Review Area	 Disturbed	 NC Highway	 Intermittent
 Detailed Study Area	 USACE Non-JD, FAA Mitigable	 Road	 Culvert
 Open Water/Non-Stream Surface Water Features			




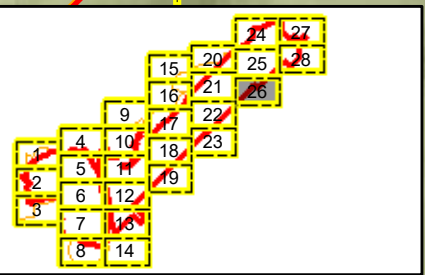
Sheet 25

Sheet 26

Sheet 21

Sheet 22

**Elevation (ft.)**  
High : 528  
  
Low : 148







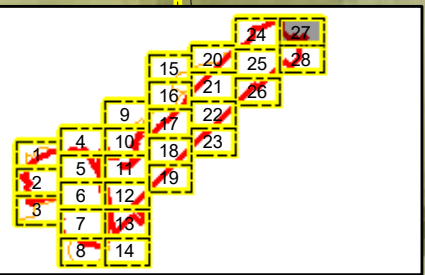
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**Wake County, North Carolina**

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Figure  
**5**  
Sheet 27

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			



	County Boundary	<b>Wetland Features</b>		<b>Channel Features</b>
	Sheet Index			
	JD Review Area			
	Detailed Study Area			
	Open Water/Non-Stream Surface Water Features			



Sheet 27

Sheet 28

Sheet 24

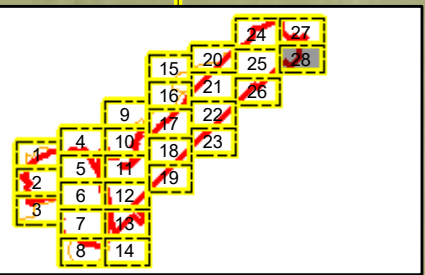
Sheet 25

B1/W60

S44

**Elevation (ft.)**

High : 528  
Low : 148



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Job No.: 19-018

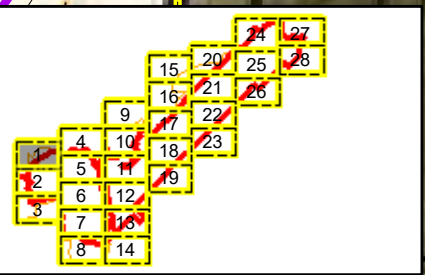
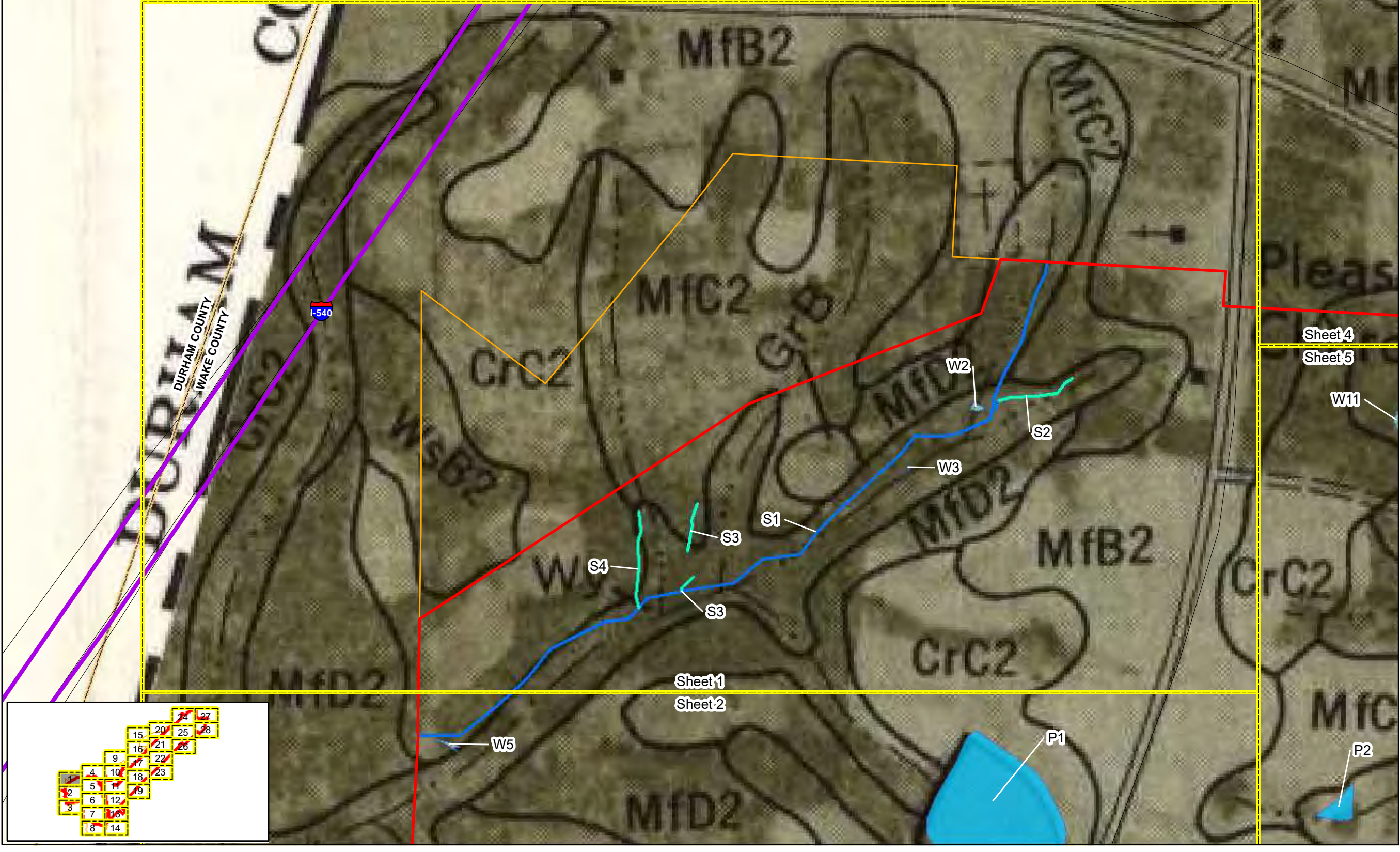
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Figure

**5**

Sheet 28

County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			



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**Federal Environmental Assessment**

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**Wake County, North Carolina**

Date:	November 2022
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Job No.:	19-018
Drawn By:	Checked By:
KEMS	NDH

Figure  
**6**  
Sheet 1

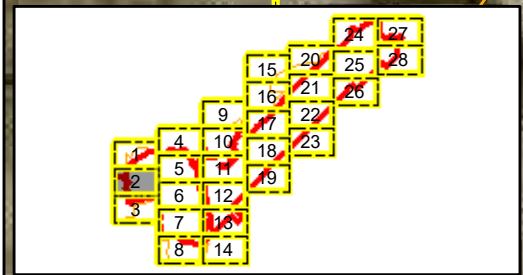
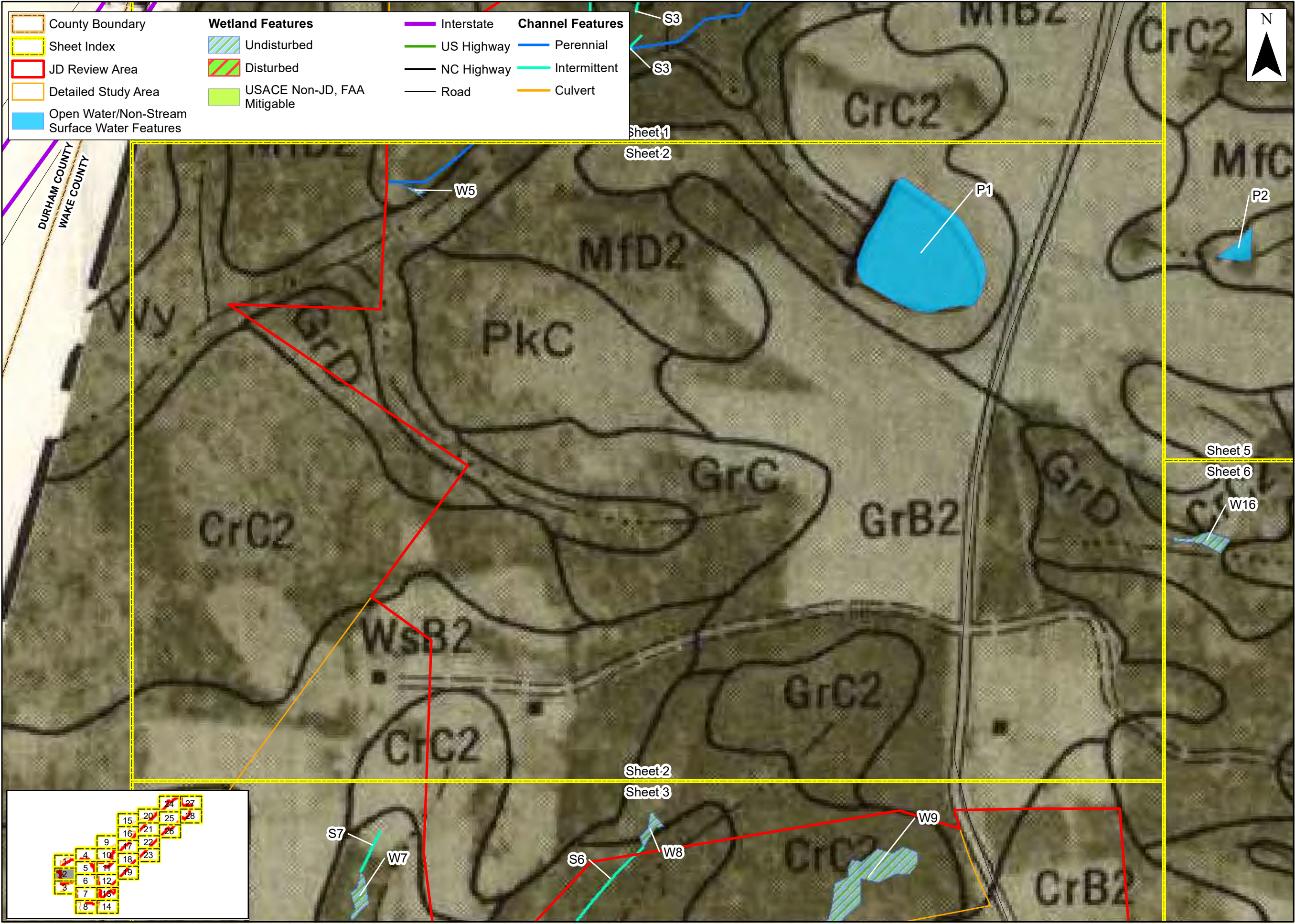


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**Proposed Runway 5L/23R Replacement**  
**Federal Environmental Assessment**  
**USDA-NRCS Soils Map (Sheets 18, 26, and 27)**  
**Wake County, North Carolina**

Date: November 2022  
Scale: 0 100 200 Ft  
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Figure  
**6**  
Sheet 2



- County Boundary
- Sheet Index
- JD Review Area
- Detailed Study Area
- Open Water/Non-Stream Surface Water Features

- Wetland Features**
- Undisturbed
  - Disturbed
  - USACE Non-JD, FAA Mitigable

- Channel Features**
- Interstate
  - US Highway
  - NC Highway
  - Road
  - Perennial
  - Intermittent
  - Culvert

Sheet 1

Sheet 2

Sheet 5


Sheet 6

Sheet 2

Sheet 3



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**Proposed Runway 5L/23R Replacement**

**Federal Environmental Assessment**

**USDA-NRCS Soils Map (Sheets 18, 26, and 27)**

**Wake County, North Carolina**

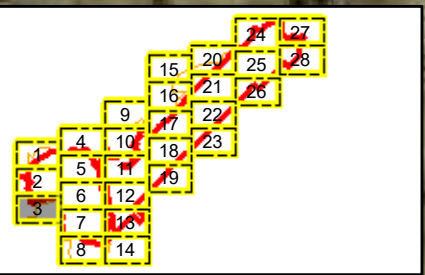
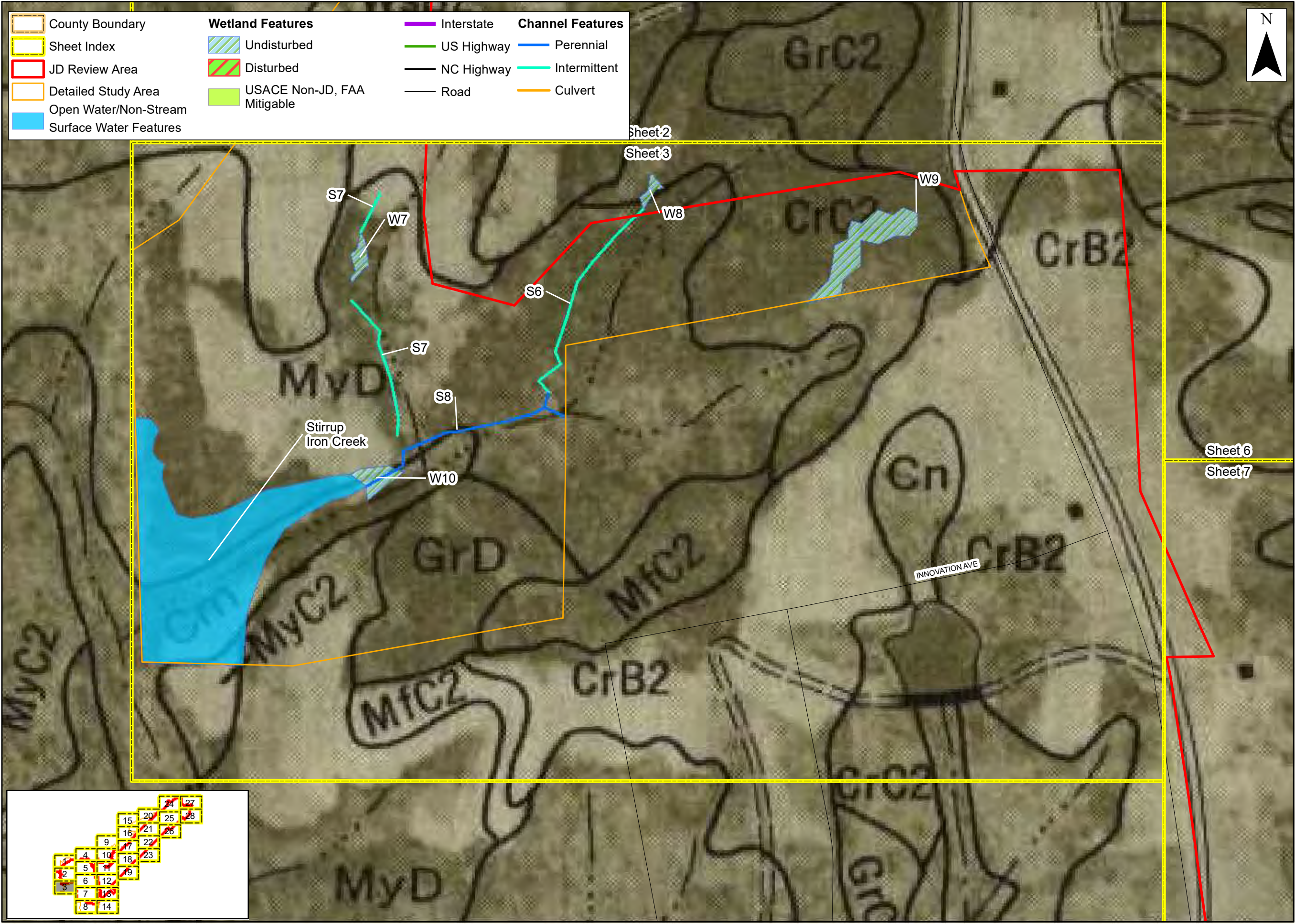
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Scale: 0 100 200 Ft

Job No.: 19-018

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Figure  
**6**  
Sheet 3



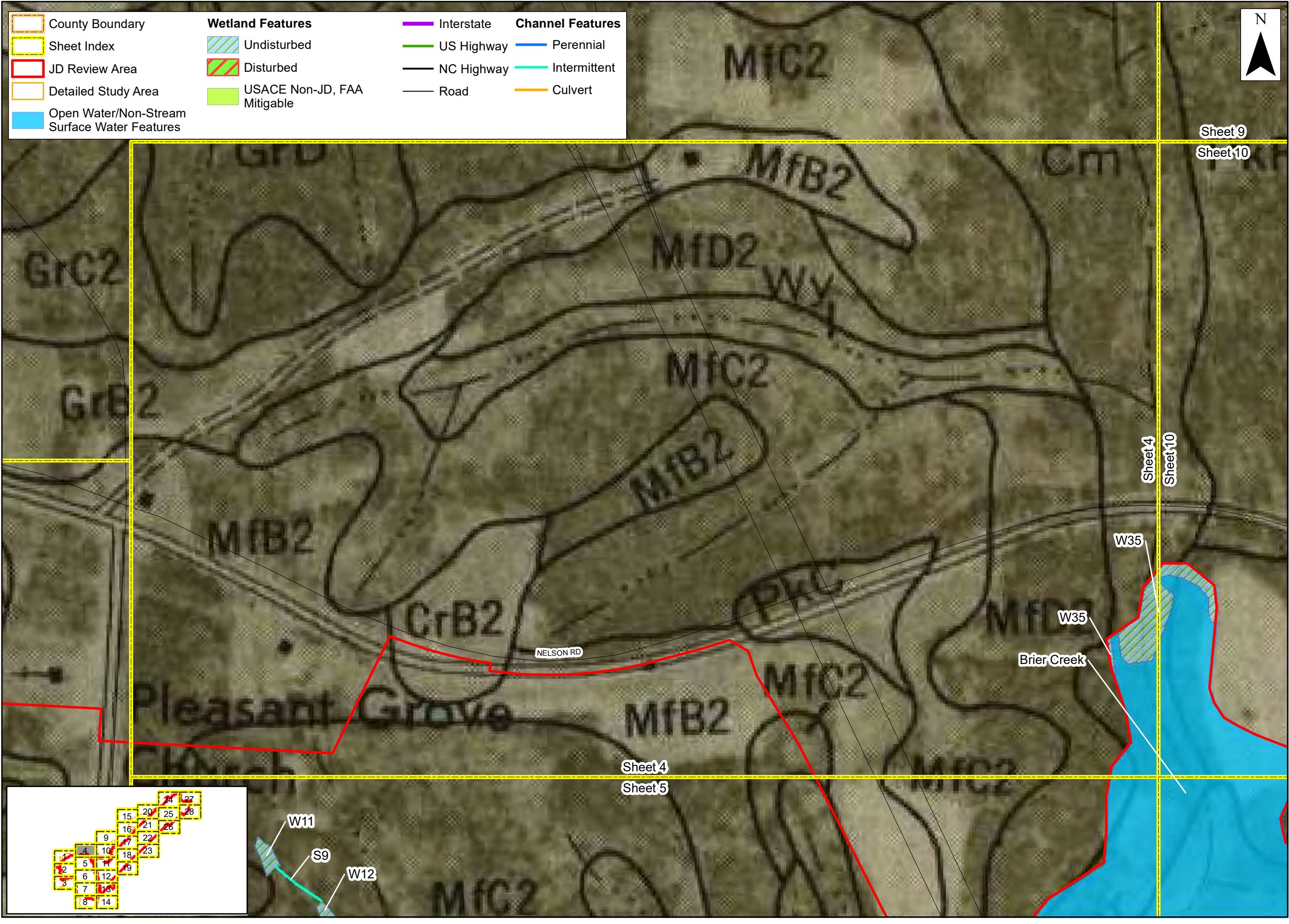


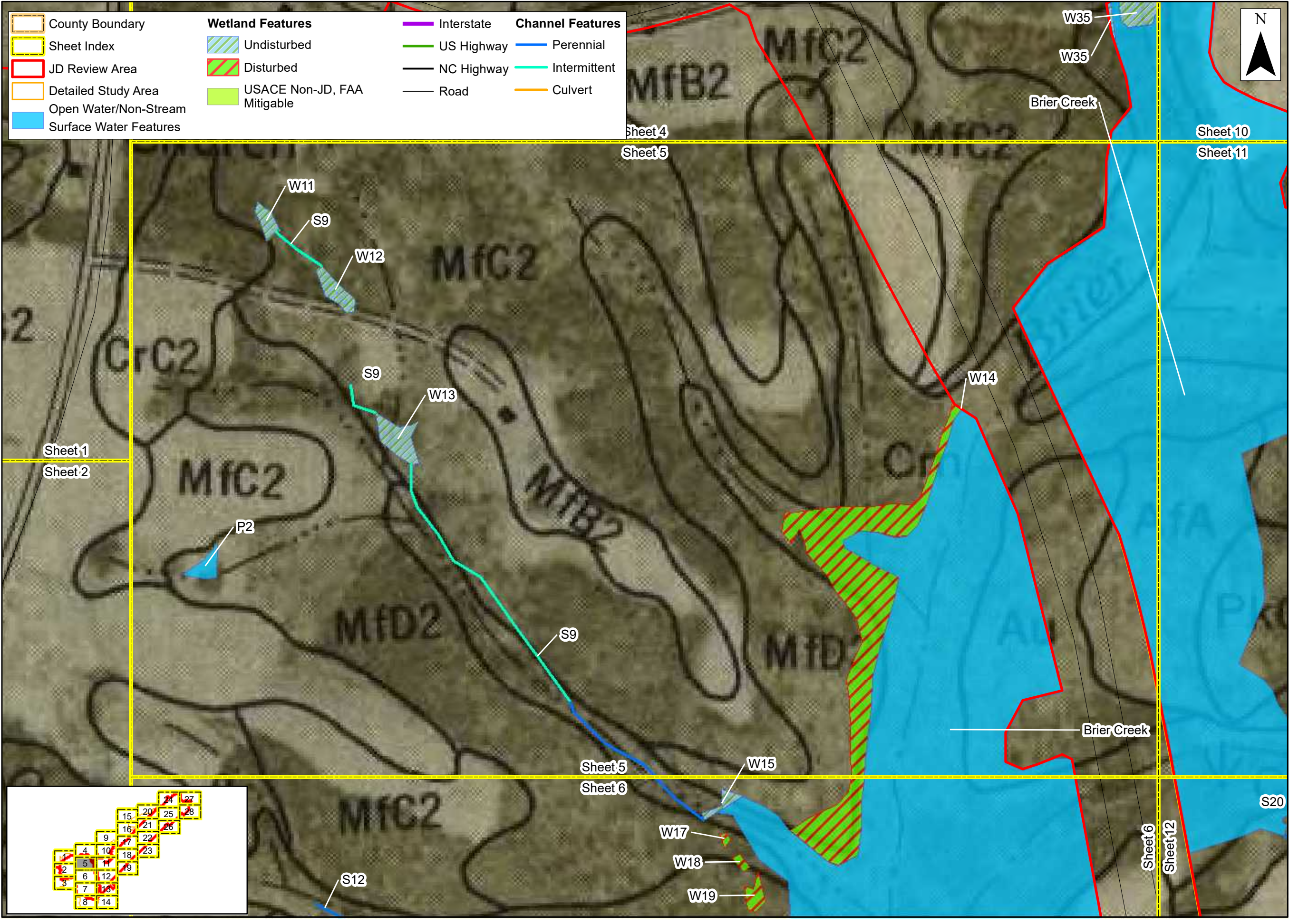
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**Wake County, North Carolina**

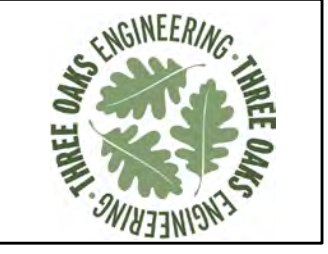
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Figure  
**6**  
Sheet 4





	County Boundary		Undisturbed		Perennial
	Sheet Index		Disturbed		Intermittent
	JD Review Area		USACE Non-JD, FAA Mitigable		Culvert
	Detailed Study Area				
	Open Water/Non-Stream				
	Surface Water Features				
			Interstate		US Highway
			NC Highway		Road



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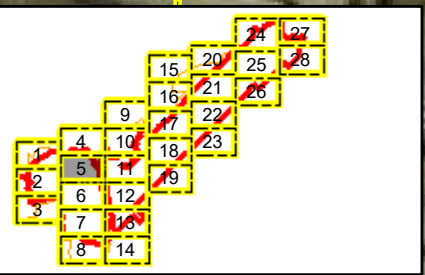
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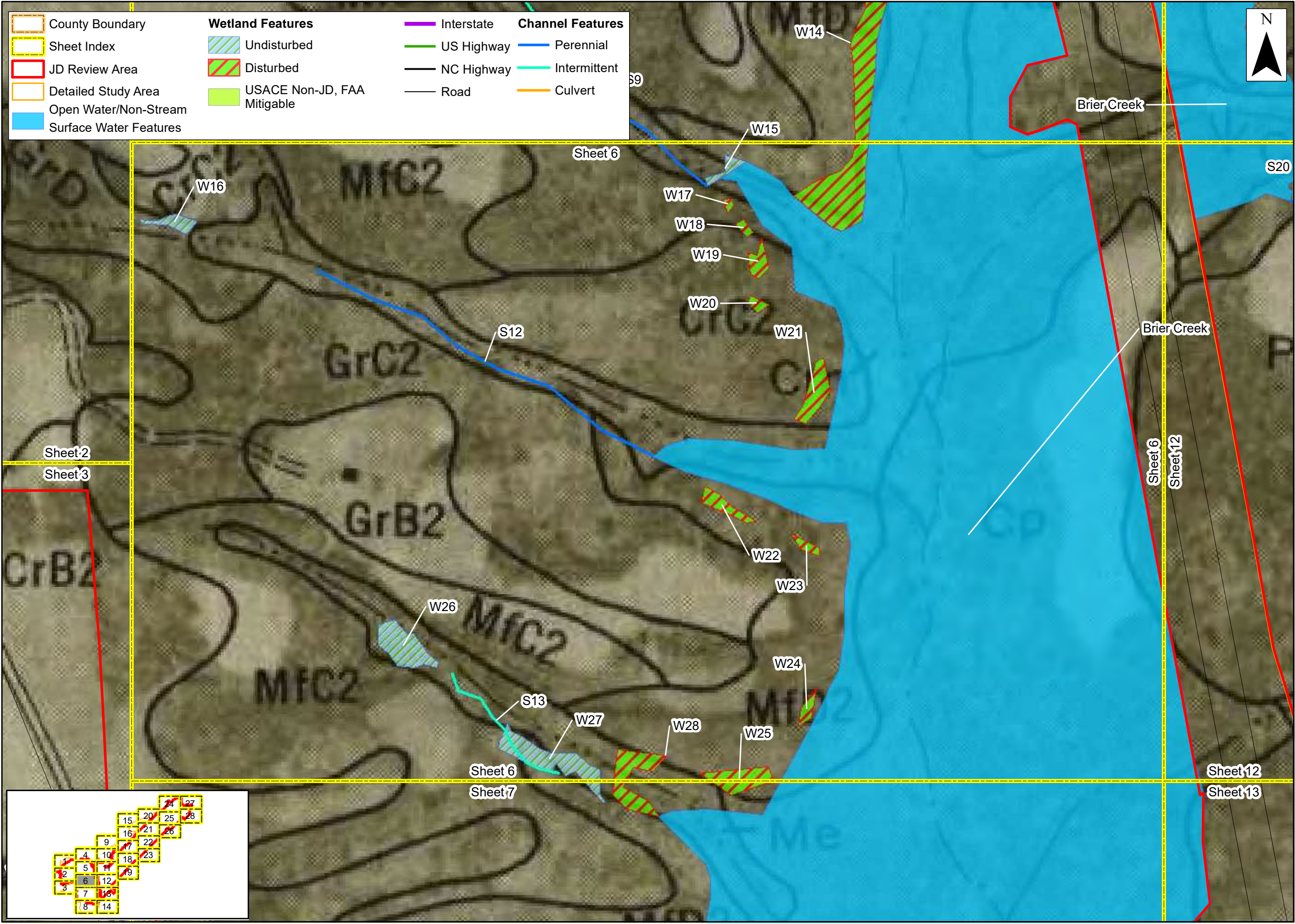
**USDA-NRCS Soils Map (Sheets 18, 26, and 27)**

**Wake County, North Carolina**

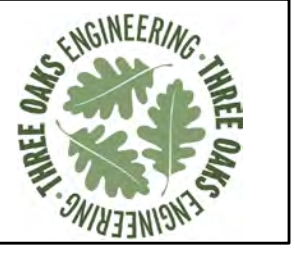
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Job No.:	19-018
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Figure  
**6**  
Sheet 5





	County Boundary		Undisturbed		Perennial
	Sheet Index		Disturbed		Intermittent
	JD Review Area		USACE Non-JD, FAA Mitigable		Culvert
	Detailed Study Area				
	Open Water/Non-Stream				
	Surface Water Features				



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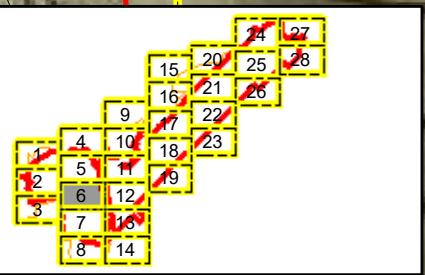
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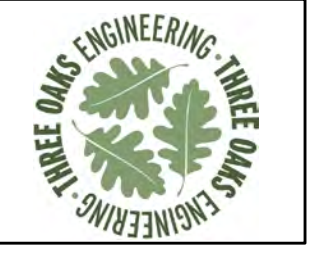
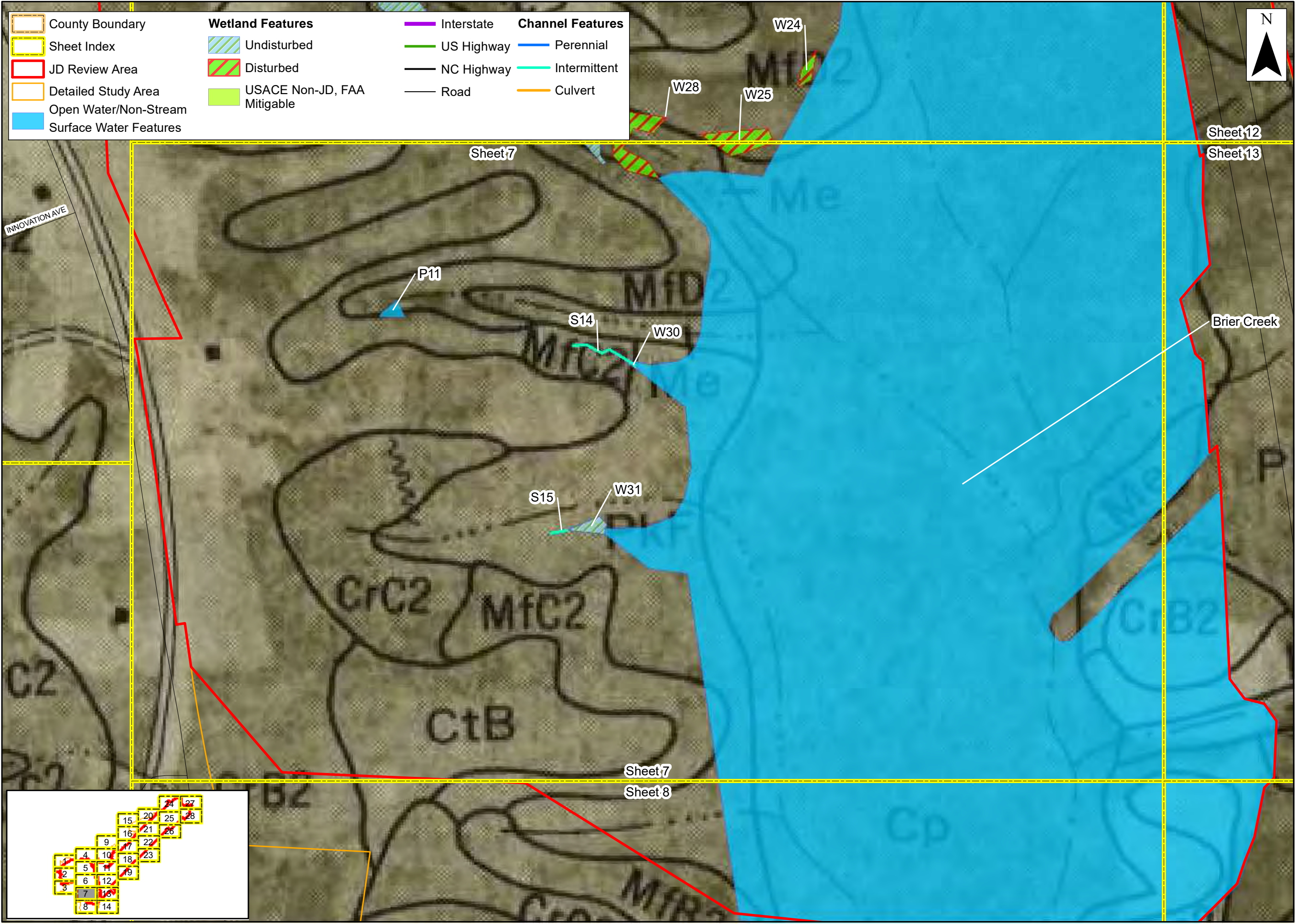
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Checked By:	NDH

Figure  
**6**  
Sheet 6







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Figure  
**6**  
Sheet 7





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**Federal Environmental Assessment**

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**Wake County, North Carolina**

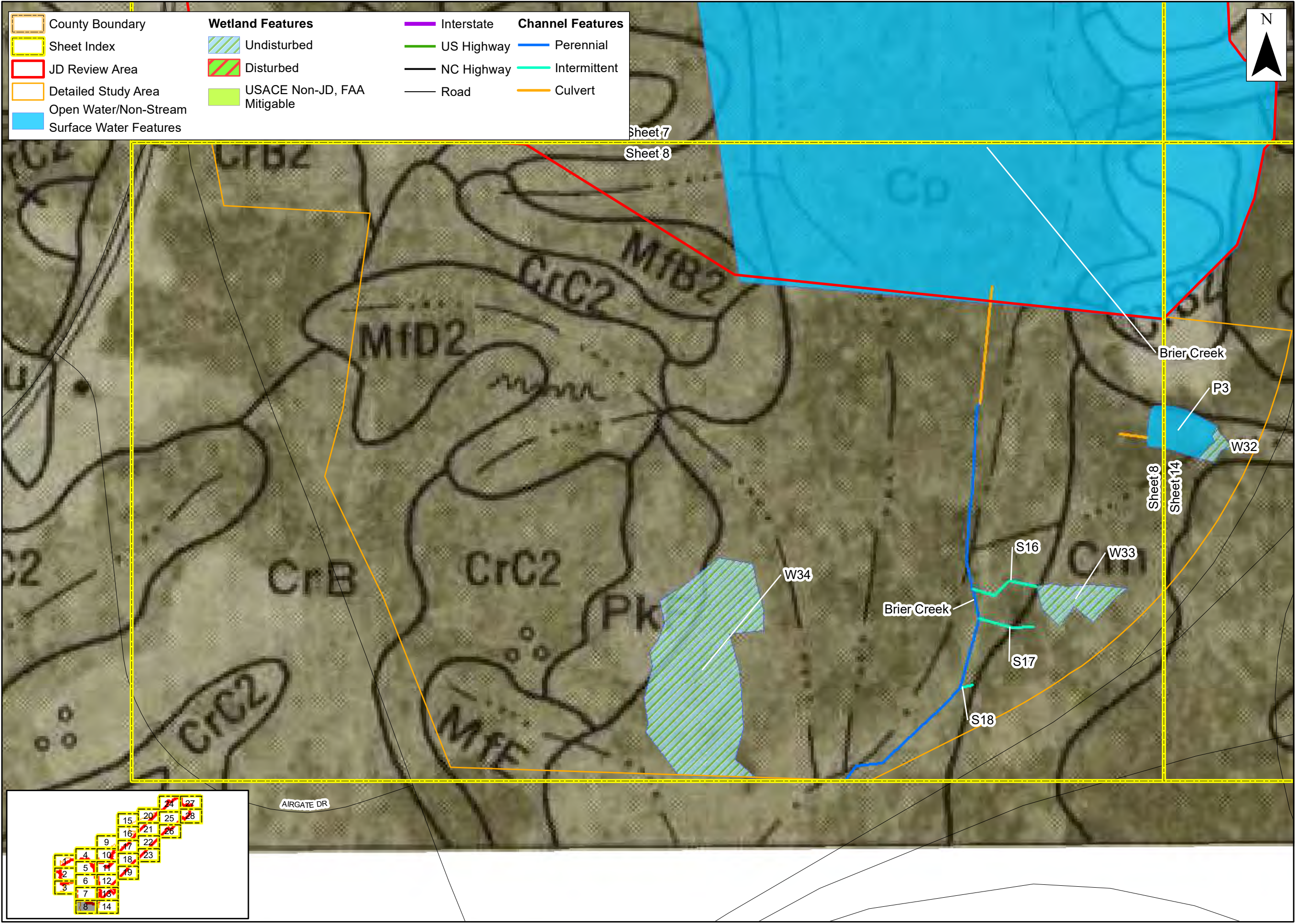
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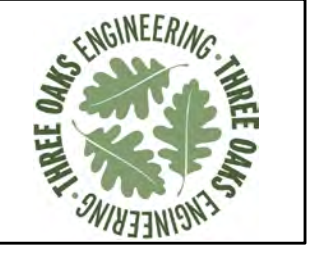
Figure  
**6**  
Sheet 8



County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream			
Surface Water Features			



County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			



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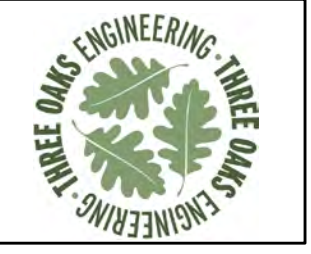
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Scale:	0 100 200 Ft
Job No.:	19-018
Drawn By:	KEMS
Checked By:	NDH

Figure  
**6**  
Sheet 9



County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream			
Surface Water Features			



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**Raleigh-Durham International Airport**

**Proposed Runway 5L/23R Replacement**

**Federal Environmental Assessment**

**USDA-NRCS Soils Map (Sheets 18, 26, and 27)**

**Wake County, North Carolina**

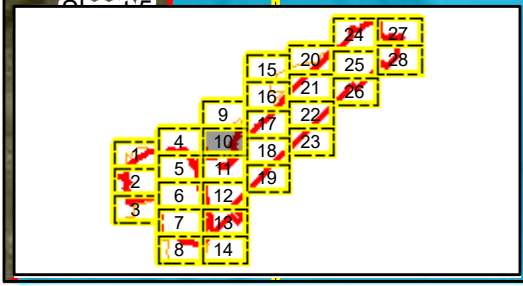
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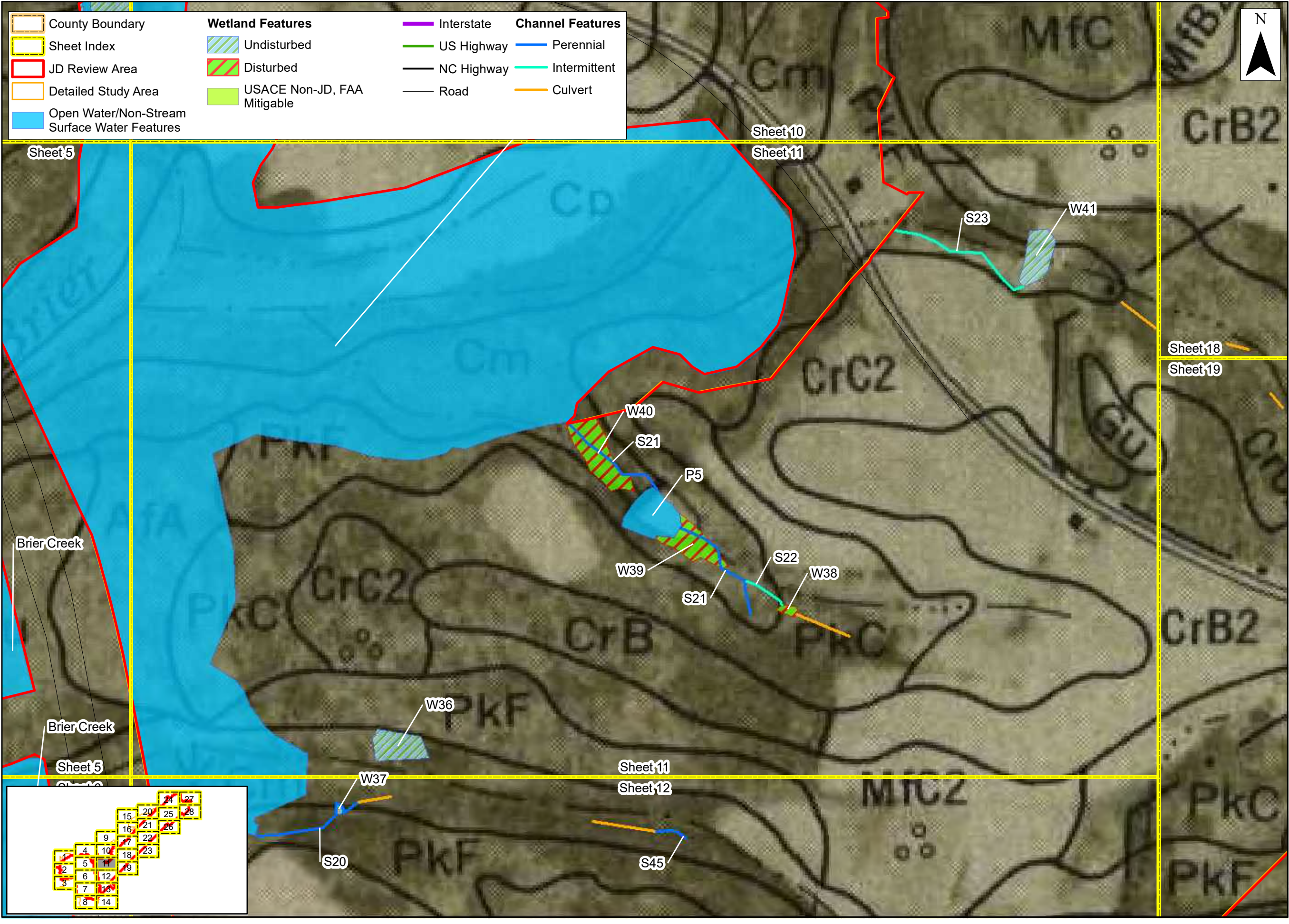
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Job No.: 19-018

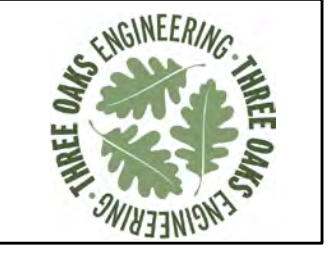
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Figure  
**6**  
Sheet 10





County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			



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**Proposed Runway 5L/23R Replacement**

**Federal Environmental Assessment**

**USDA-NRCS Soils Map (Sheets 18, 26, and 27)**

**Wake County, North Carolina**

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Figure  
**6**  
Sheet 11



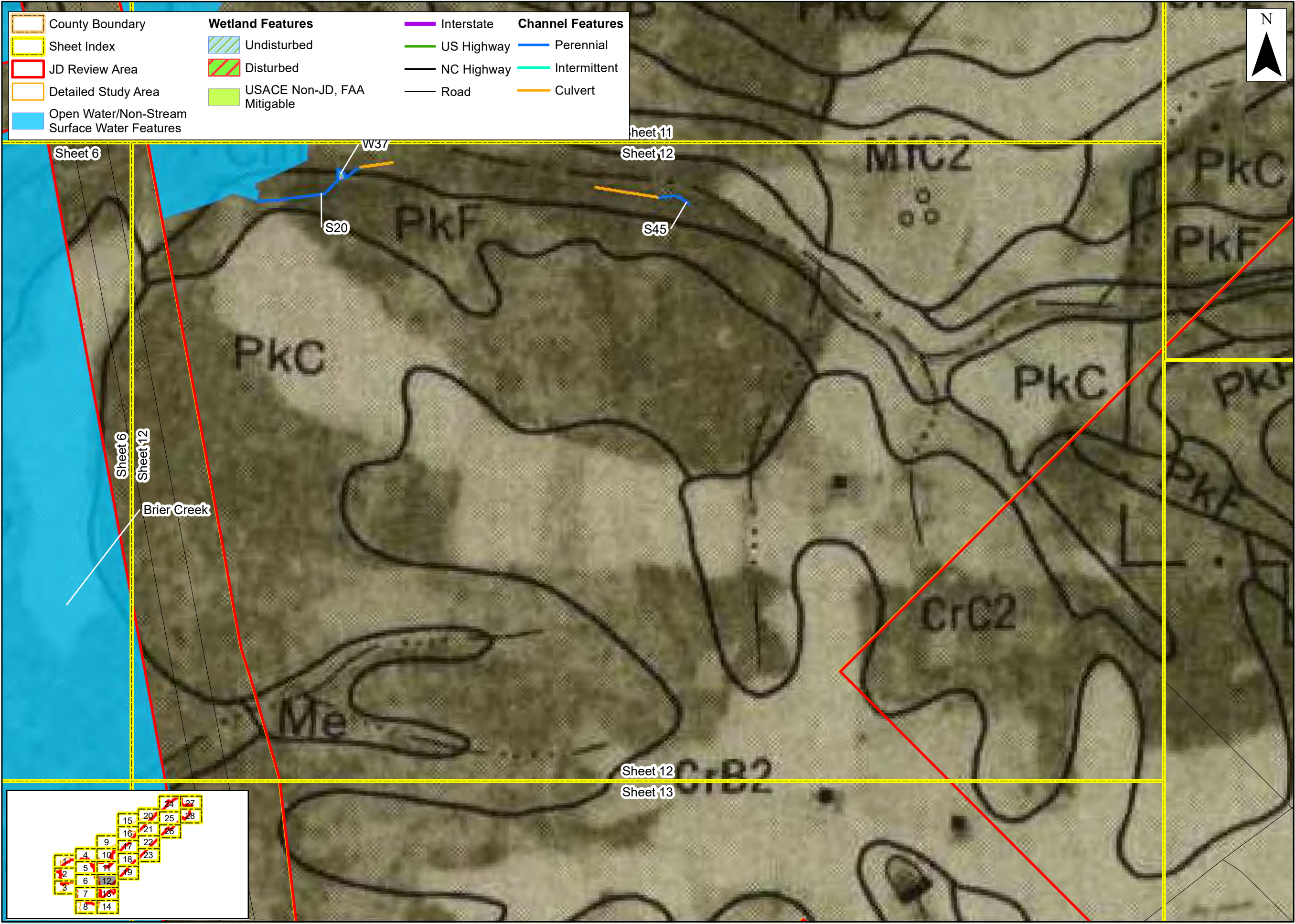


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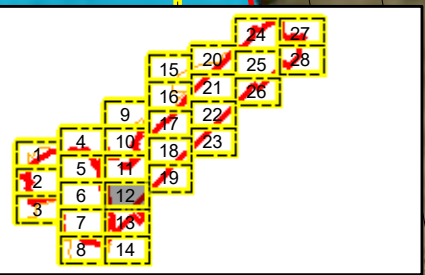

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**Proposed Runway 5L/23R Replacement**  
**Federal Environmental Assessment**  
**USDA-NRCS Soils Map (Sheets 18, 26, and 27)**  
**Wake County, North Carolina**

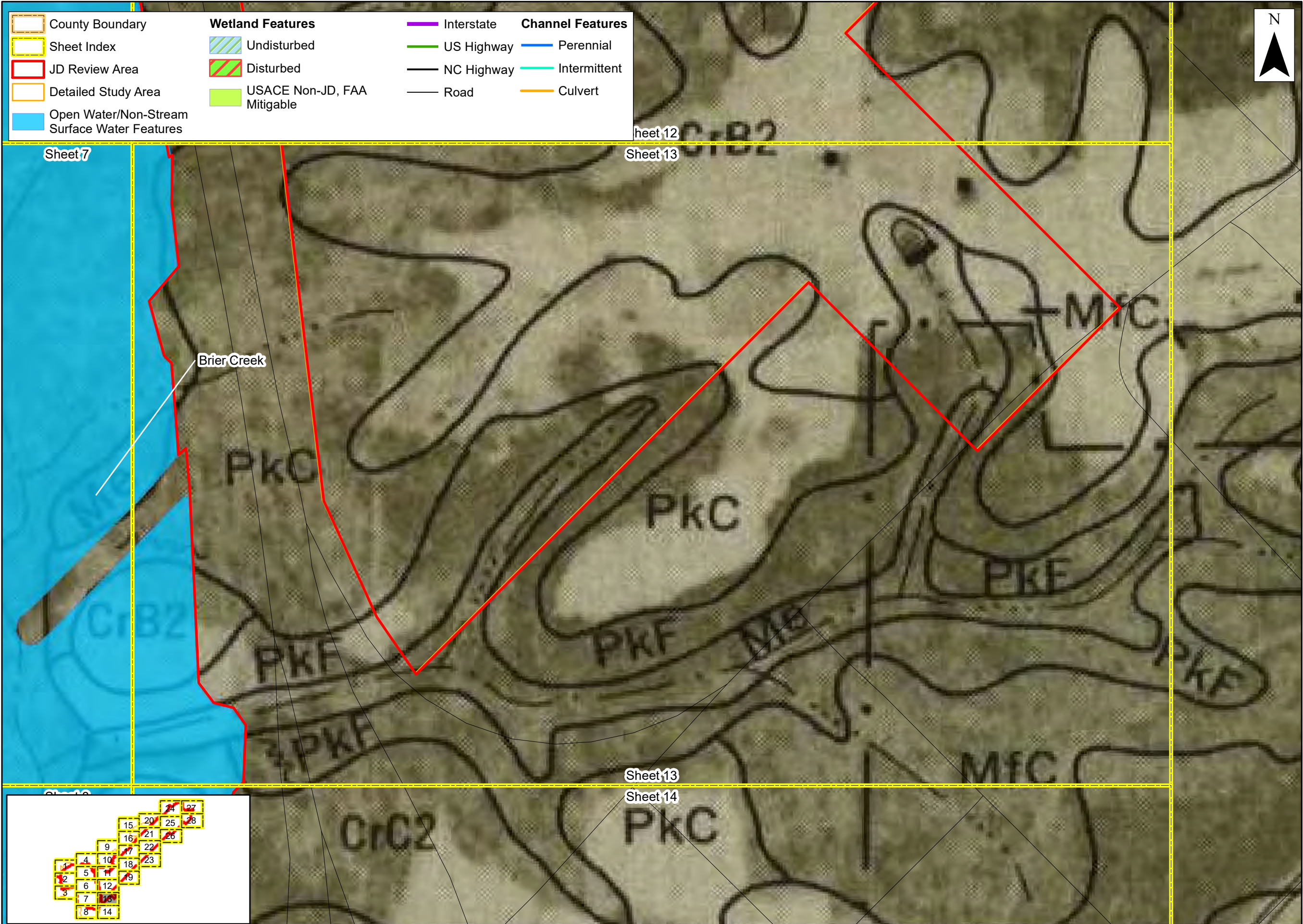
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Job No.: 19-018  
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Checked By: NDH

Figure  
**6**  
Sheet 12



- County Boundary
- Sheet Index
- JD Review Area
- Detailed Study Area
- Open Water/Non-Stream Surface Water Features
- Wetland Features**
  - Undisturbed
  - Disturbed
  - USACE Non-JD, FAA Mitigable
- Channel Features**
  - Perennial
  - Intermittent
  - Culvert
- Interstate
- US Highway
- NC Highway
- Road





- |  |                             |            |                         |
|--|-----------------------------|------------|-------------------------|
| County Boundary                              | <b>Wetland Features</b>     | Interstate | <b>Channel Features</b> |
| Sheet Index                                  | Undisturbed                 | US Highway | Perennial               |
| JD Review Area                               | Disturbed                   | NC Highway | Intermittent            |
| Detailed Study Area                          | USACE Non-JD, FAA Mitigable | Road       | Culvert                 |
| Open Water/Non-Stream Surface Water Features |                             |            |                         |



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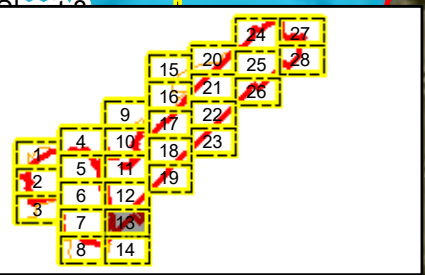
**Federal Environmental Assessment**

**USDA-NRCS Soils Map (Sheets 18, 26, and 27)**

**Wake County, North Carolina**

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**6**  
Sheet 13

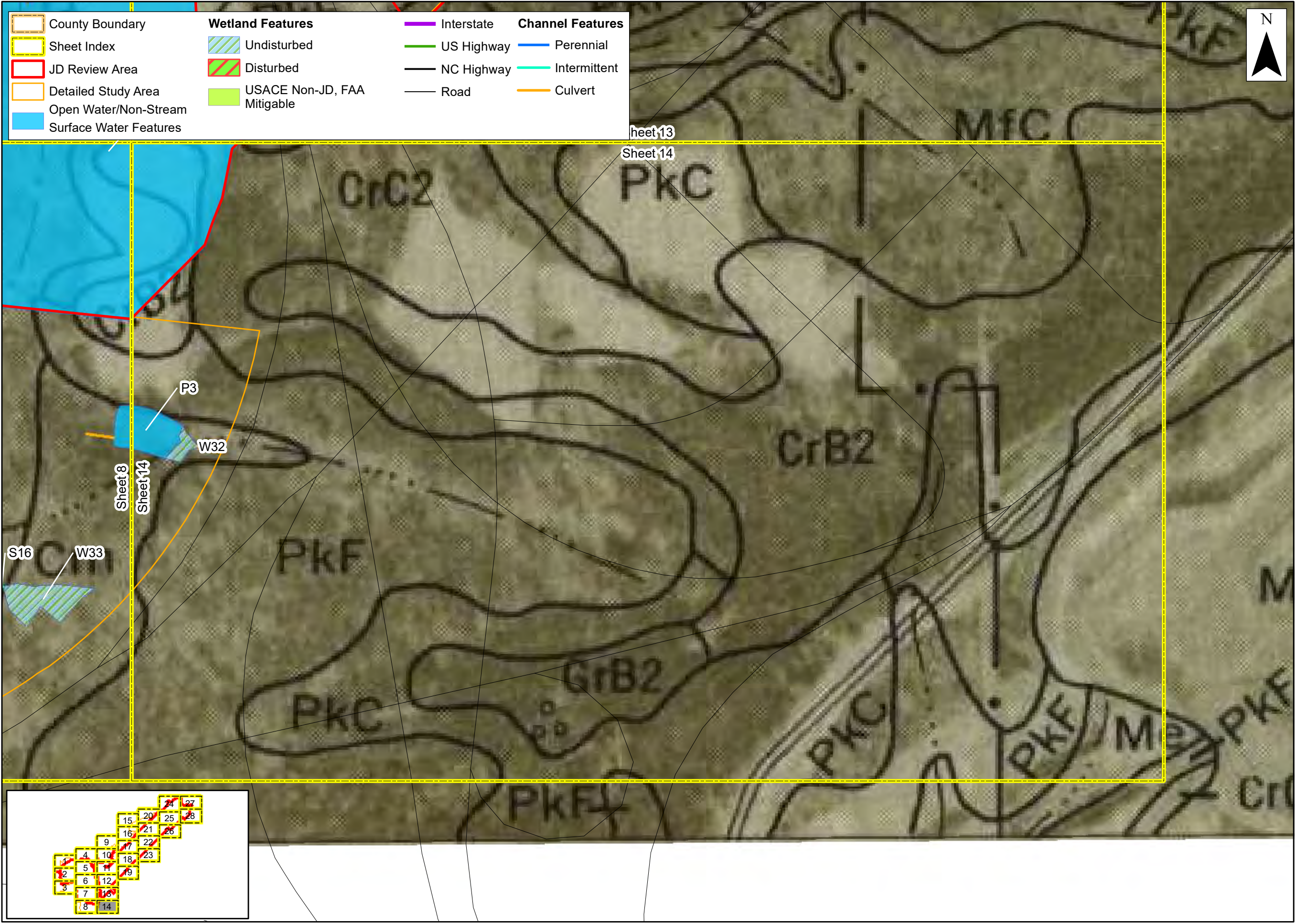


Sheet 12

Sheet 13

Sheet 13

Sheet 14



County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream			
Surface Water Features			



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**Wake County, North Carolina**

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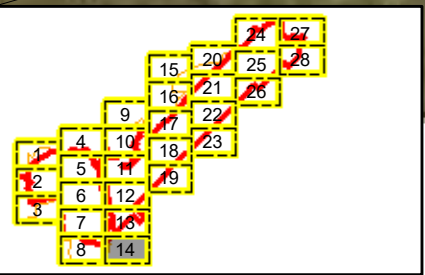
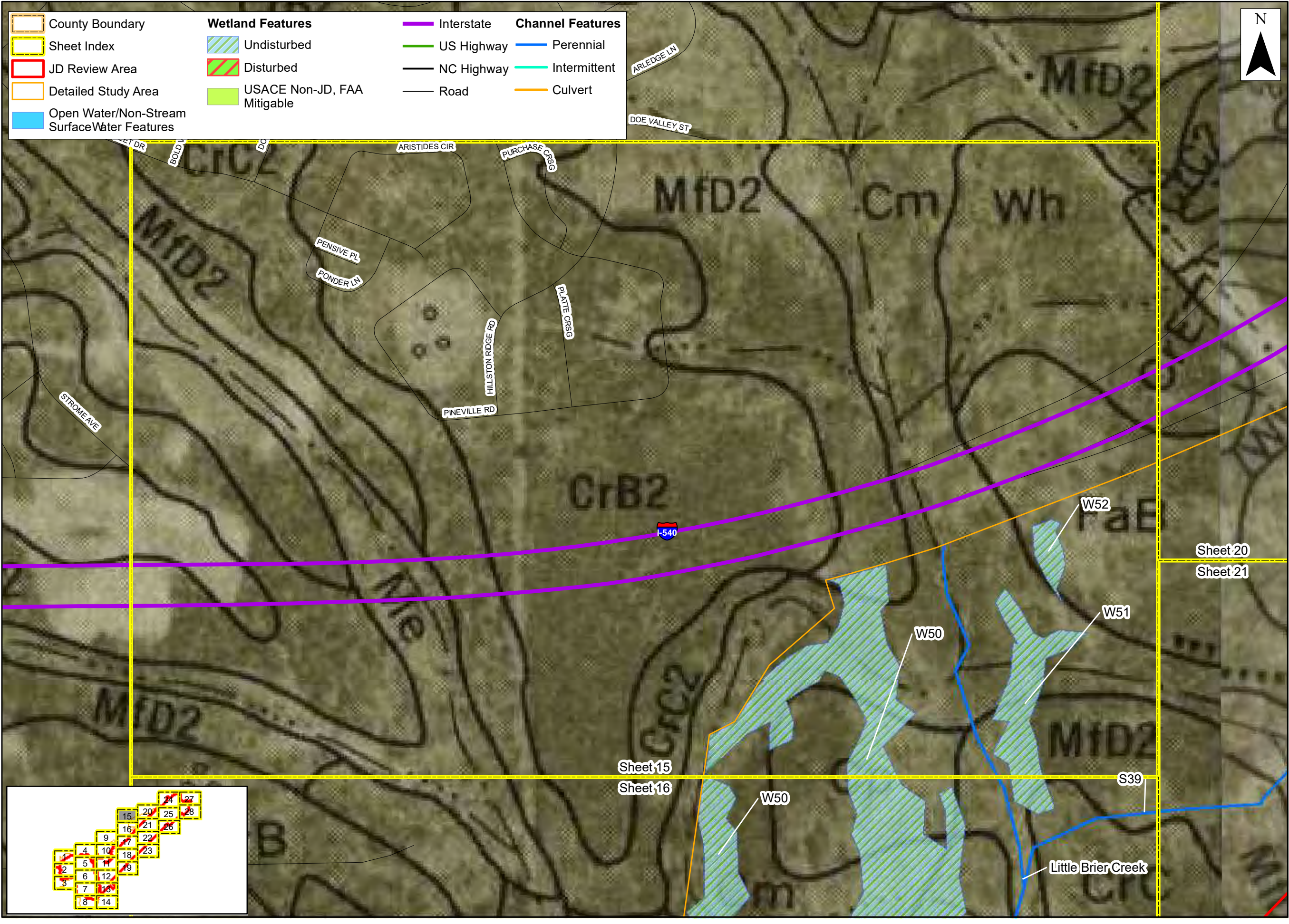


Figure  
**6**  
Sheet 14





County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			



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**Proposed Runway 5L/23R Replacement**

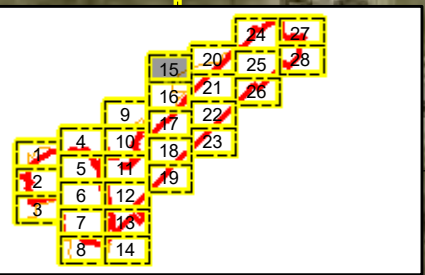
**Federal Environmental Assessment**

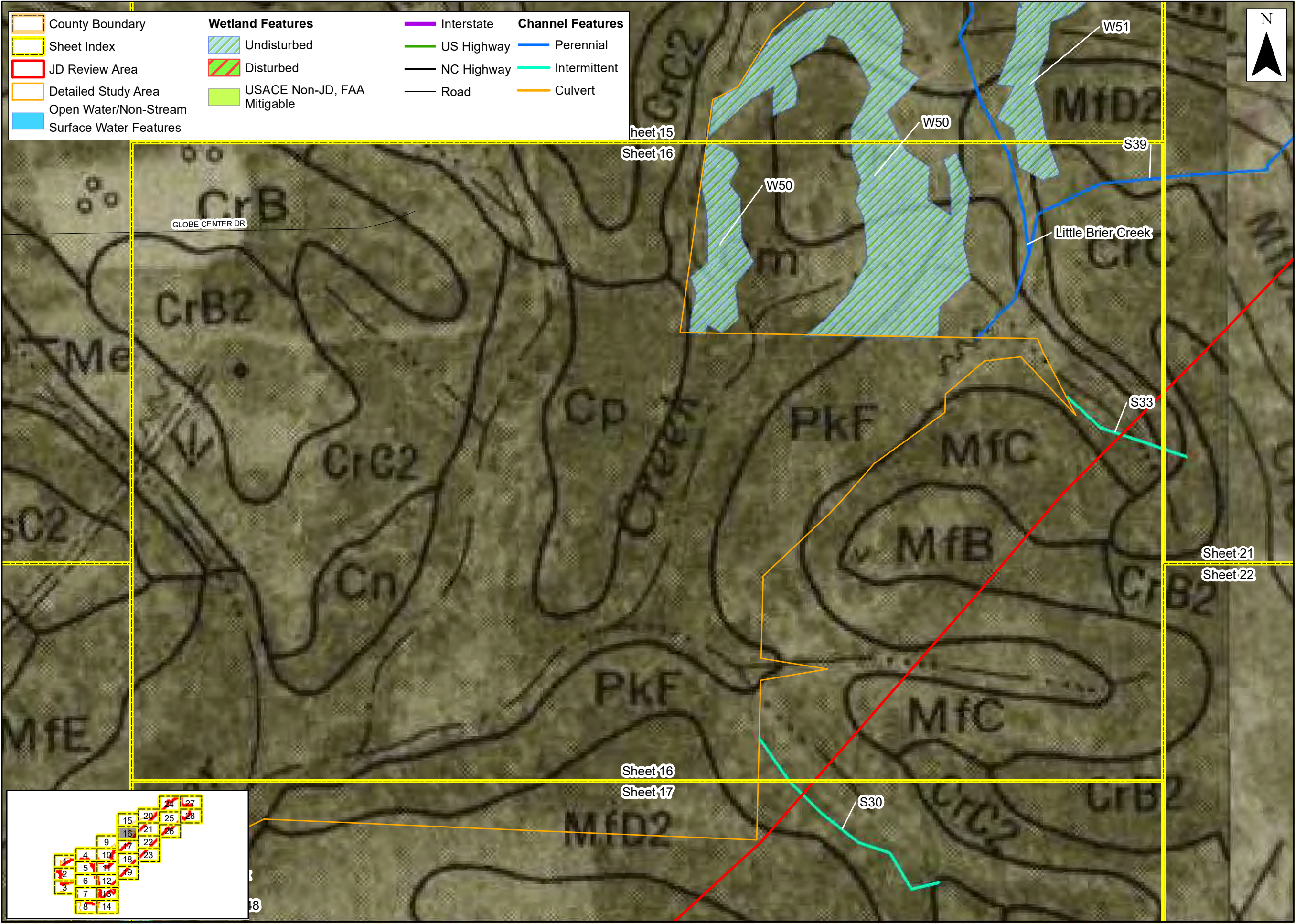
**USDA-NRCS Soils Map (Sheets 18, 26, and 27)**

**Wake County, North Carolina**

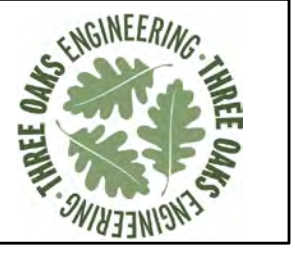
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Job No.:	19-018
Drawn By:	Checked By:
KEMS	NDH

Figure  
**6**  
Sheet 15





County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream			
Surface Water Features			



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**Proposed Runway  
5L/23R  
Replacement**

**Federal  
Environmental  
Assessment**

**USDA-NRCS Soils  
Map (Sheets 18,  
26, and 27)  
Wake County,  
North Carolina**

Date: November 2022

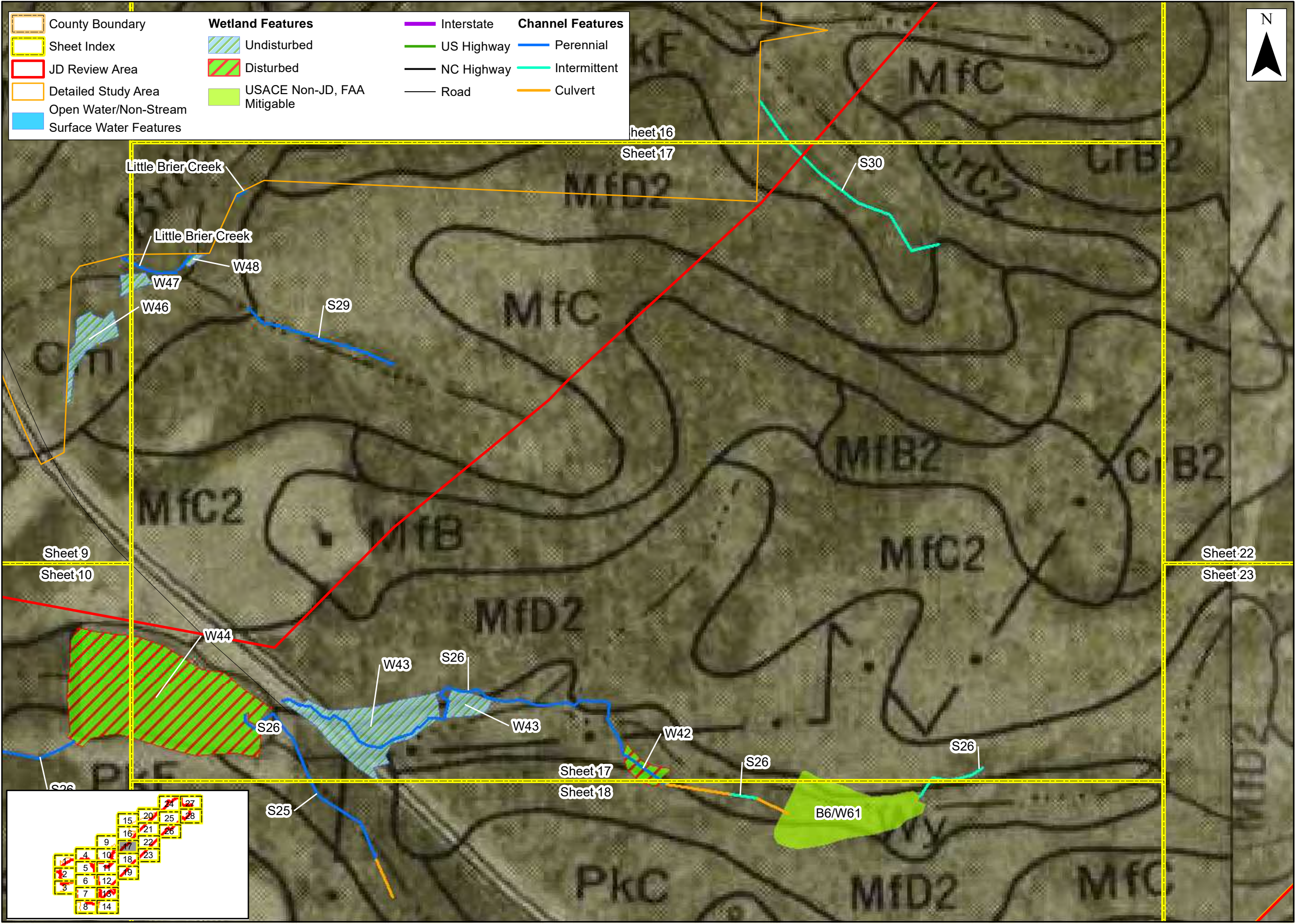
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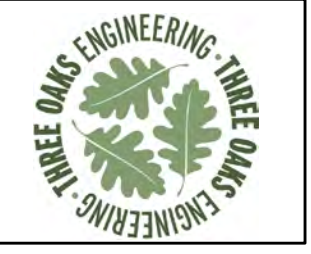
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Figure  
**6**  
Sheet 16



County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream			
Surface Water Features			



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**Raleigh-Durham International Airport**

**Proposed Runway 5L/23R Replacement**

**Federal Environmental Assessment**

**USDA-NRCS Soils Map (Sheets 18, 26, and 27)**

**Wake County, North Carolina**

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Figure  
**6**  
Sheet 17





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**Proposed Runway 5L/23R Replacement**

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**USDA-NRCS Soils Map (Sheets 18, 26, and 27)**

**Wake County, North Carolina**

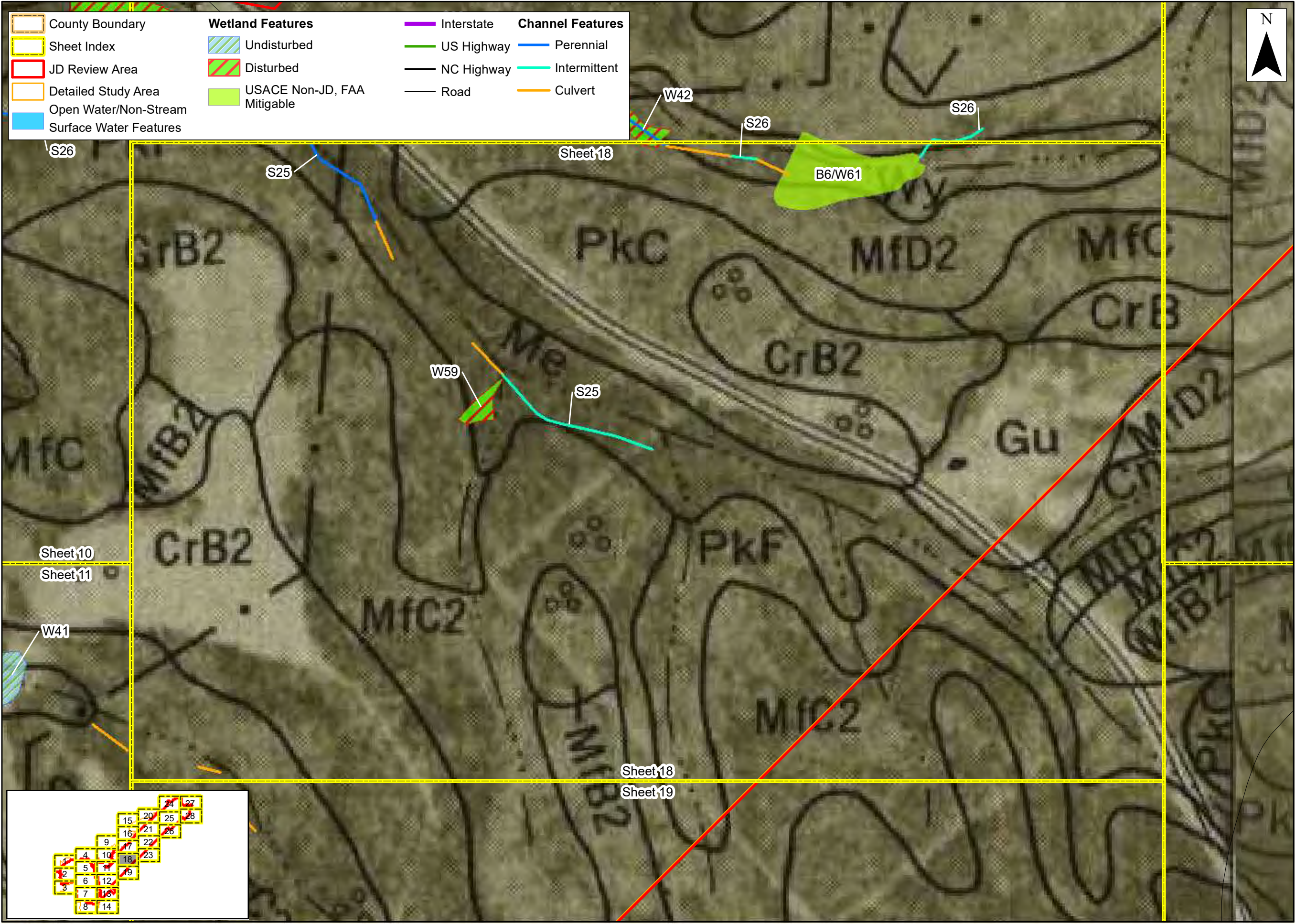
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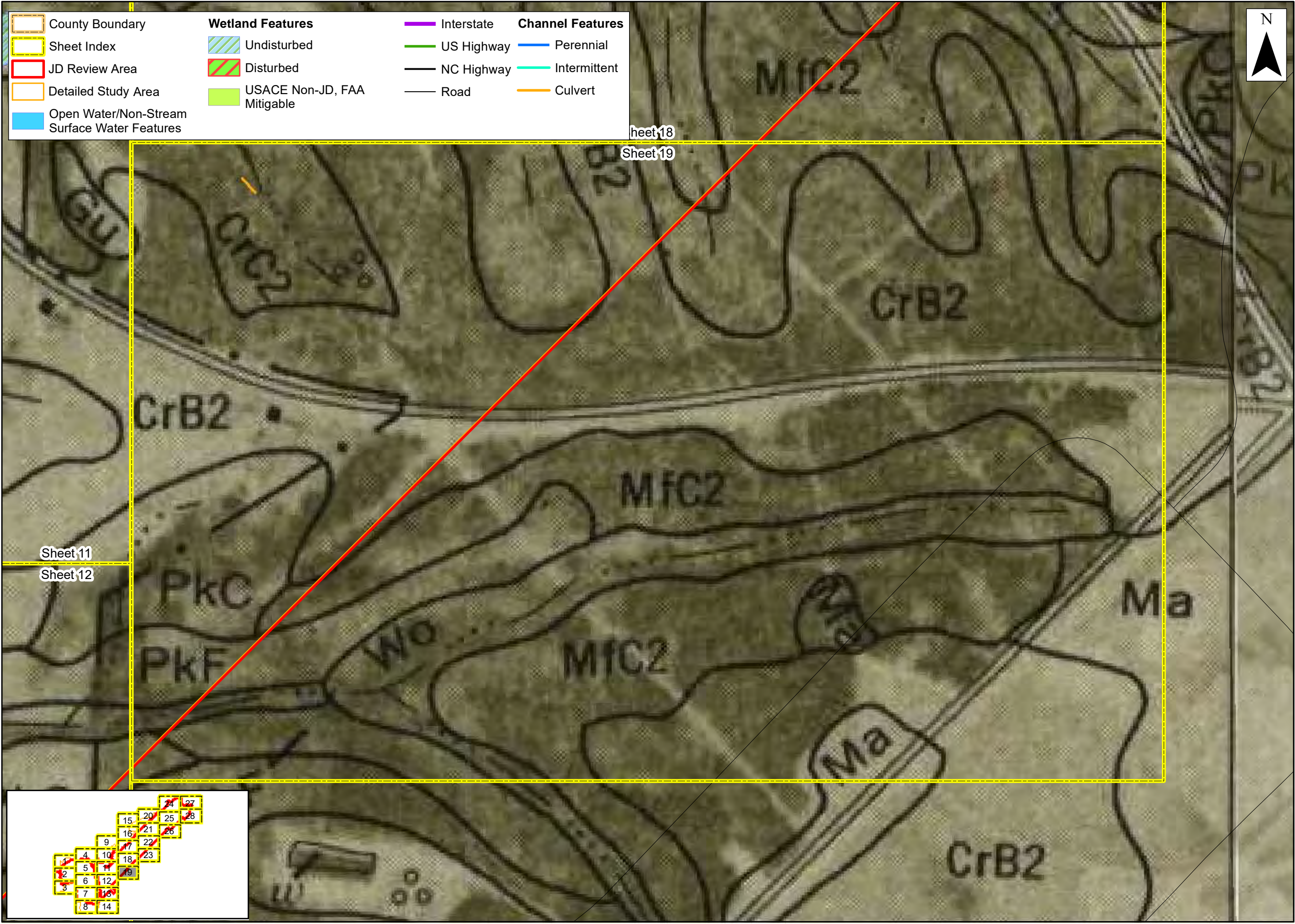
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Figure  
**6**  
Sheet 18






County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			



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**Proposed Runway 5L/23R Replacement**

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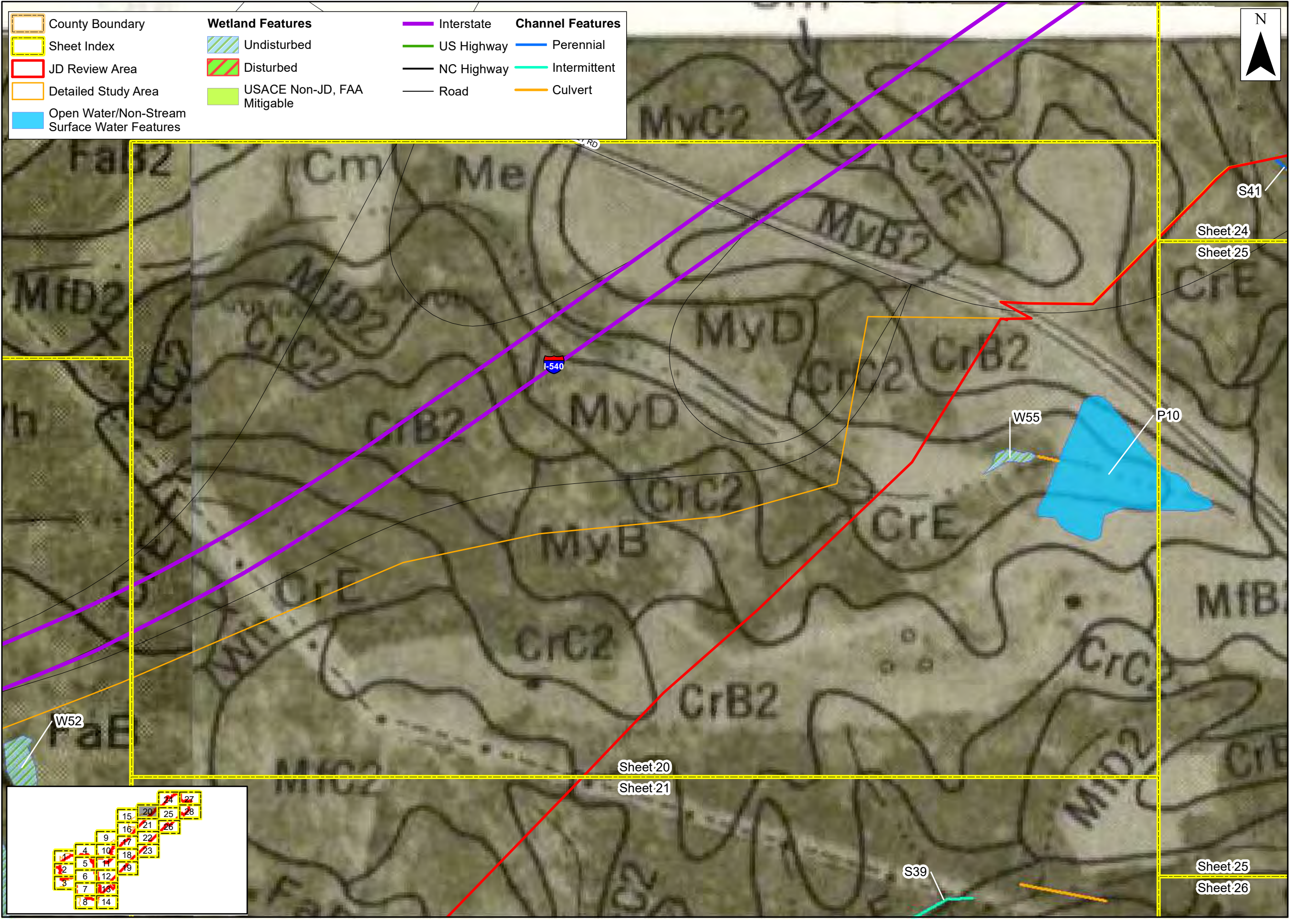
**USDA-NRCS Soils Map (Sheets 18, 26, and 27)**

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Figure  
**6**  
Sheet 19



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**Proposed Runway 5L/23R Replacement**

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**USDA-NRCS Soils Map (Sheets 18, 26, and 27)**

**Wake County, North Carolina**

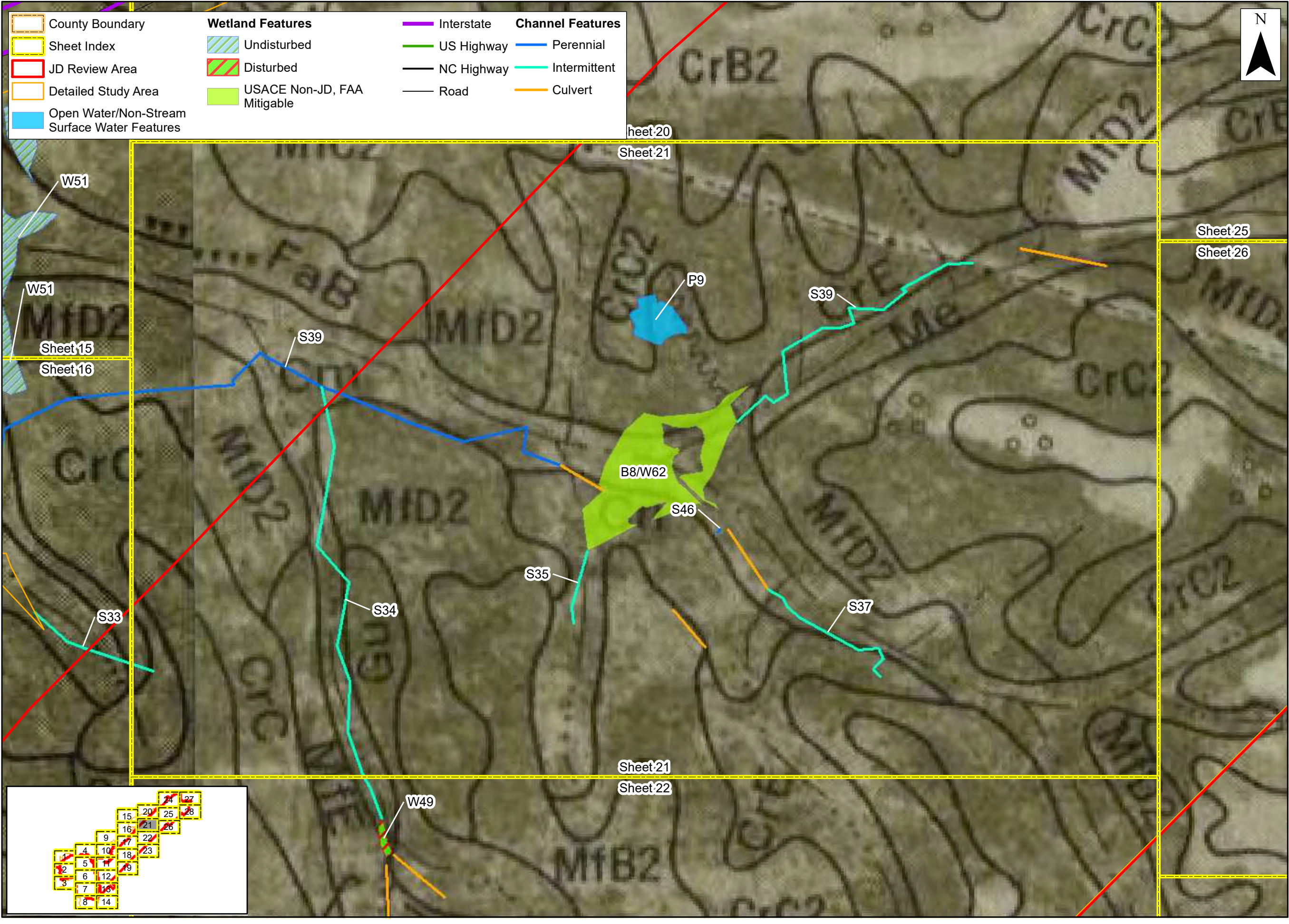
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Figure  
**6**  
Sheet 20



County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			



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**Proposed Runway 5L/23R Replacement**

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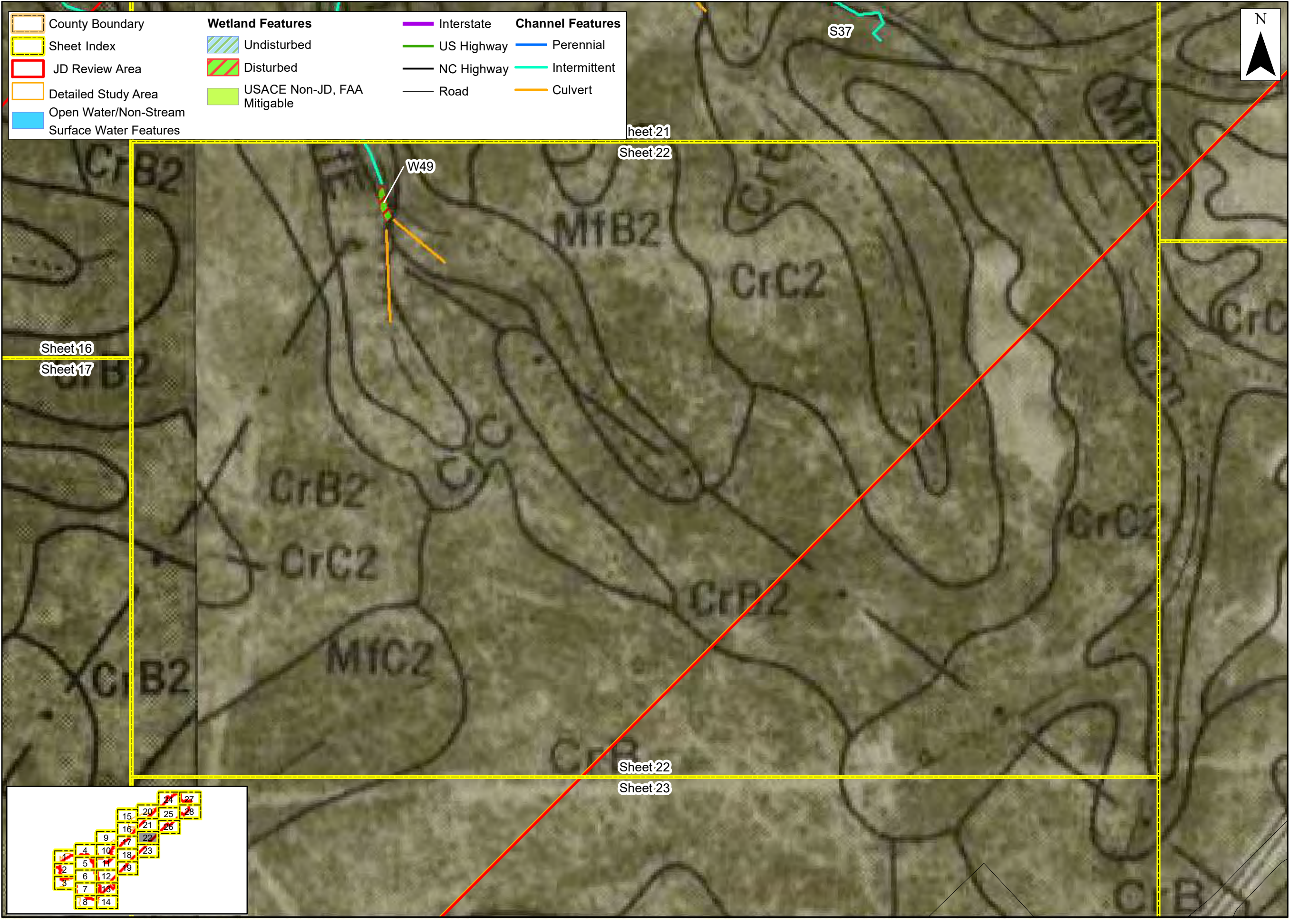
**USDA-NRCS Soils Map (Sheets 18, 26, and 27)**

**Wake County, North Carolina**

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Job No.:	19-018
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Figure  
**6**  
Sheet 21





County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			



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**Proposed Runway 5L/23R Replacement**

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**USDA-NRCS Soils Map (Sheets 18, 26, and 27)**

**Wake County, North Carolina**

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Figure  
**6**  
Sheet 22







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**Proposed Runway 5L/23R Replacement**

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**USDA-NRCS Soils Map (Sheets 18, 26, and 27)**

**Wake County, North Carolina**

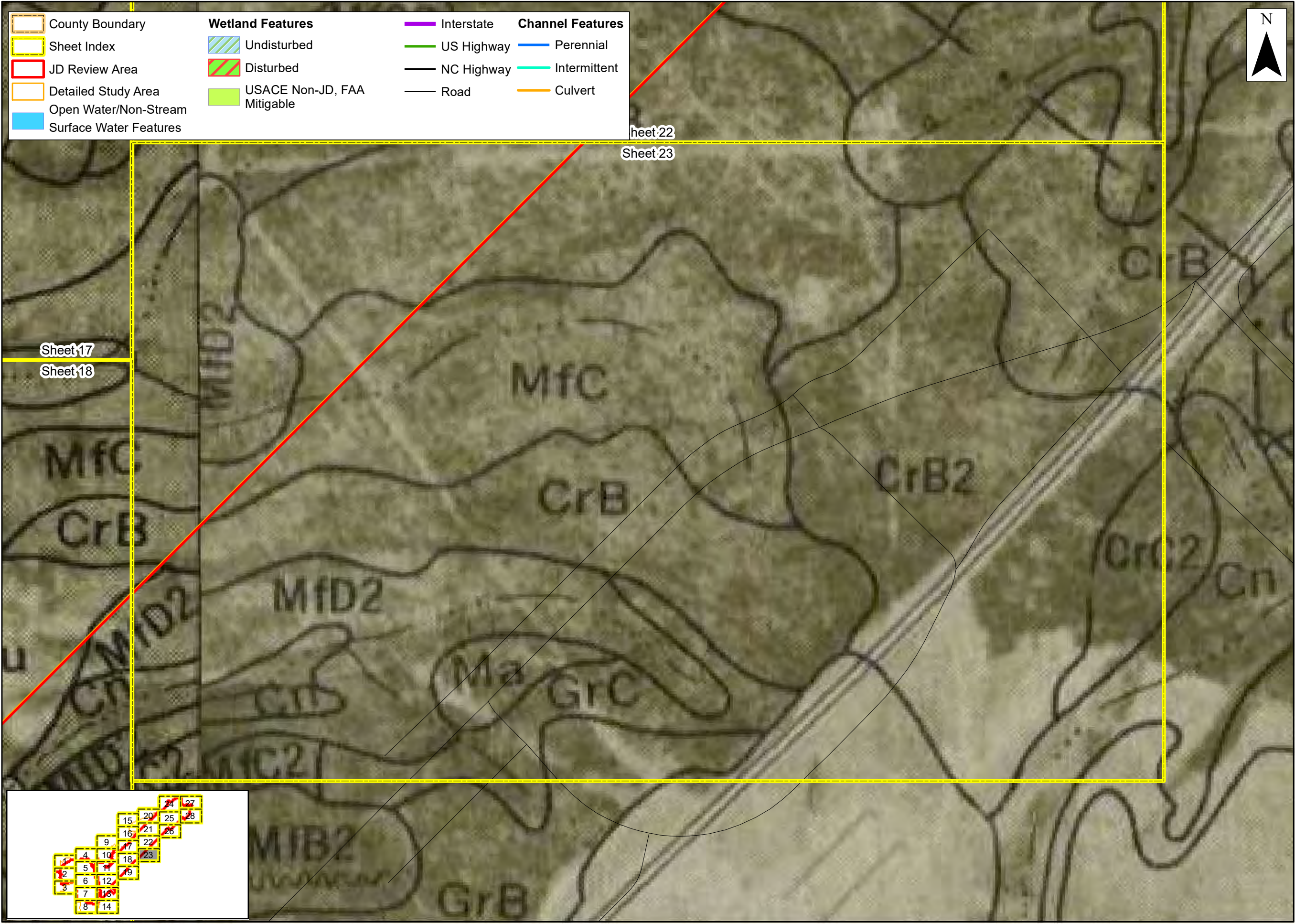
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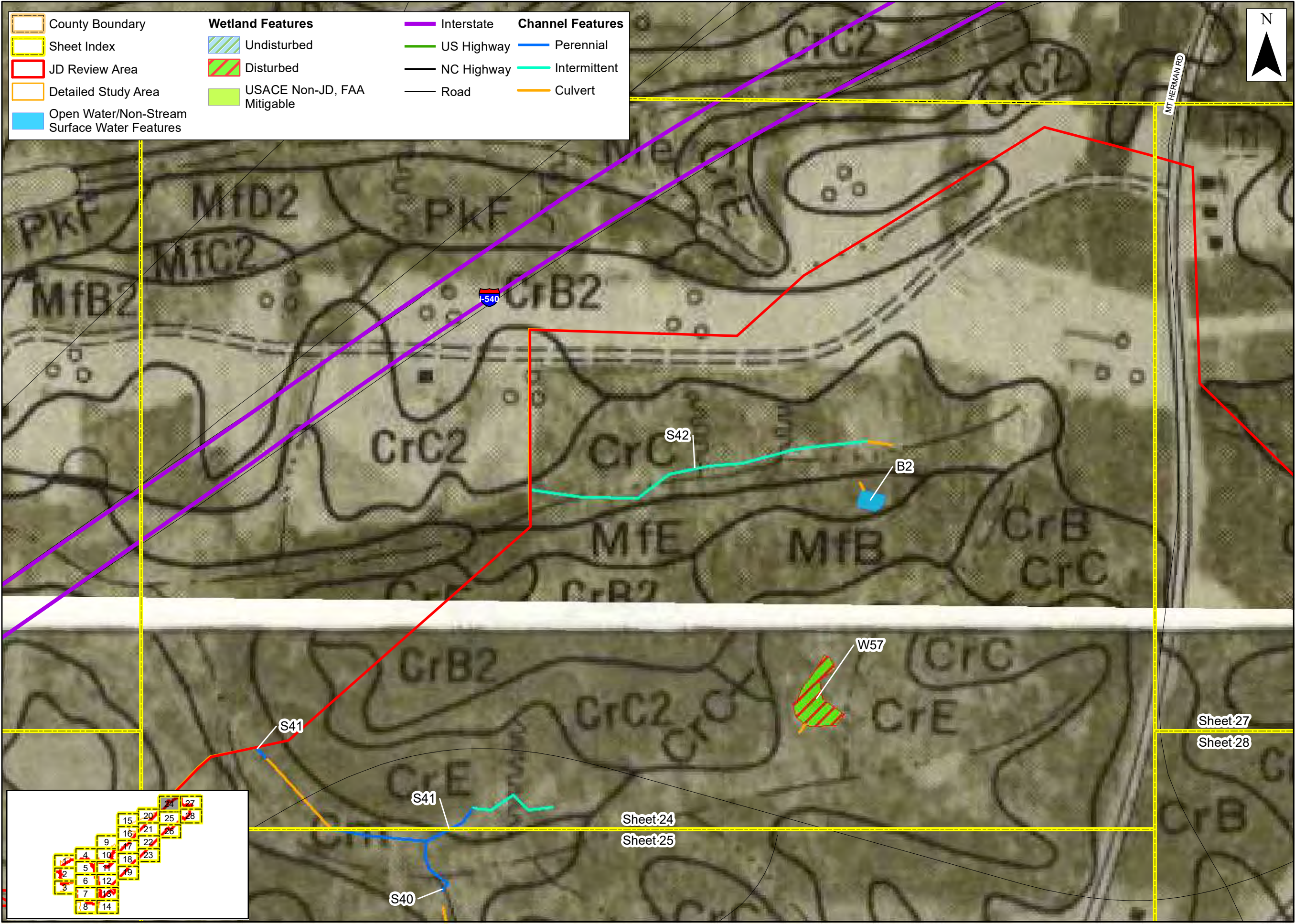
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Figure  
**6**  
Sheet 23



County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream			
Surface Water Features			





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**Proposed Runway 5L/23R Replacement**

**Federal Environmental Assessment**

**USDA-NRCS Soils Map (Sheets 18, 26, and 27)**

**Wake County, North Carolina**

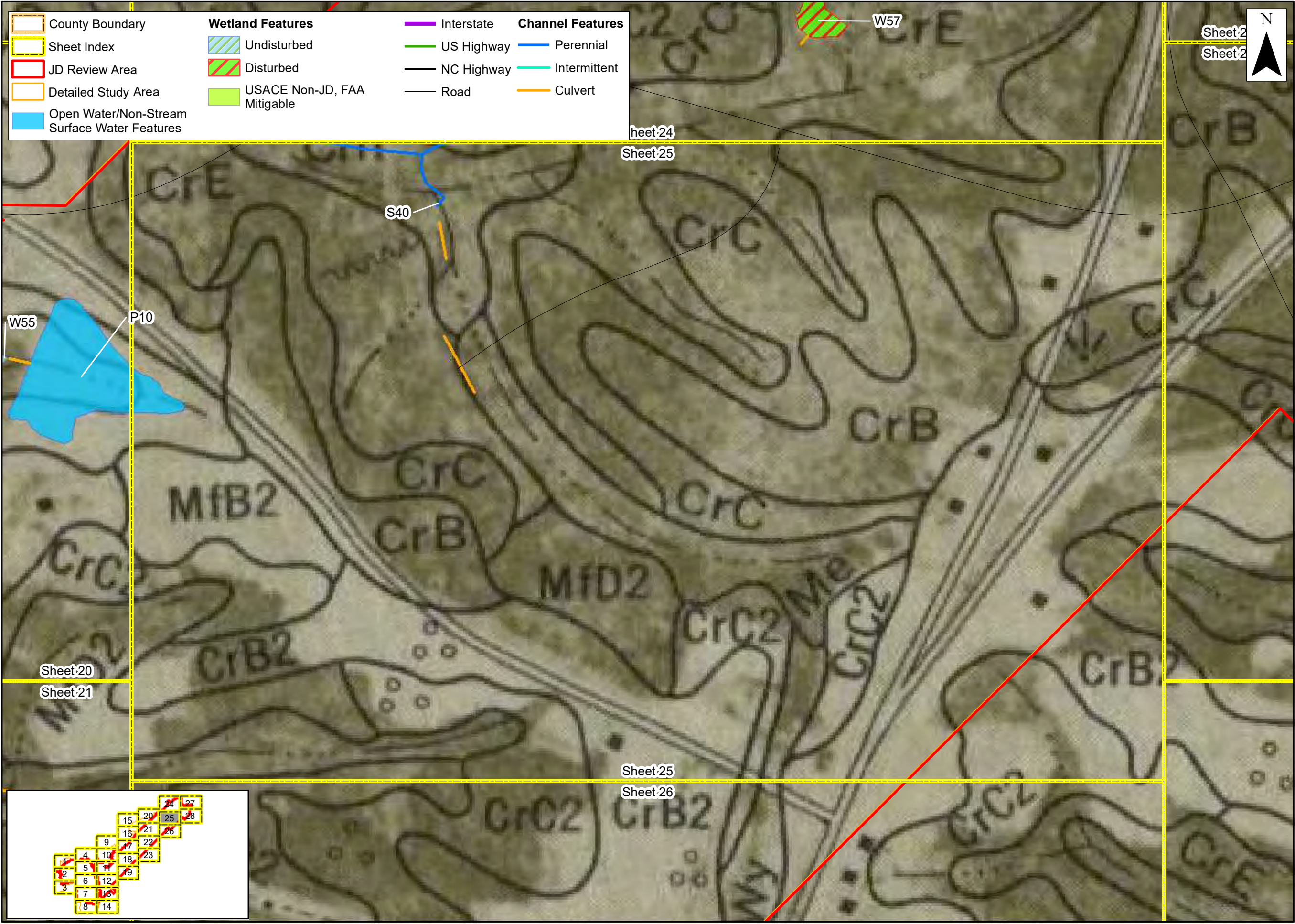
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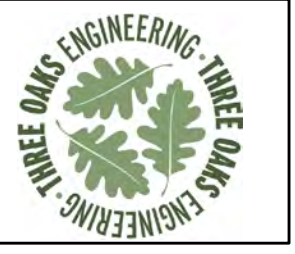
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Figure  
**6**  
Sheet 24



County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			



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**Federal Environmental Assessment**

**USDA-NRCS Soils Map (Sheets 18, 26, and 27)**  
**Wake County, North Carolina**

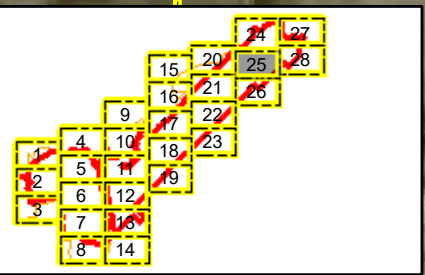
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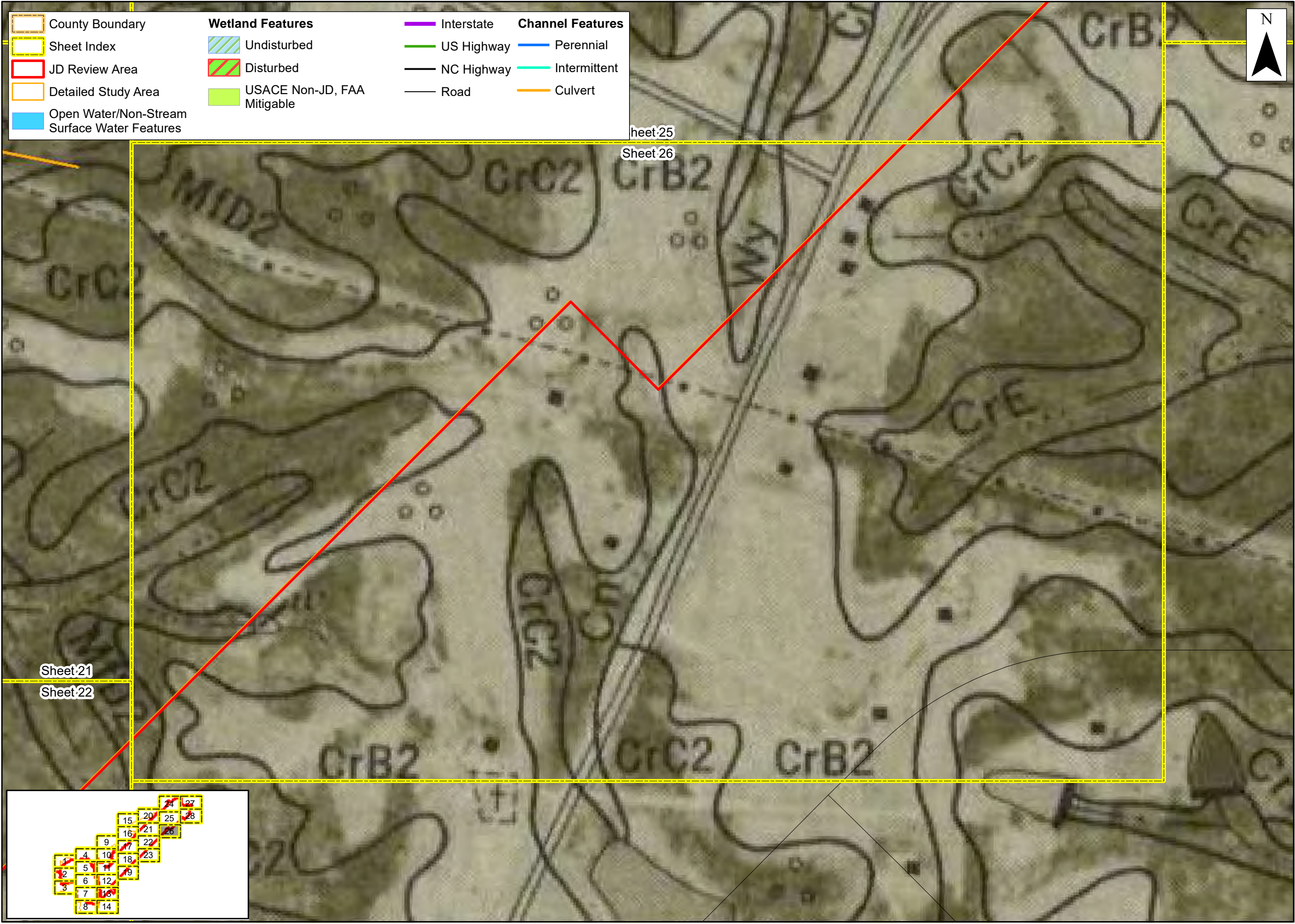
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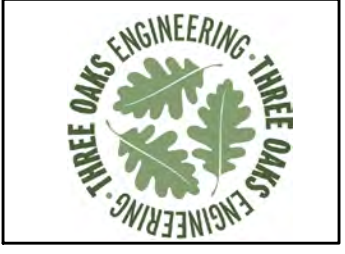
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Figure  
**6**  
 Sheet 25





County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream Surface Water Features			



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**Proposed Runway 5L/23R Replacement**

**Federal Environmental Assessment**

**USDA-NRCS Soils Map (Sheets 18, 26, and 27)**

**Wake County, North Carolina**




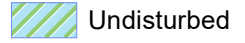



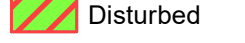

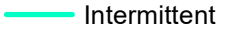





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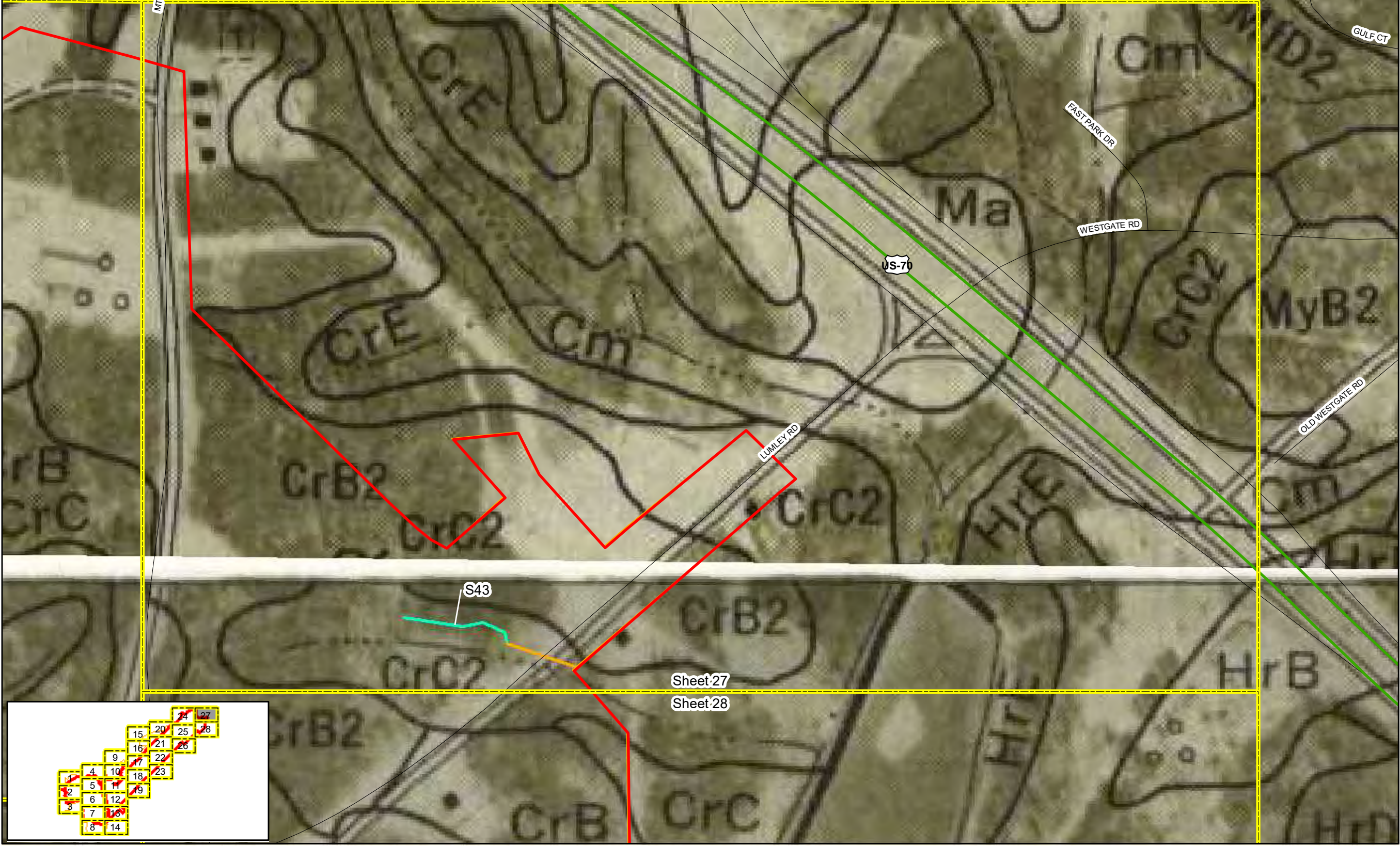
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**6**  
Sheet 26

Sheet 21  
Sheet 22

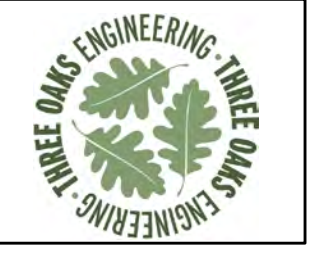
Sheet 25  
Sheet 26



 County Boundary	<b>Wetland Features</b>	 Interstate	<b>Channel Features</b>
 Sheet Index	 Undisturbed	 US Highway	 Perennial
 JD Review Area	 Disturbed	 NC Highway	 Intermittent
 Detailed Study Area	 USACE Non-JD, FAA Mitigable	 Road	 Culvert
 Open Water/Non-Stream Surface Water Features			



Sheet 27  
Sheet 28



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**Raleigh-Durham International Airport**

**Proposed Runway 5L/23R Replacement**

**Federal Environmental Assessment**

**USDA-NRCS Soils Map (Sheets 18, 26, and 27)**

**Wake County, North Carolina**

Date:	November 2022
Scale:	0 100 200 Ft
Job No.:	19-018
Drawn By:	Checked By:
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Figure  
**6**  
Sheet 27



County Boundary	<b>Wetland Features</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	US Highway	Perennial
JD Review Area	Disturbed	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert
Open Water/Non-Stream			
Surface Water Features			



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**Proposed Runway 5L/23R Replacement**

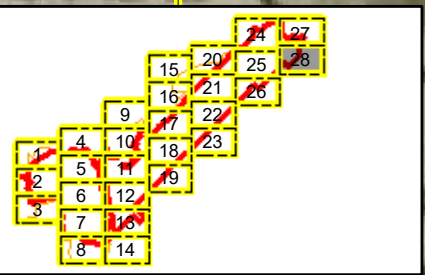
**Federal Environmental Assessment**

**USDA-NRCS Soils Map (Sheets 18, 26, and 27)**

**Wake County, North Carolina**

Date:	November 2022
Scale:	0 100 200 Ft
Job No.:	19-018
Drawn By:	Checked By:
KEMS	NDH

Figure  
**6**  
Sheet 28



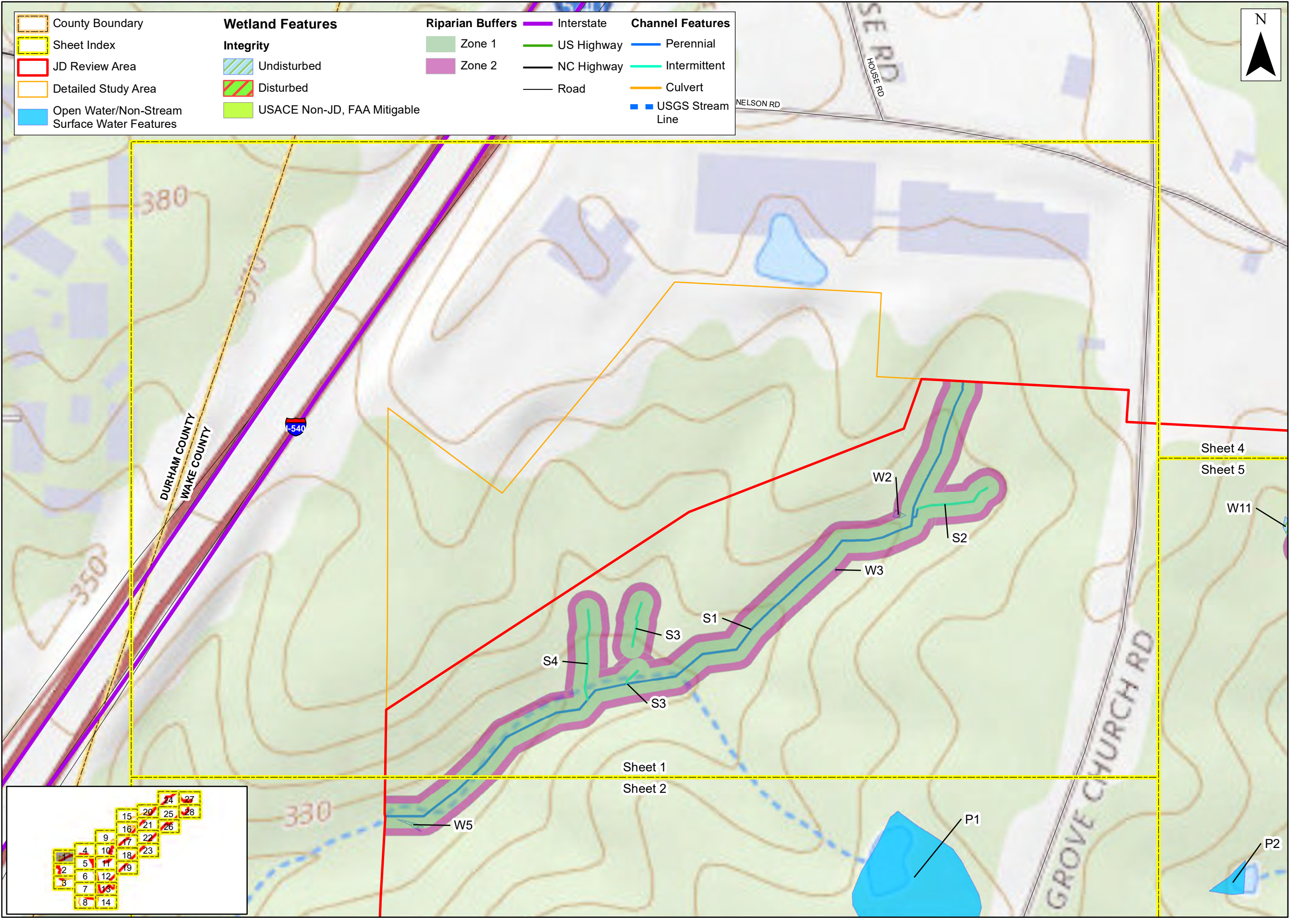


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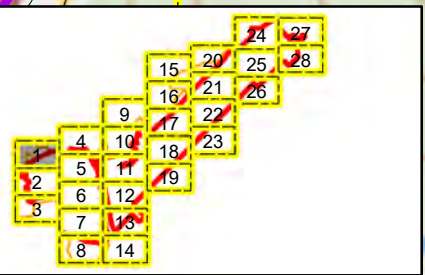
**Raleigh-Durham International Airport**  
**Proposed Runway 5L/23R Replacement**  
**Federal Environmental Assessment**  
**Potential Riparian Buffers**  
 Wake County, North Carolina

Date: November 2022  
 Scale: 0 100 200 Ft  
 Job No.: 19-018  
 Drawn By: KEMS  
 Checked By: NDH

Figure  
**7**  
 Sheet 1



County Boundary	<b>Wetland Features</b>	<b>Riparian Buffers</b>	Interstate	<b>Channel Features</b>
Sheet Index	<b>Integrity</b>	Zone 1	US Highway	Perennial
JD Review Area	Undisturbed	Zone 2	NC Highway	Intermittent
Detailed Study Area	Disturbed	Road	Culvert	USGS Stream Line
Open Water/Non-Stream Surface Water Features	USACE Non-JD, FAA Mitigable			





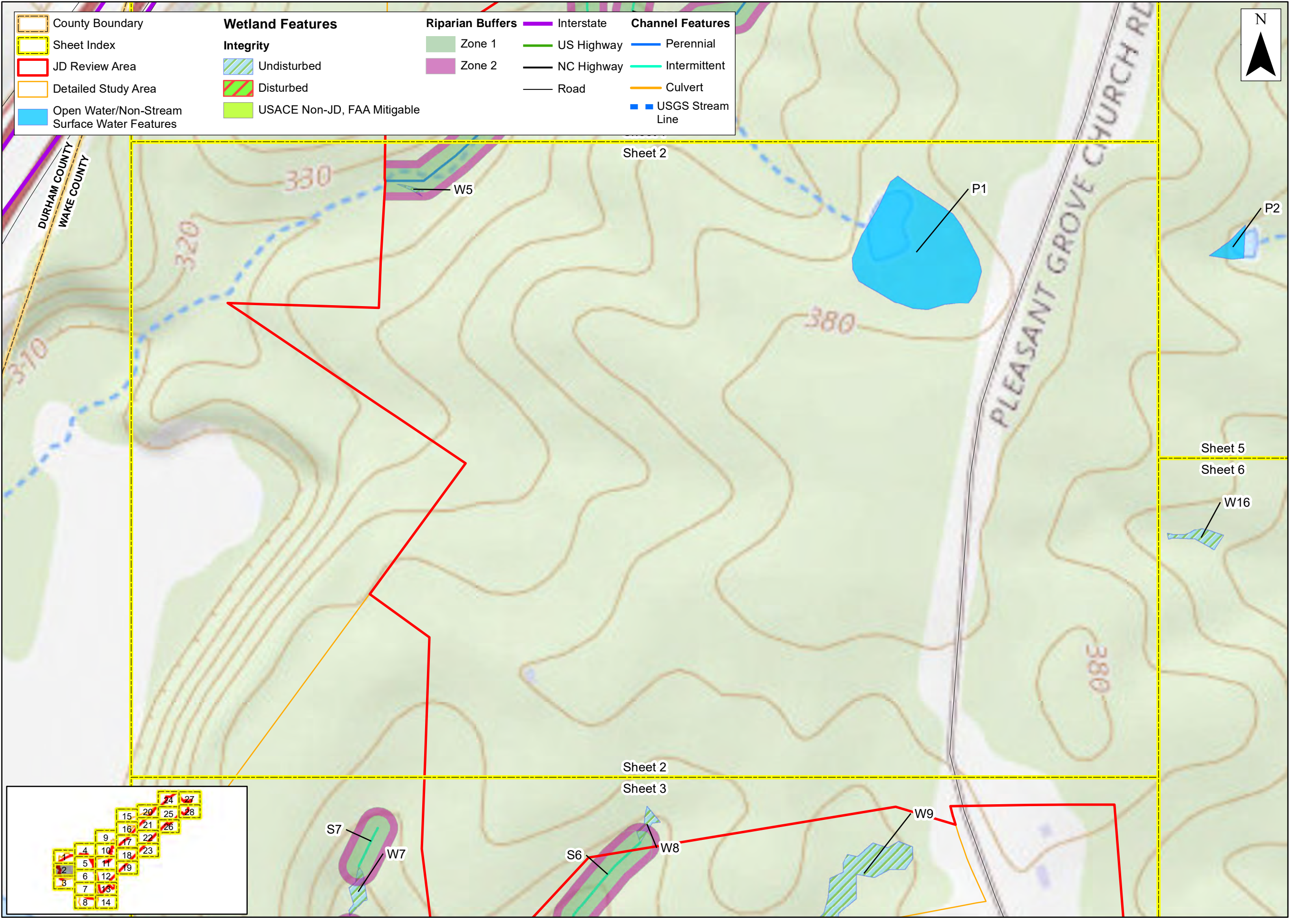
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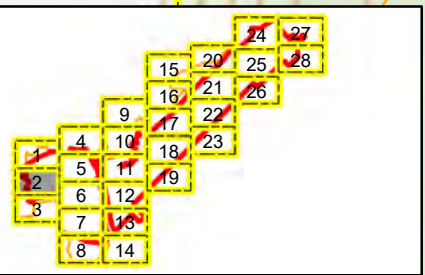
**Raleigh-Durham International Airport**  
**Proposed Runway 5L/23R Replacement**  
**Federal Environmental Assessment**  
**Potential Riparian Buffers**  
 Wake County, North Carolina

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Figure  
**7**  
 Sheet 2



County Boundary	<b>Wetland Features</b>	<b>Riparian Buffers</b>	Interstate	<b>Channel Features</b>
Sheet Index	<b>Integrity</b>	Zone 1	US Highway	Perennial
JD Review Area	Undisturbed	Zone 2	NC Highway	Intermittent
Detailed Study Area	Disturbed	Road	Culvert	USGS Stream Line
Open Water/Non-Stream Surface Water Features	USACE Non-JD, FAA Mitigable			





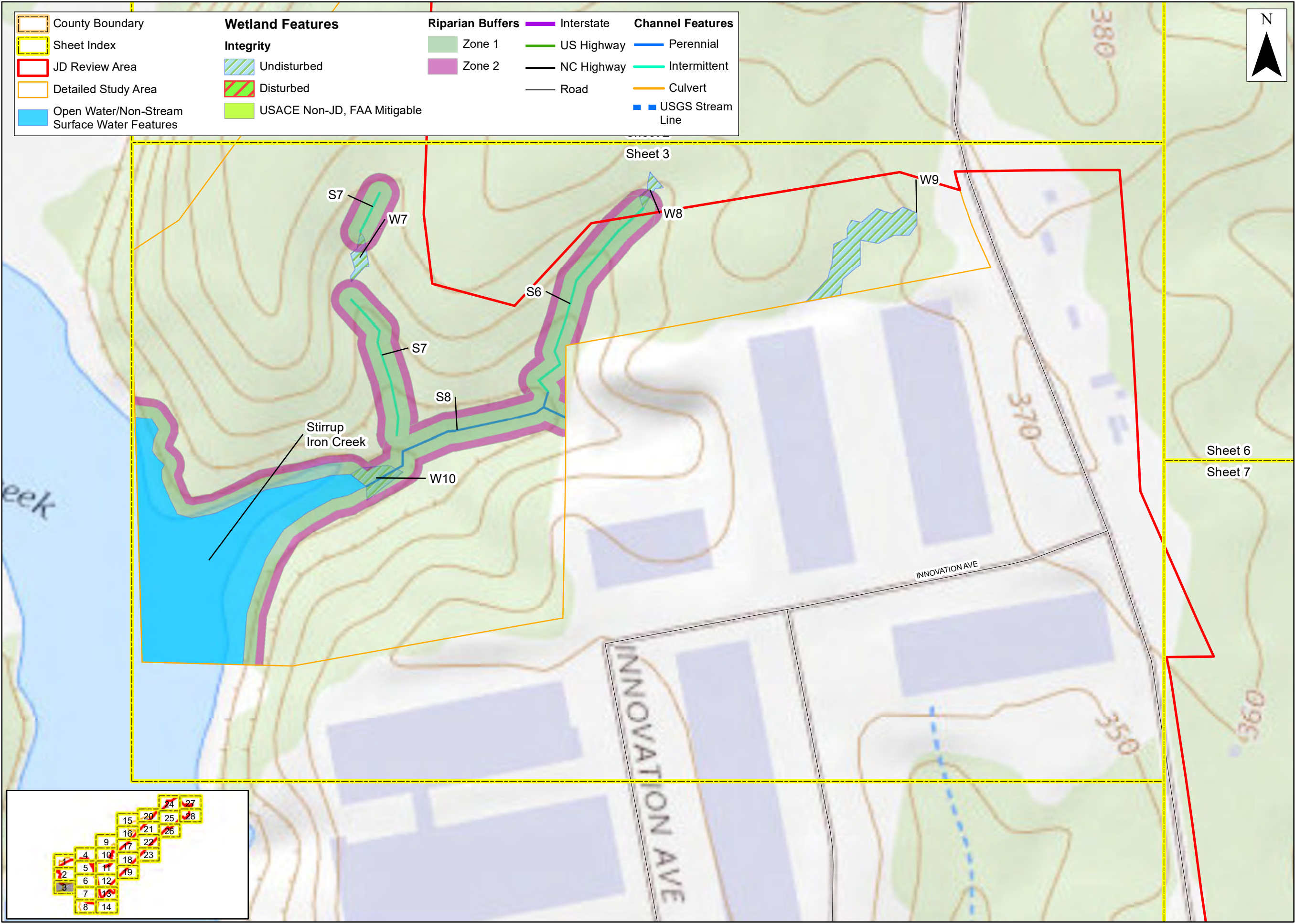





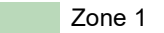



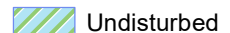
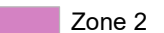









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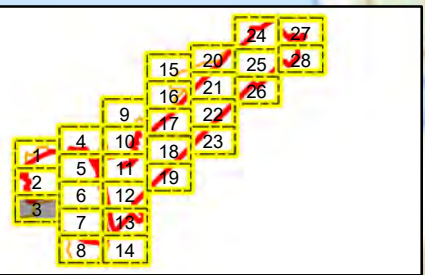

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**Federal Environmental Assessment**  
**Potential Riparian Buffers**  
**Wake County, North Carolina**

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Figure  
**7**  
Sheet 3



 County Boundary	<b>Wetland Features</b>	<b>Riparian Buffers</b>	 Interstate	<b>Channel Features</b>
 Sheet Index	<b>Integrity</b>	 Zone 1	 US Highway	 Perennial
 JD Review Area	 Undisturbed	 Zone 2	 NC Highway	 Intermittent
 Detailed Study Area	 Disturbed	 Road	 Culvert	 USGS Stream Line
 Open Water/Non-Stream Surface Water Features	 USACE Non-JD, FAA Mitigable			





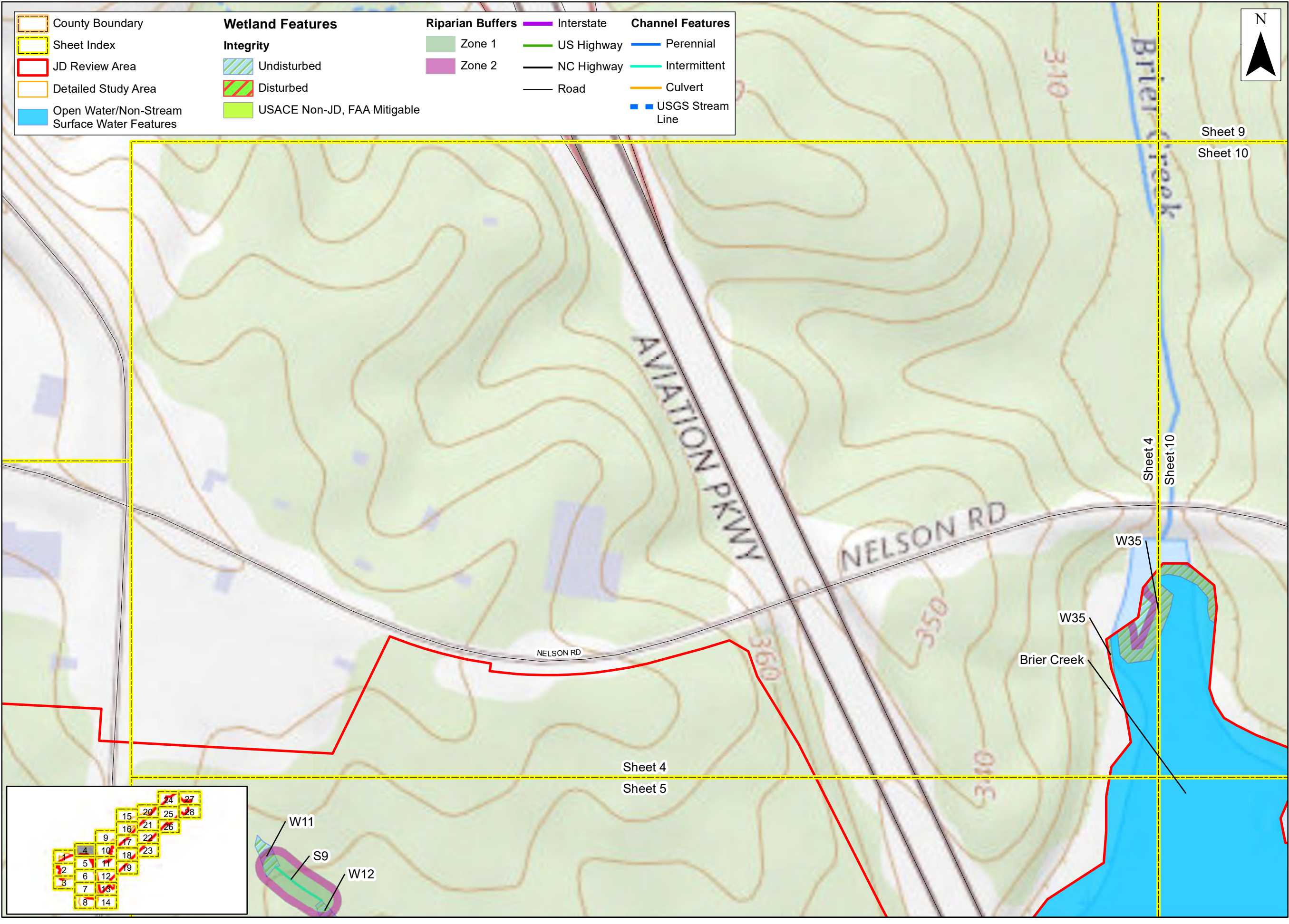
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Figure  
**7**  
 Sheet 4





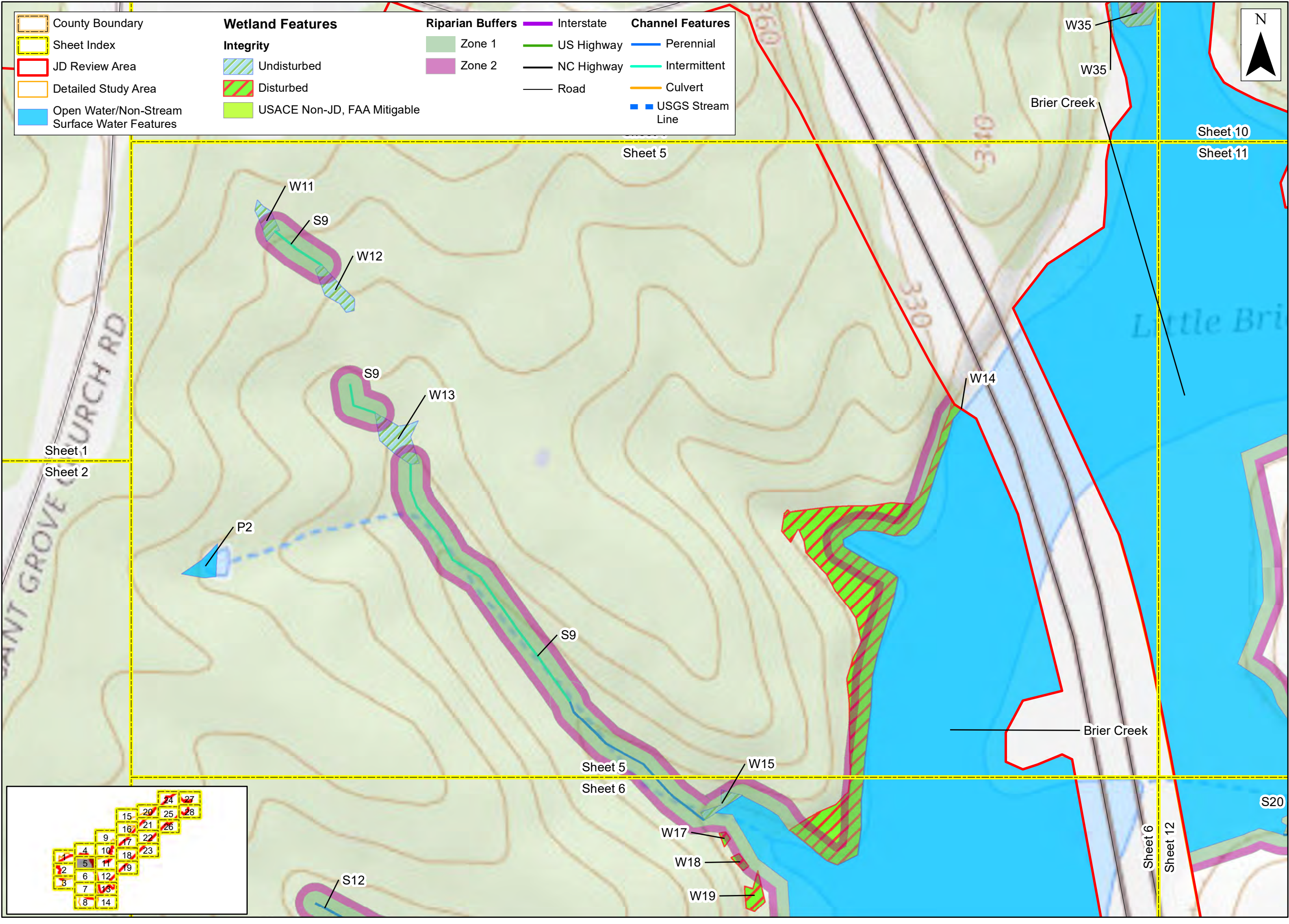
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Figure  
**7**  
 Sheet 5



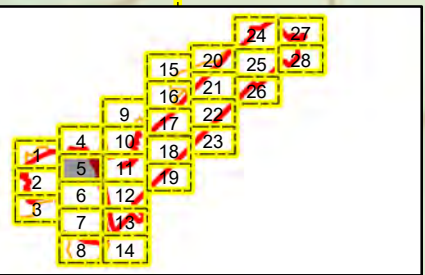
- County Boundary
- Sheet Index
- JD Review Area
- Detailed Study Area
- Open Water/Non-Stream Surface Water Features

- Wetland Features**
- Integrity**
- Undisturbed
  - Disturbed
  - USACE Non-JD, FAA Mitigable

- Riparian Buffers**
- Zone 1
  - Zone 2

- Interstate
- US Highway
- NC Highway
- Road

- Channel Features**
- Perennial
  - Intermittent
  - Culvert
  - USGS Stream Line





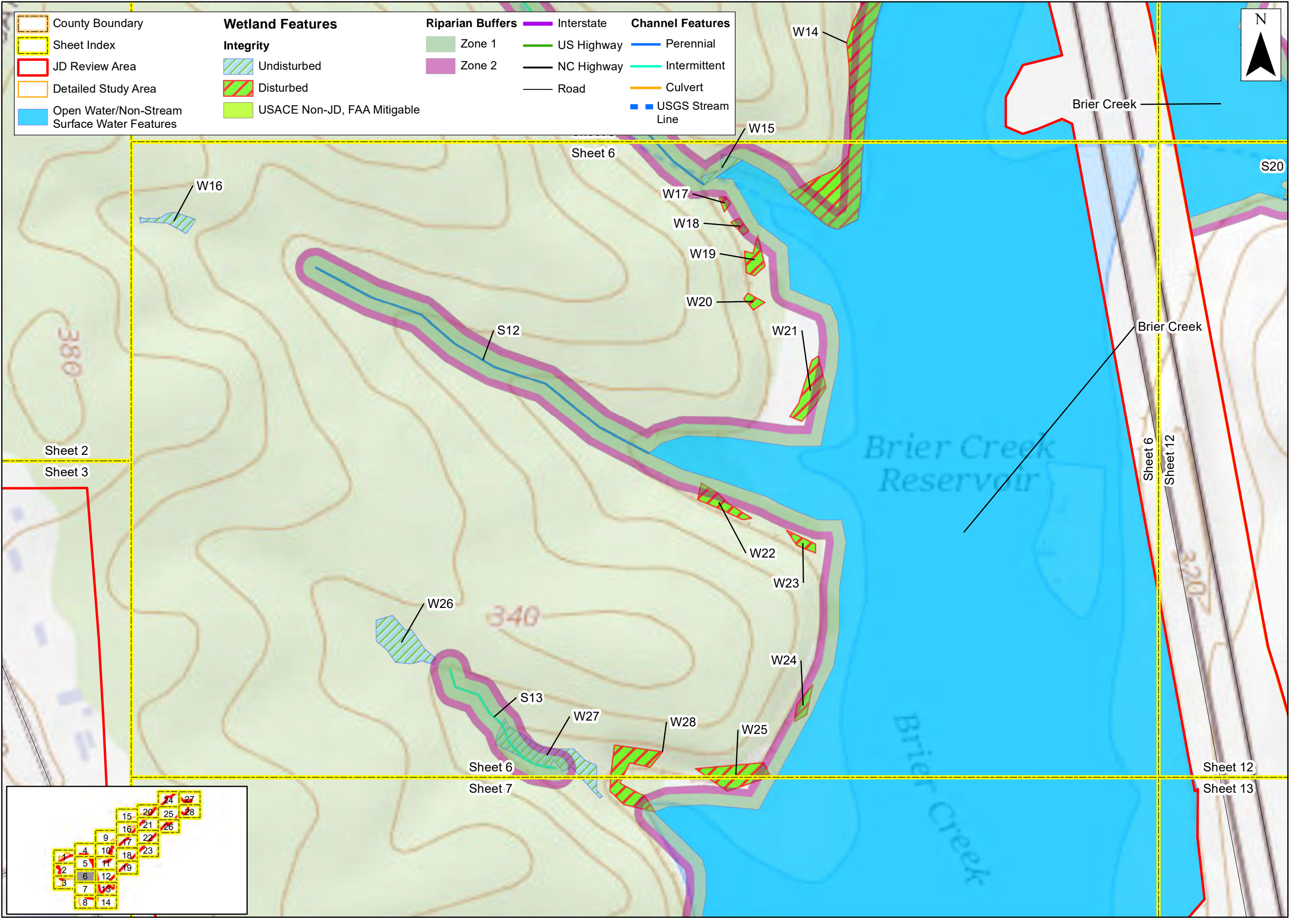
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Figure  
**7**  
 Sheet 6



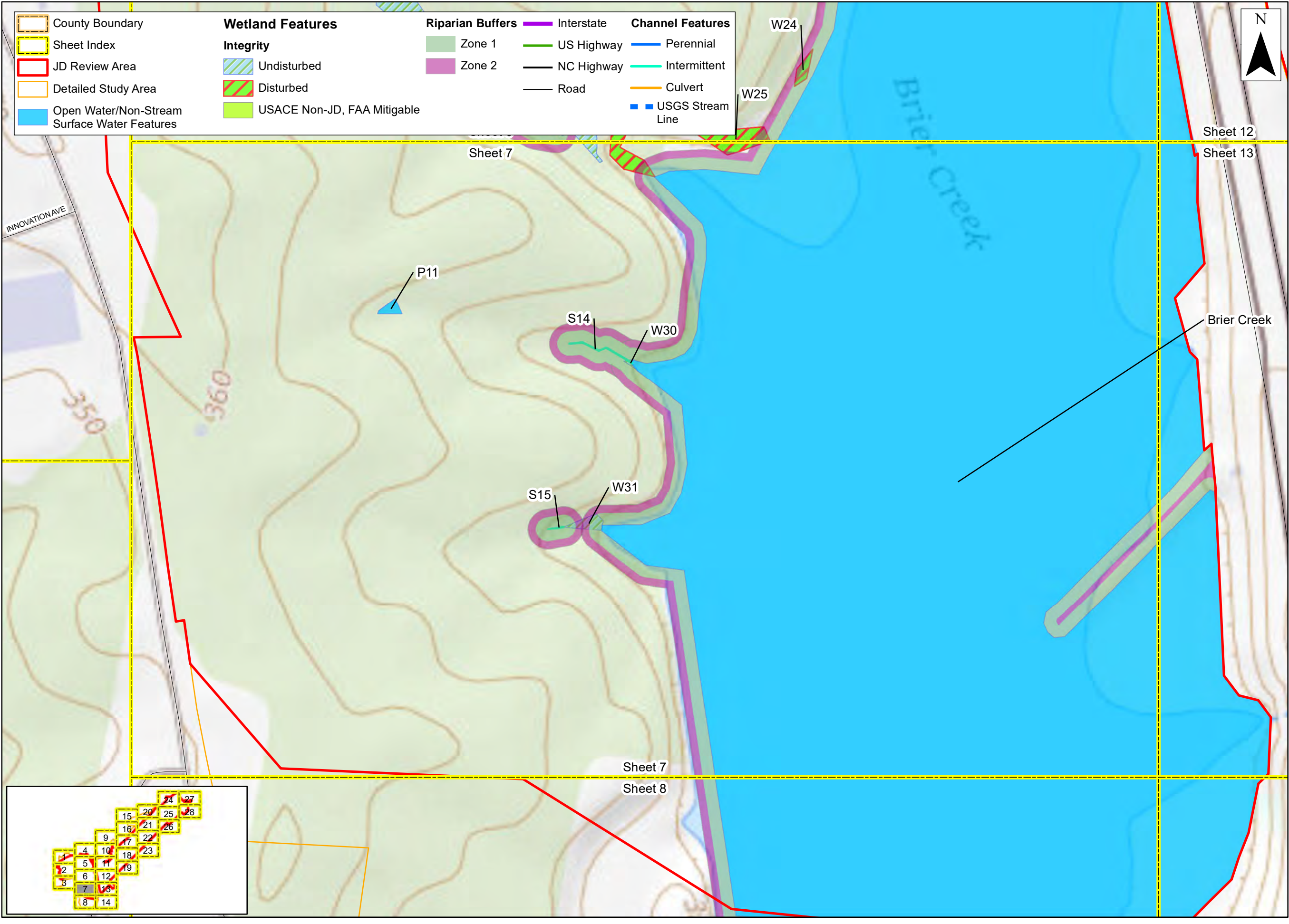


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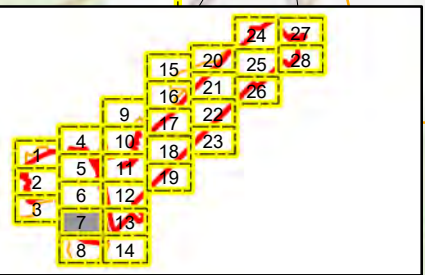
**Raleigh-Durham International Airport**  
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**Federal Environmental Assessment**  
**Potential Riparian Buffers**  
 Wake County, North Carolina

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Figure  
**7**  
 Sheet 7



County Boundary	<b>Wetland Features</b>	<b>Riparian Buffers</b>	Interstate	<b>Channel Features</b>
Sheet Index	<b>Integrity</b>	Zone 1	US Highway	Perennial
JD Review Area	Undisturbed	Zone 2	NC Highway	Intermittent
Detailed Study Area	Disturbed	Road	Culvert	USGS Stream Line
Open Water/Non-Stream Surface Water Features	USACE Non-JD, FAA Mitigable			





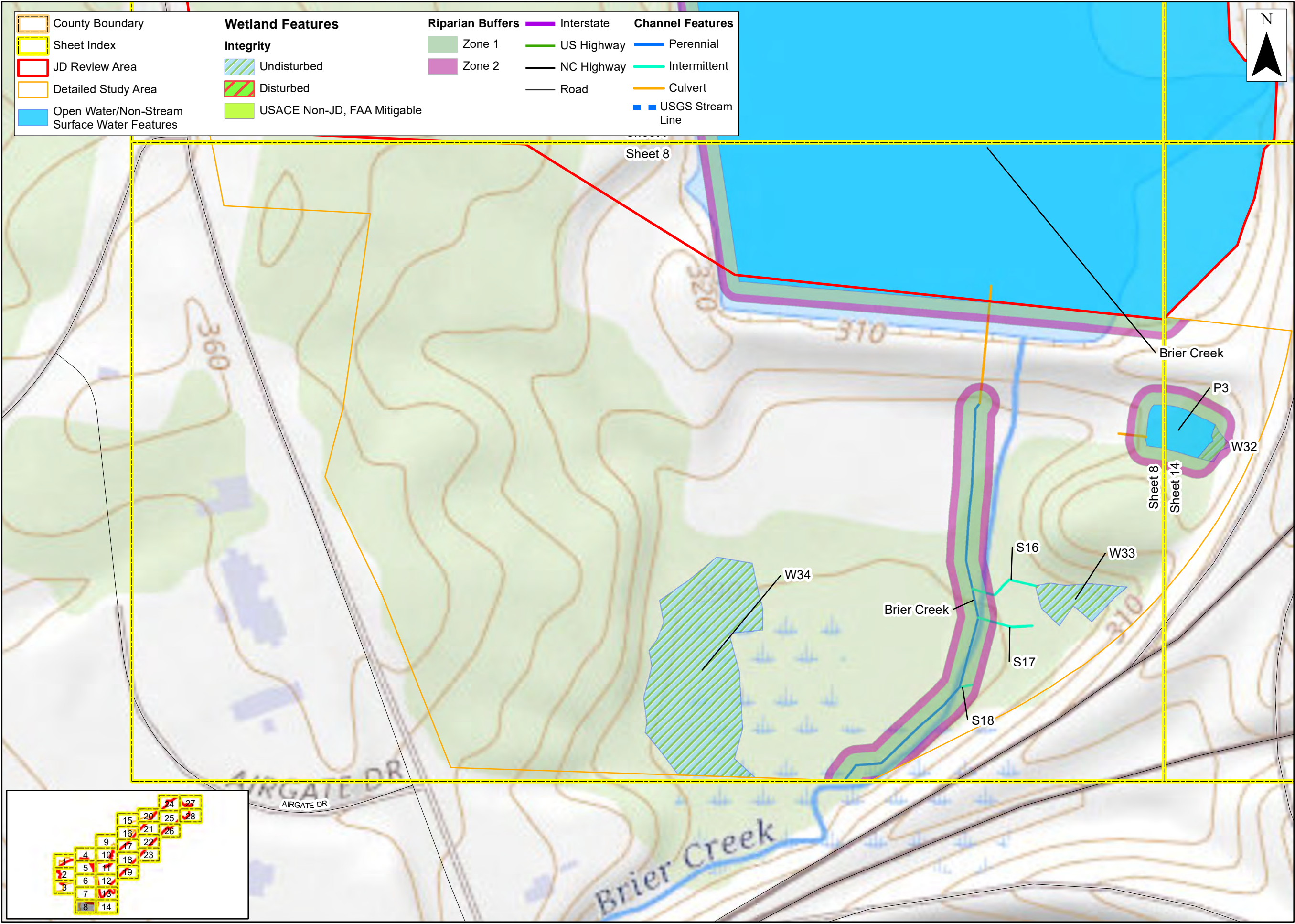
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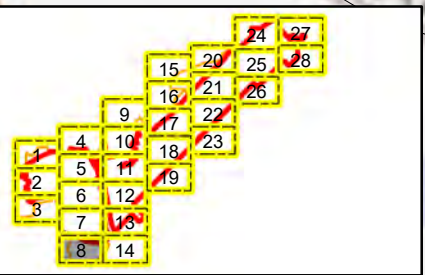
**Raleigh-Durham International Airport**  
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**Federal Environmental Assessment**  
**Potential Riparian Buffers**  
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Date: November 2022  
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Figure  
**7**  
 Sheet 8



County Boundary	<b>Wetland Features</b>	<b>Riparian Buffers</b>	Interstate	<b>Channel Features</b>
Sheet Index	<b>Integrity</b>	Zone 1	US Highway	Perennial
JD Review Area	Undisturbed	Zone 2	NC Highway	Intermittent
Detailed Study Area	Disturbed	Road	Culvert	USGS Stream Line
Open Water/Non-Stream Surface Water Features	USACE Non-JD, FAA Mitigable			





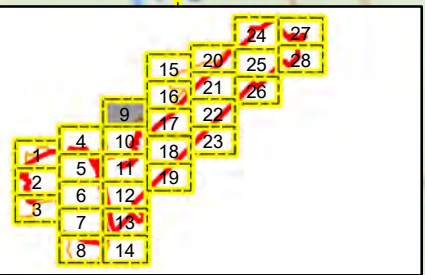
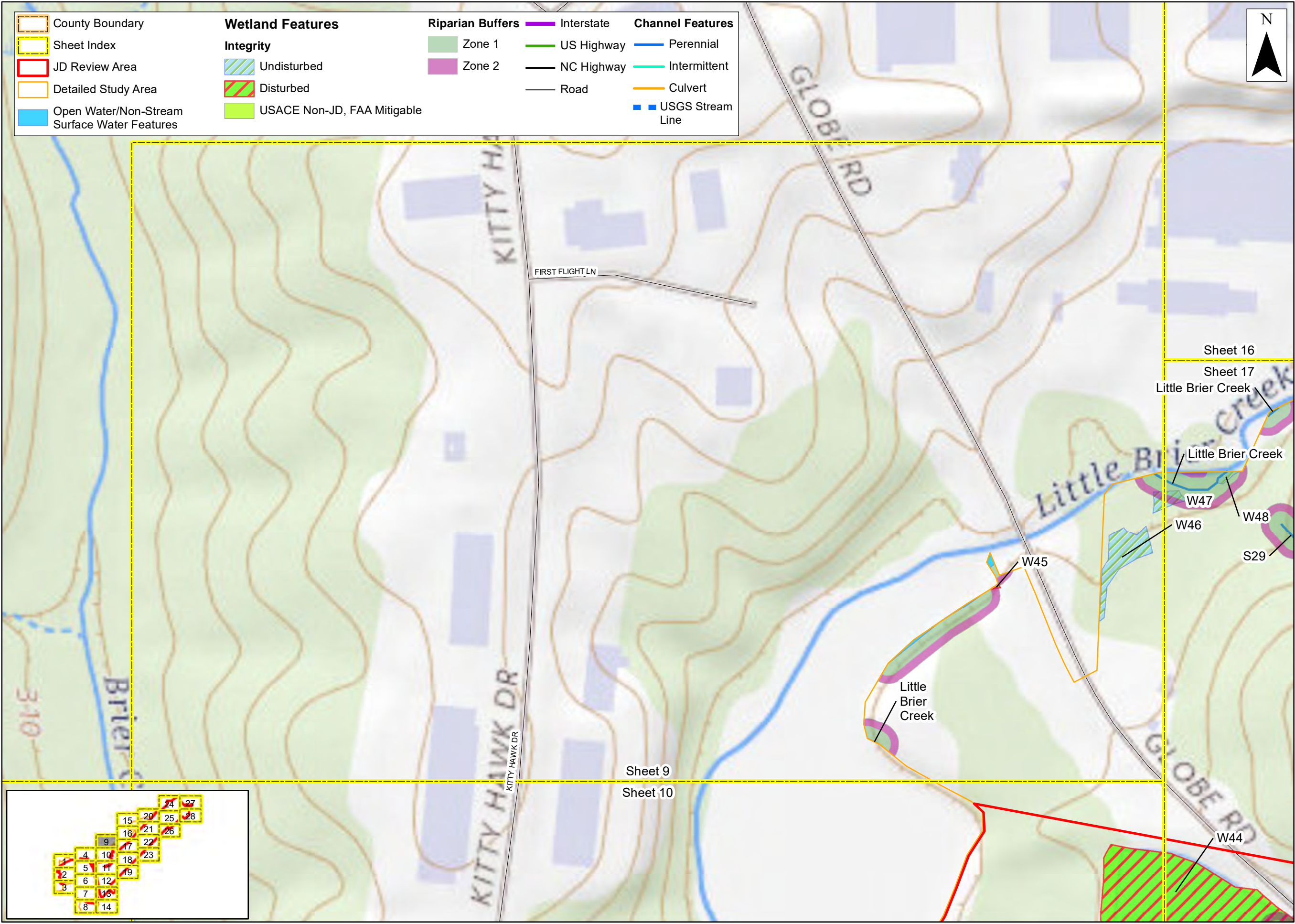
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Figure  
**7**  
 Sheet 9





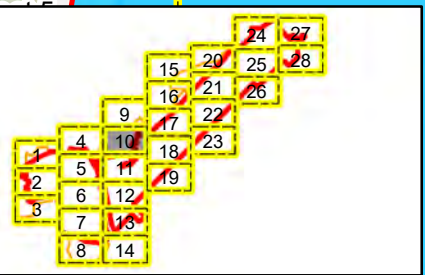
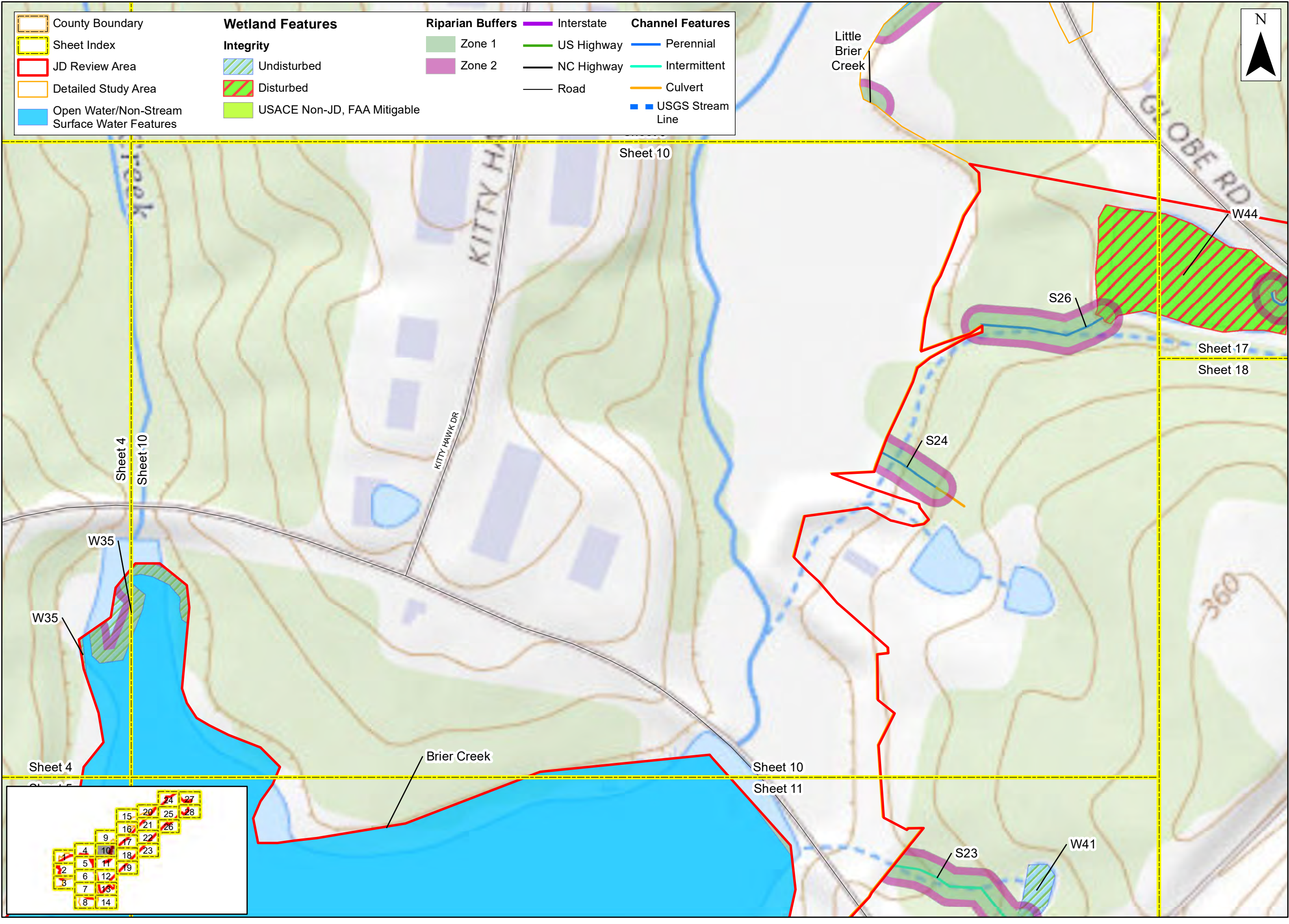
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Figure  
**7**  
 Sheet 10







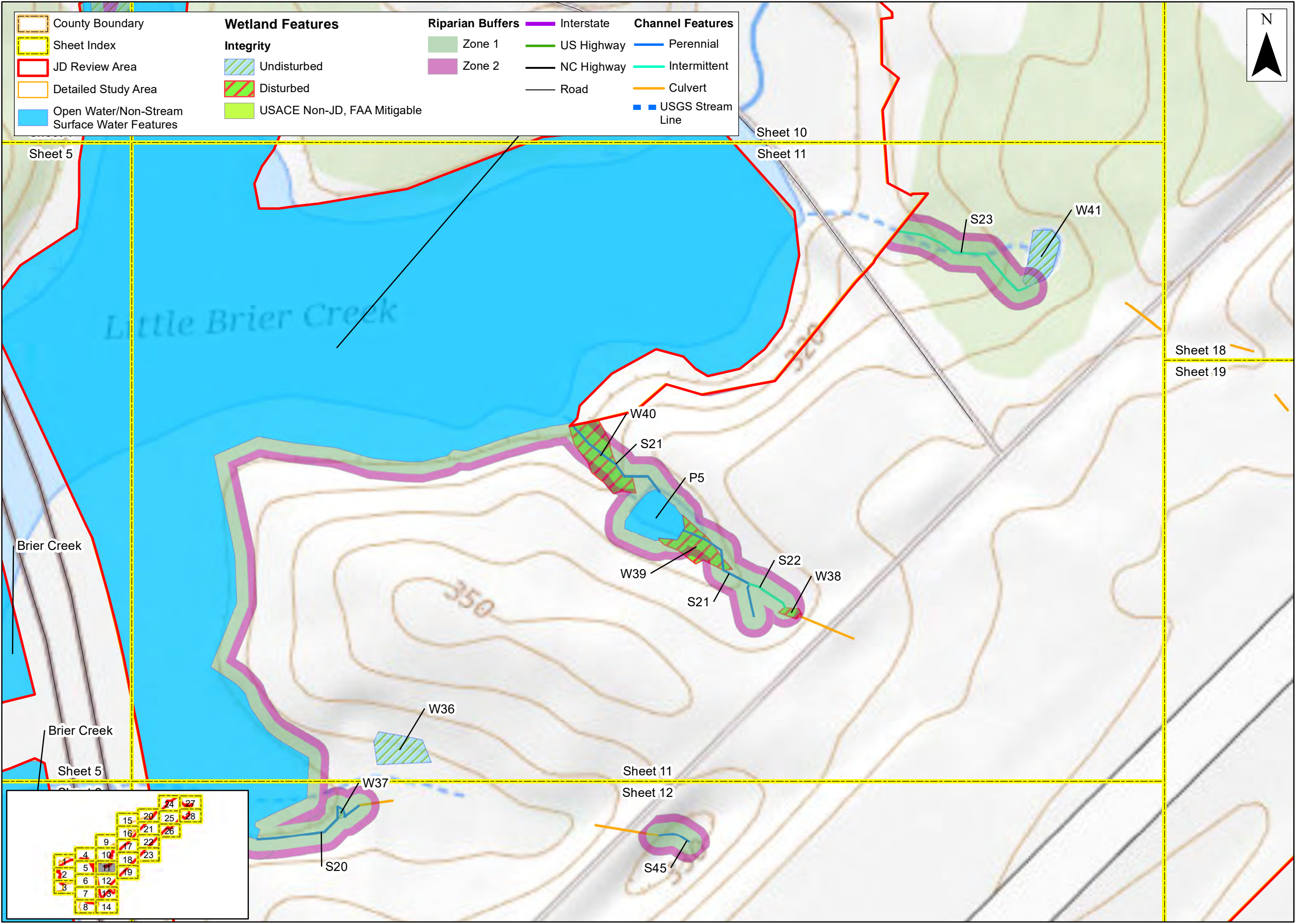
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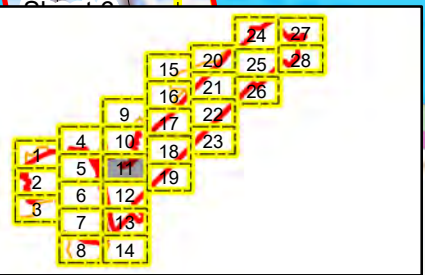
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**Federal Environmental Assessment**  
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Date: November 2022  
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Figure  
**7**  
 Sheet 11



County Boundary	<b>Wetland Features</b>	<b>Riparian Buffers</b>	Interstate	<b>Channel Features</b>
Sheet Index	<b>Integrity</b>	Zone 1	US Highway	Perennial
JD Review Area	Undisturbed	Zone 2	NC Highway	Intermittent
Detailed Study Area	Disturbed	Road	Culvert	USGS Stream Line
Open Water/Non-Stream Surface Water Features	USACE Non-JD, FAA Mitigable			





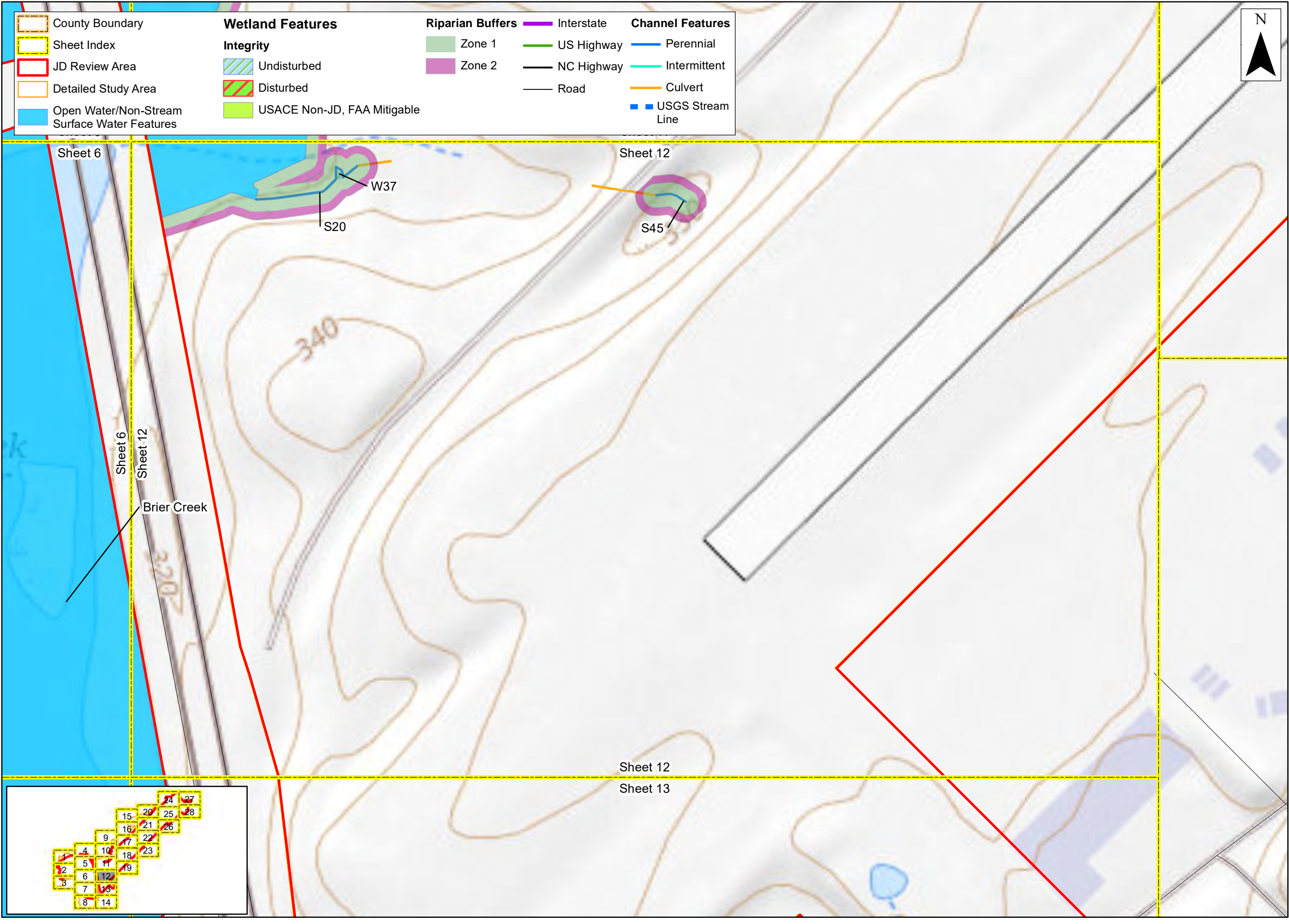
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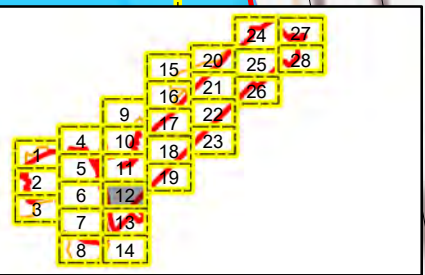
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 Wake County, North Carolina

Date: November 2022  
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**Figure 7**  
**Sheet 12**



County Boundary	<b>Wetland Features</b>	<b>Riparian Buffers</b>	Interstate	<b>Channel Features</b>
Sheet Index	<b>Integrity</b>	Zone 1	US Highway	Perennial
JD Review Area	Undisturbed	Zone 2	NC Highway	Intermittent
Detailed Study Area	Disturbed	Road	Culvert	USGS Stream Line
Open Water/Non-Stream Surface Water Features	USACE Non-JD, FAA Mitigable			



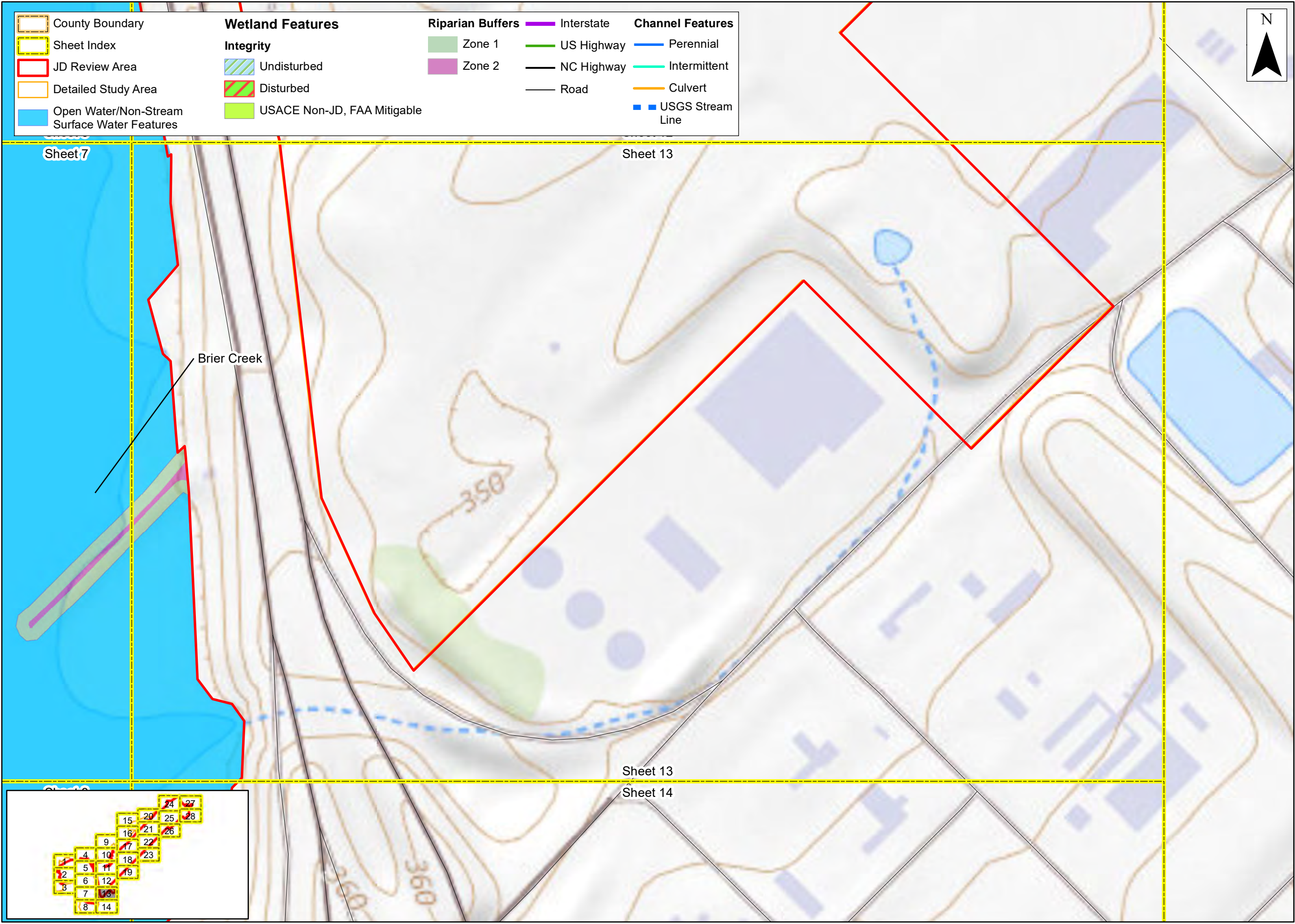





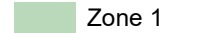




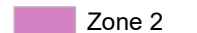









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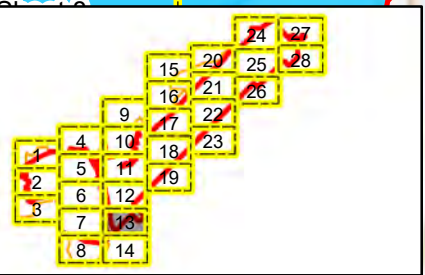

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**Wake County, North Carolina**

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Figure  
**7**  
Sheet 13



 County Boundary	<b>Wetland Features</b>	<b>Riparian Buffers</b>	 Interstate	<b>Channel Features</b>
 Sheet Index	<b>Integrity</b>	 Zone 1	 US Highway	 Perennial
 JD Review Area	 Undisturbed	 Zone 2	 NC Highway	 Intermittent
 Detailed Study Area	 Disturbed	 Road	 Culvert	 USGS Stream Line
 Open Water/Non-Stream Surface Water Features	 USACE Non-JD, FAA Mitigable			





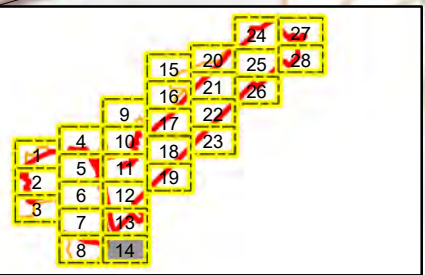
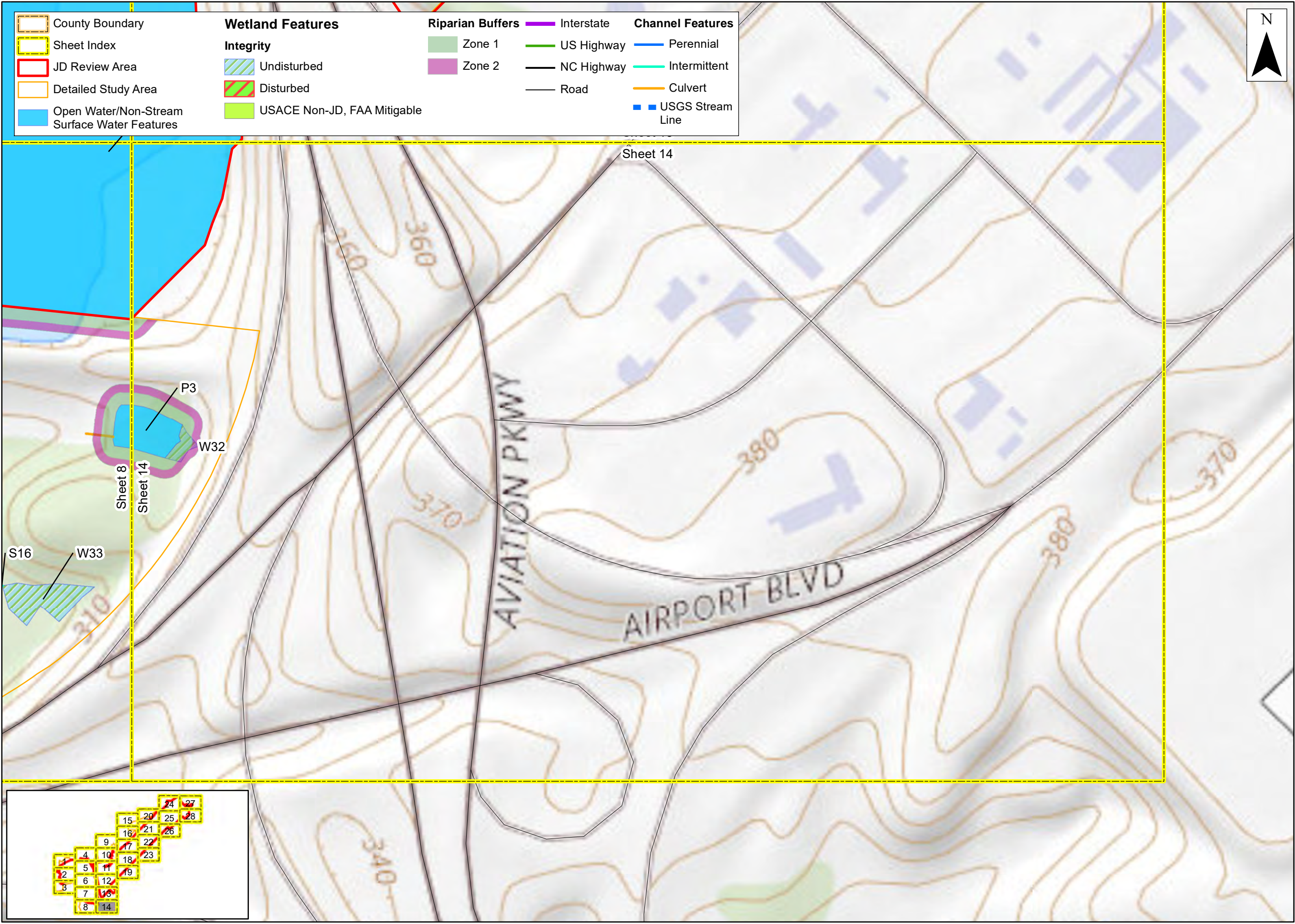
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Figure  
**7**  
Sheet 14





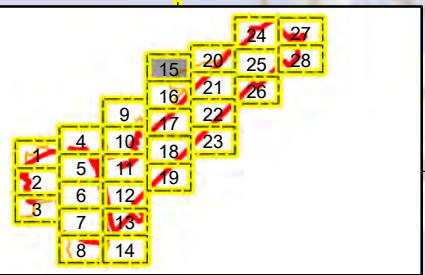
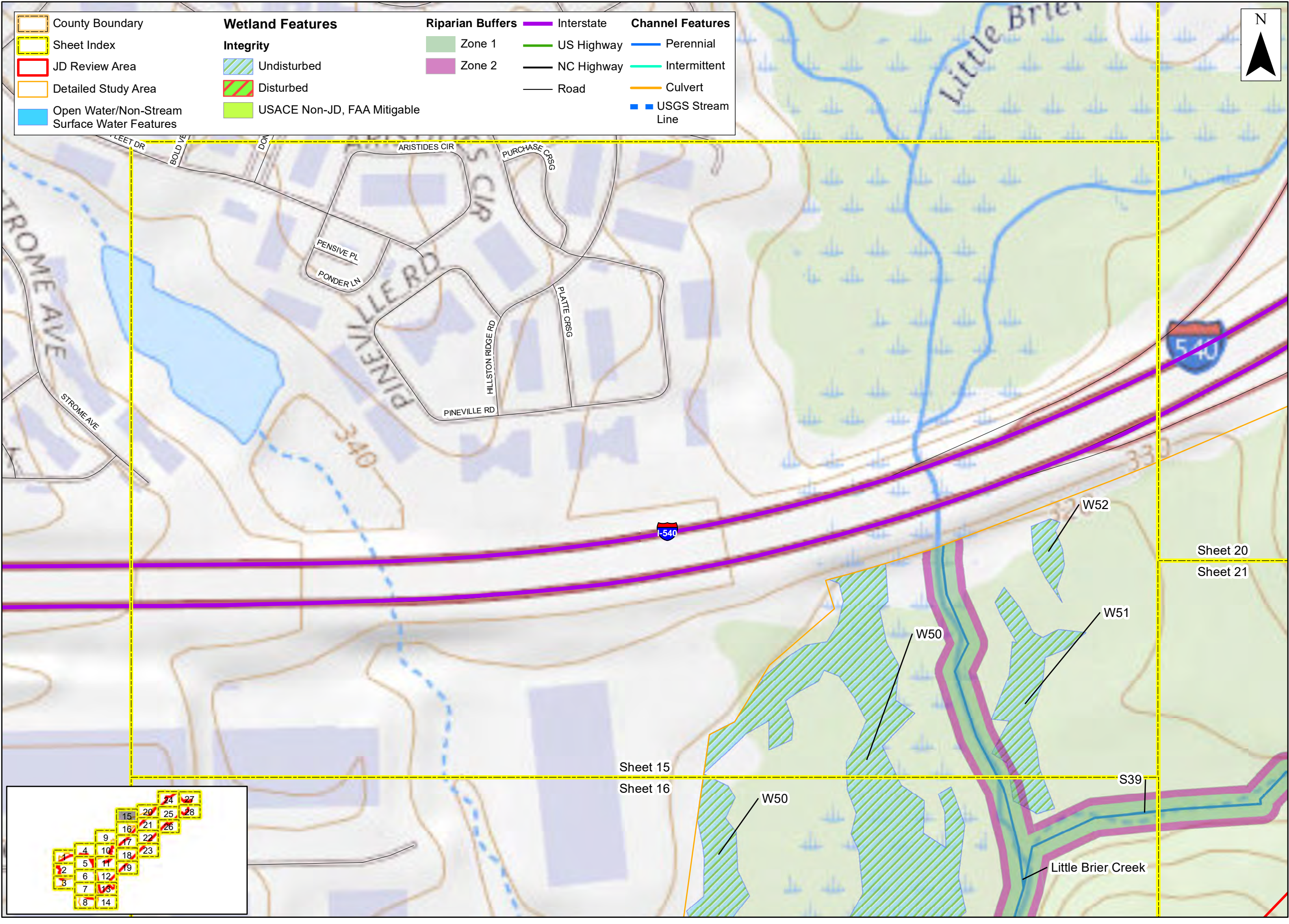
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Figure  
**7**  
 Sheet 15





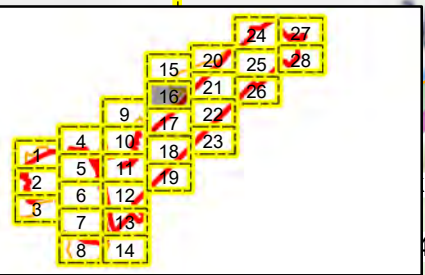
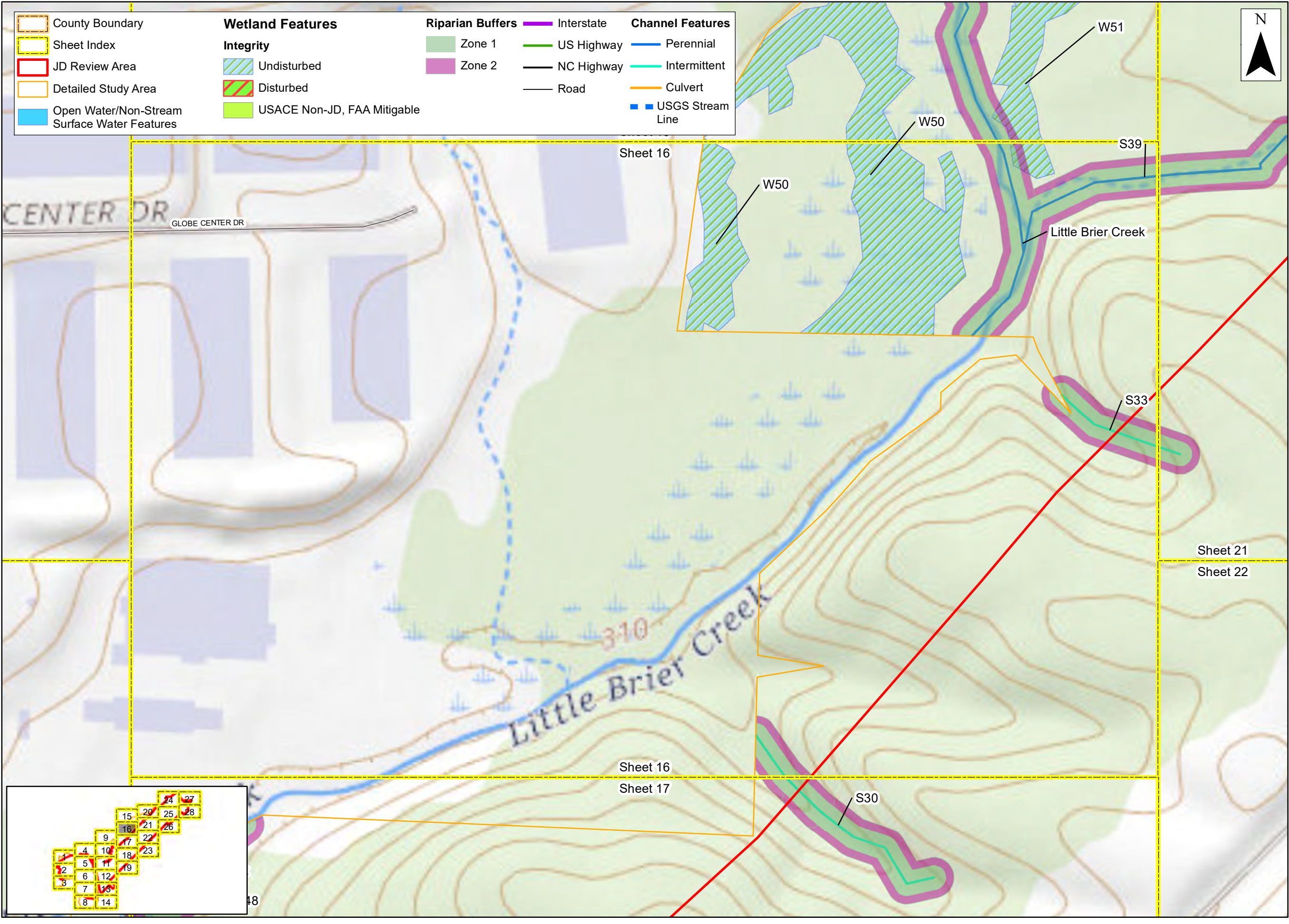
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Figure  
**7**  
 Sheet 16





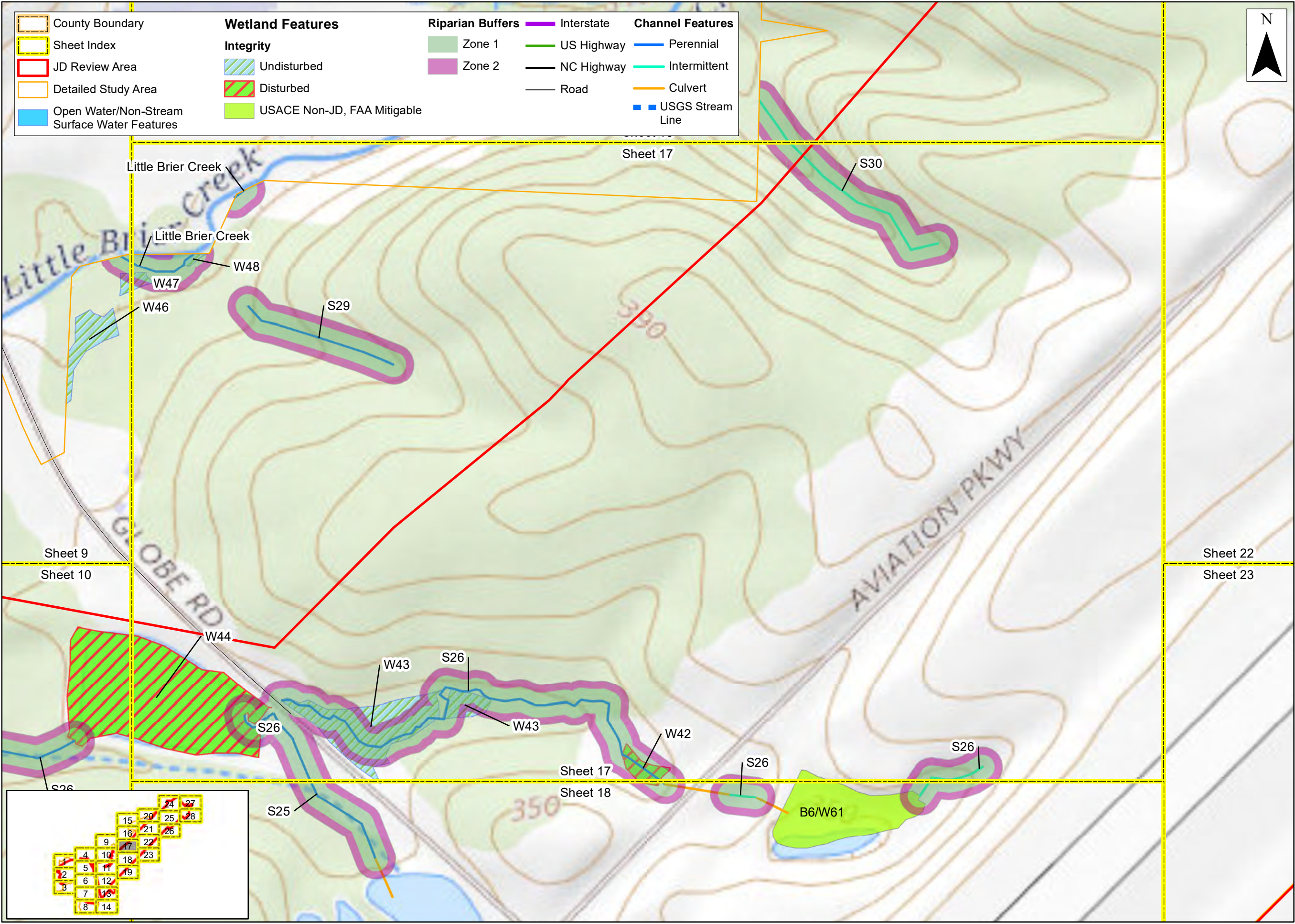
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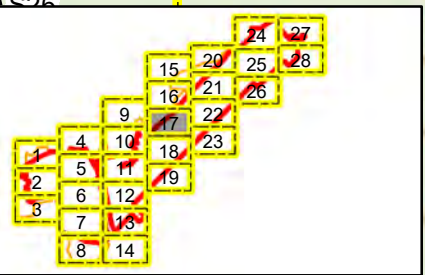
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 Wake County, North Carolina

Date: November 2022  
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 Job No.: 19-018  
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Figure  
**7**  
 Sheet 17



County Boundary	<b>Wetland Features</b>	<b>Riparian Buffers</b>	Interstate	<b>Channel Features</b>
Sheet Index	<b>Integrity</b>	Zone 1	US Highway	Perennial
JD Review Area	Undisturbed	Zone 2	NC Highway	Intermittent
Detailed Study Area	Disturbed	Road	Culvert	USGS Stream Line
Open Water/Non-Stream Surface Water Features	USACE Non-JD, FAA Mitigable			





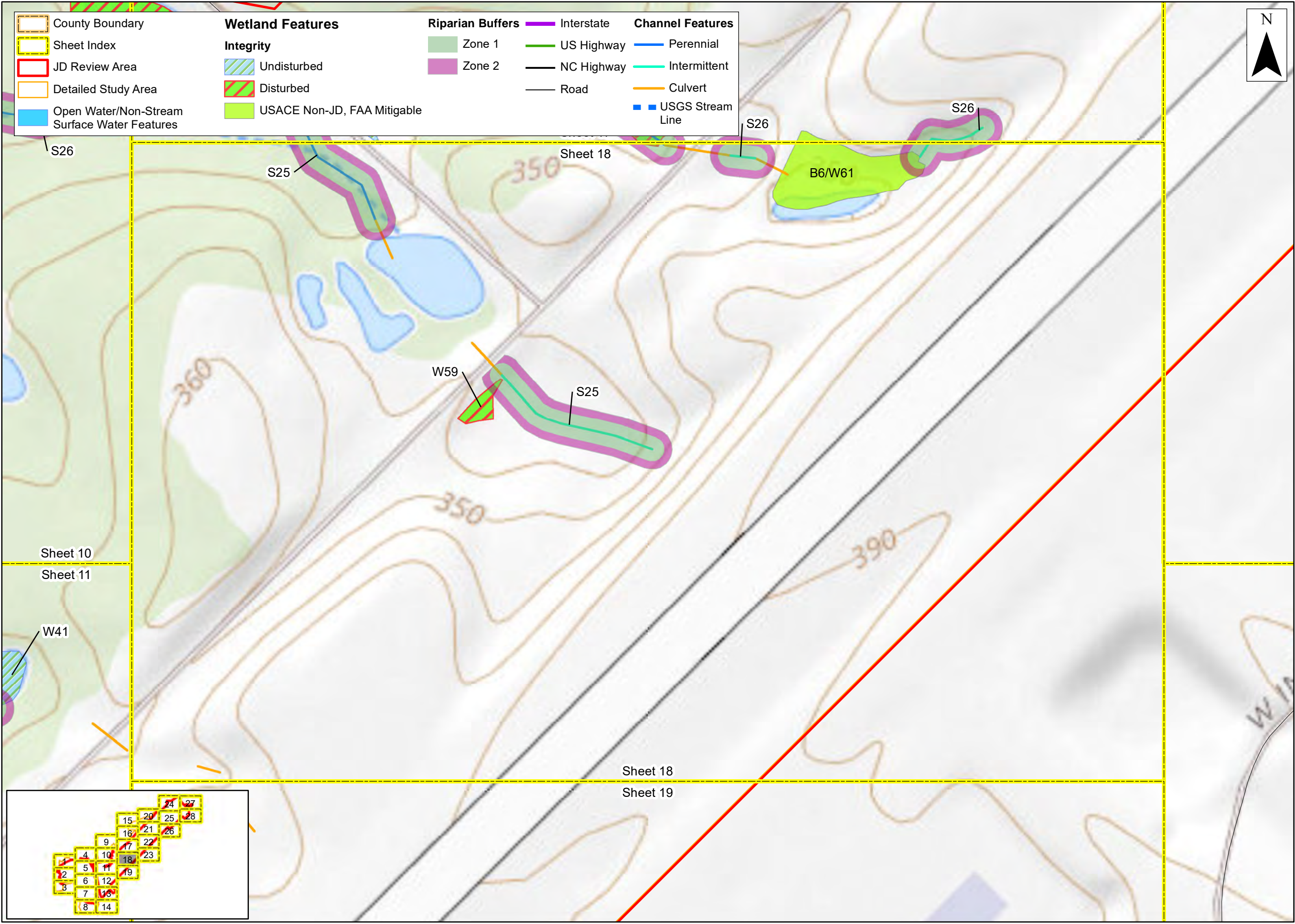
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Date: November 2022  
 Scale: 0 100 200 Ft  
 Job No.: 19-018  
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Figure  
**7**  
 Sheet 18





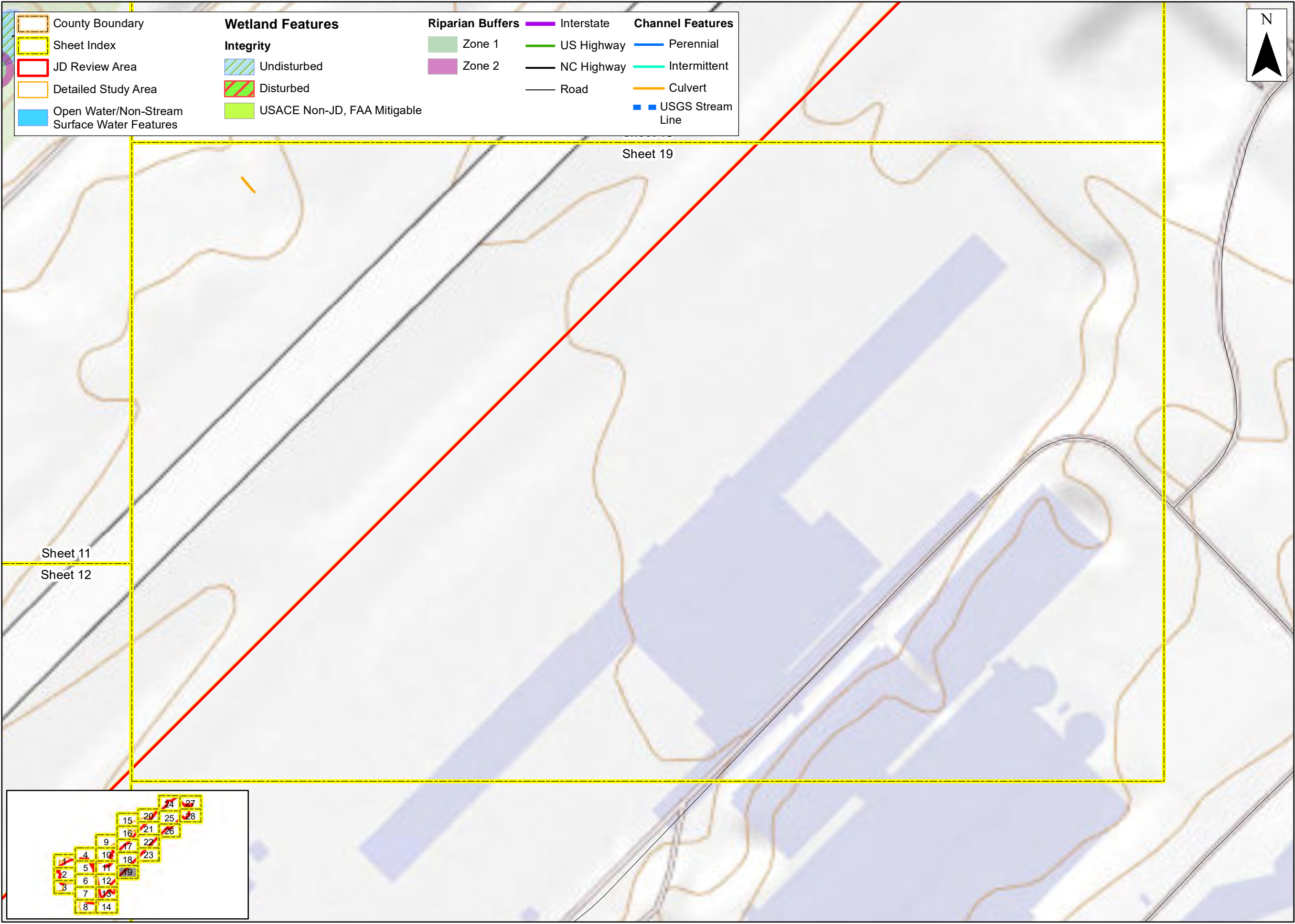


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**Federal Environmental Assessment**  
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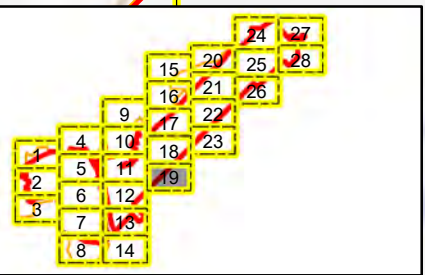
Date: November 2022  
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Figure  
**7**  
Sheet 19



Sheet 19

Sheet 11  
Sheet 12



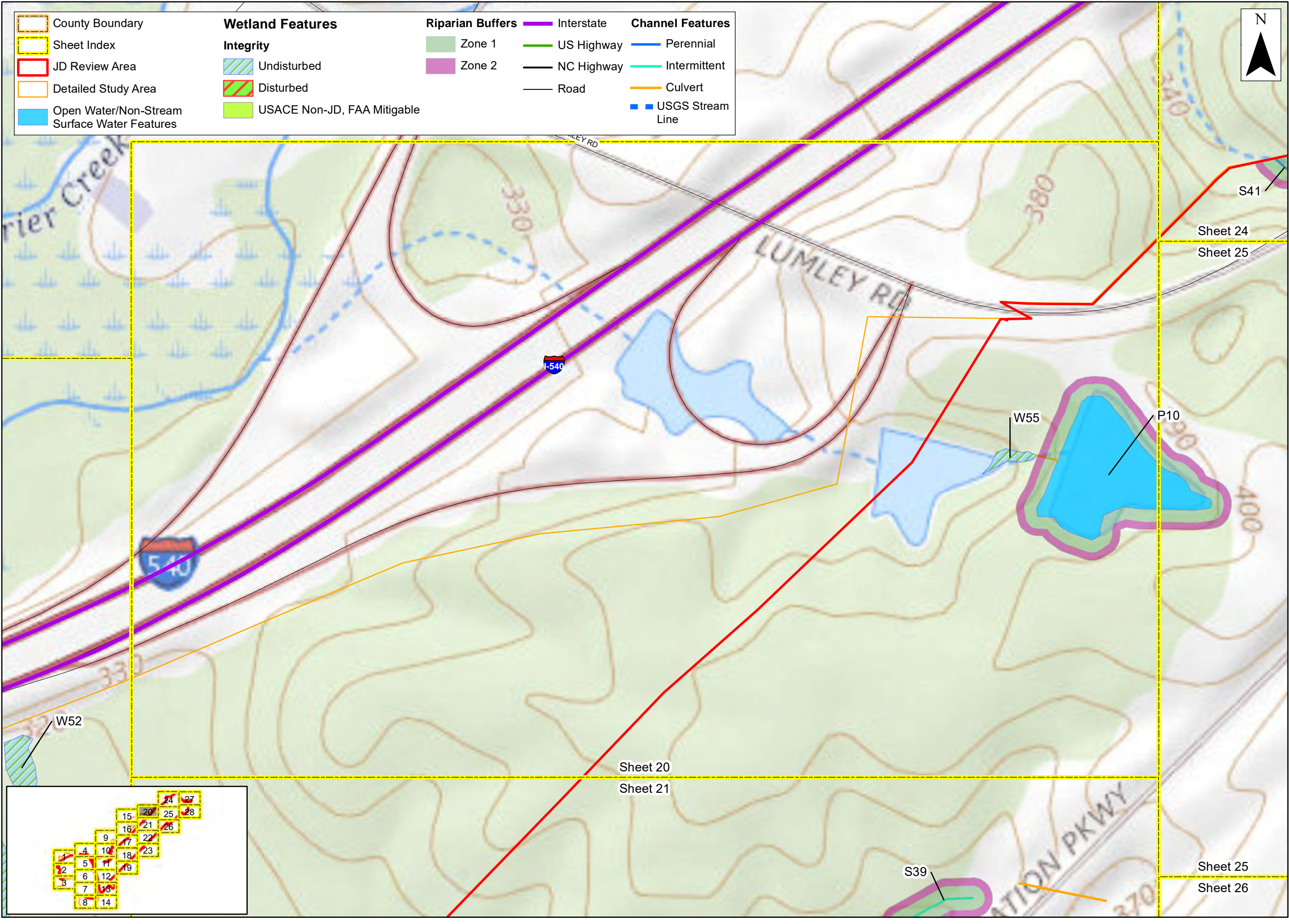


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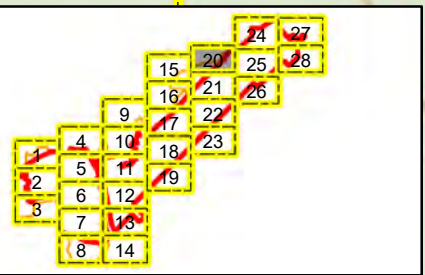

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**Federal Environmental Assessment**  
**Potential Riparian Buffers**  
**Wake County, North Carolina**

Date: November 2022  
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Figure  
**7**  
 Sheet 20



County Boundary	<b>Wetland Features</b>	<b>Riparian Buffers</b>	Interstate	<b>Channel Features</b>
Sheet Index	<b>Integrity</b>	Zone 1	US Highway	Perennial
JD Review Area	Undisturbed	Zone 2	NC Highway	Intermittent
Detailed Study Area	Disturbed	Road	Culvert	USGS Stream Line
Open Water/Non-Stream Surface Water Features	USACE Non-JD, FAA Mitigable			










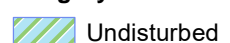












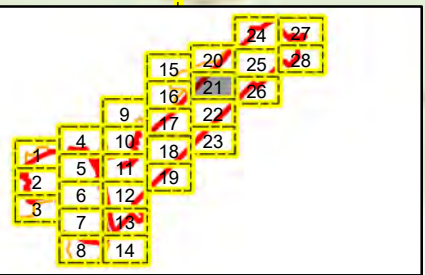
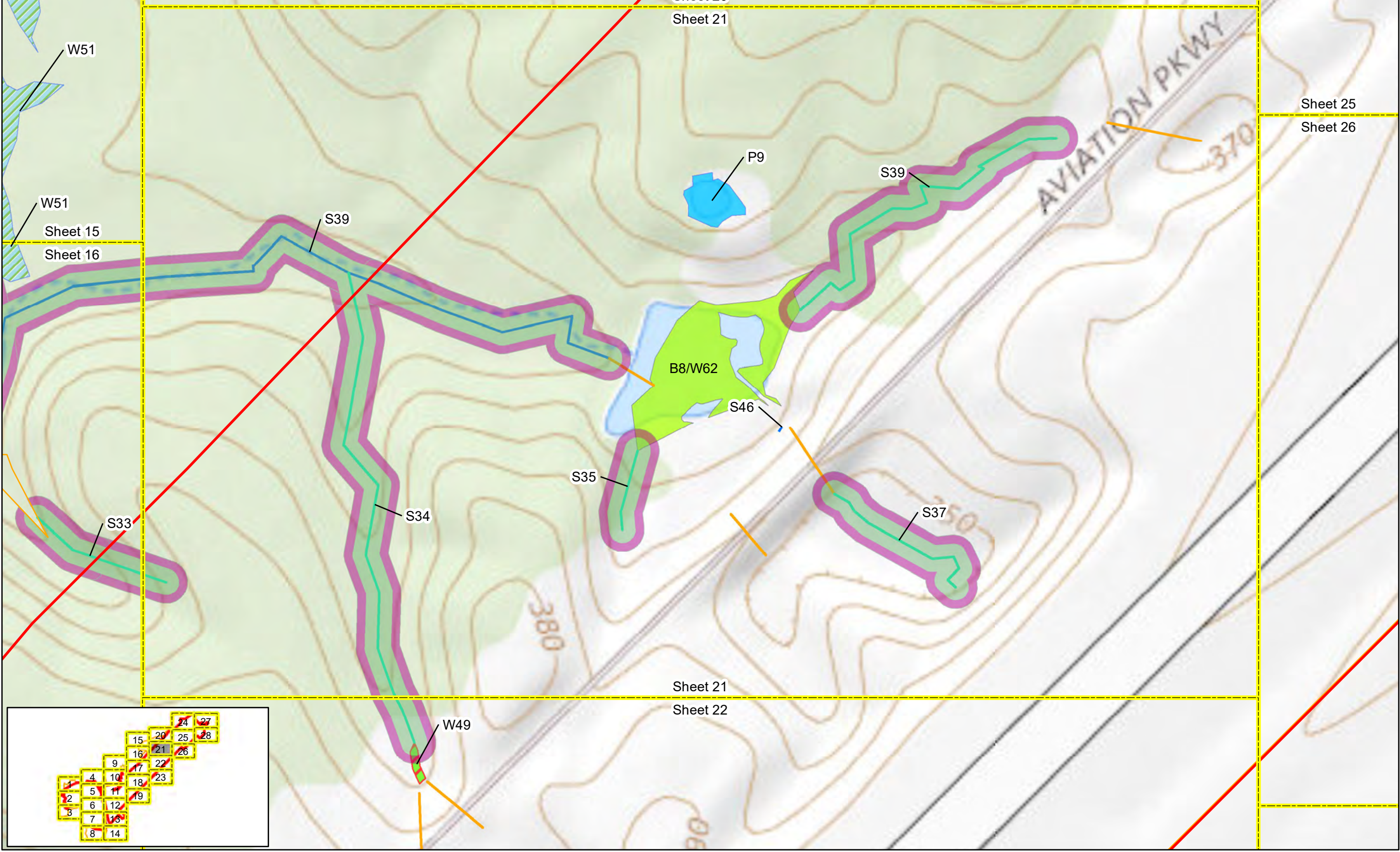
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**Federal Environmental Assessment**  
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**Wake County, North Carolina**

Date: November 2022  
Scale: 0 100 200 Ft  
Job No.: 19-018  
Drawn By: KEMS      Checked By: NDH

Figure  
**7**  
Sheet 21

 County Boundary	<b>Wetland Features</b>	<b>Riparian Buffers</b>	 Interstate	<b>Channel Features</b>
 Sheet Index	<b>Integrity</b>	 Zone 1	 US Highway	 Perennial
 JD Review Area	 Undisturbed	 Zone 2	 NC Highway	 Intermittent
 Detailed Study Area	 Disturbed	 Road	 Culvert	 USGS Stream Line
 Open Water/Non-Stream Surface Water Features	 USACE Non-JD, FAA Mitigable			





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International  
Airport**

**Proposed Runway  
5L/23R  
Replacement**

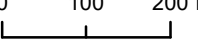
**Federal  
Environmental  
Assessment**

**Potential Riparian  
Buffers**

**Wake County,  
North Carolina**

Date: November 2022

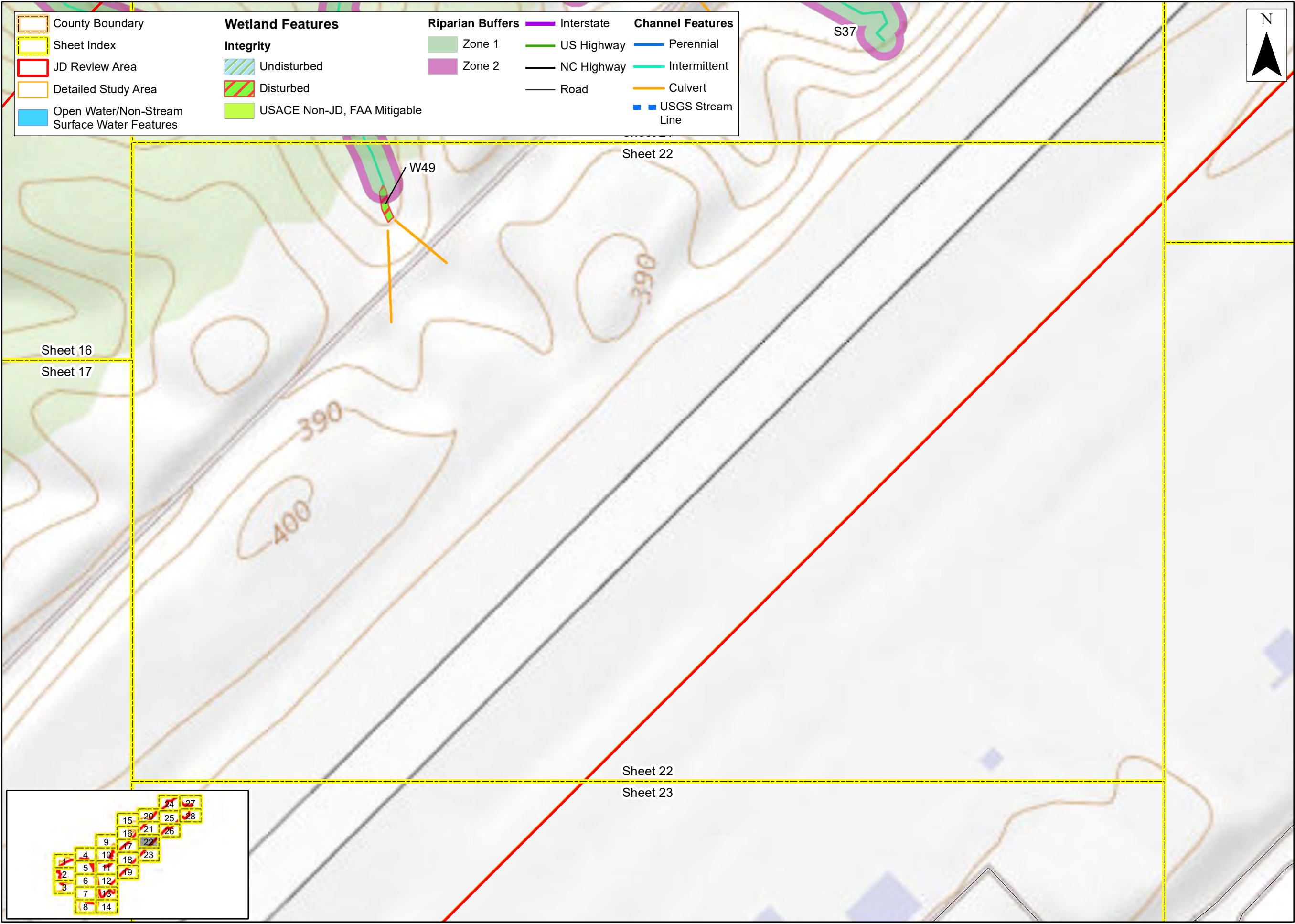
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
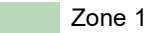



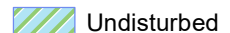
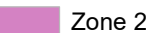







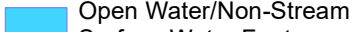
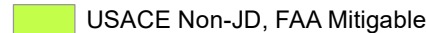


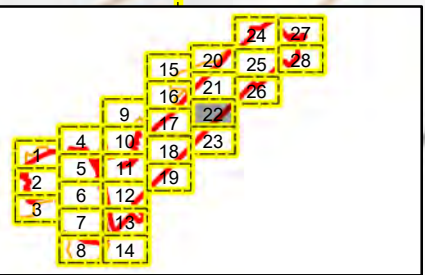
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Figure  
**7**  
Sheet 22



 County Boundary	<b>Wetland Features</b>	<b>Riparian Buffers</b>	 Interstate	<b>Channel Features</b>
 Sheet Index	<b>Integrity</b>	 Zone 1	 US Highway	 Perennial
 JD Review Area	 Undisturbed	 Zone 2	 NC Highway	 Intermittent
 Detailed Study Area	 Disturbed	 Road	 Culvert	 USGS Stream Line
 Open Water/Non-Stream Surface Water Features	 USACE Non-JD, FAA Mitigable			





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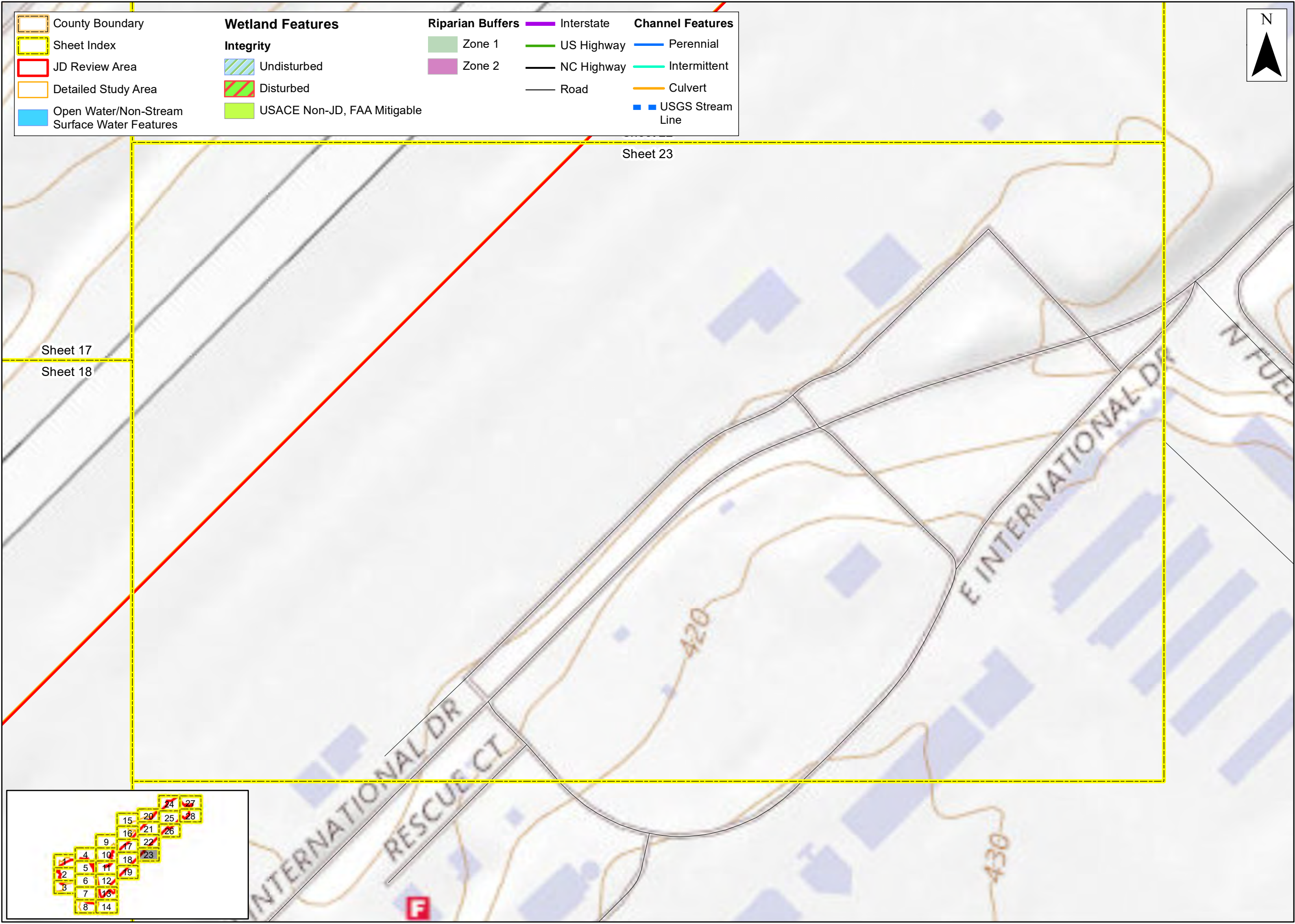
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**7**

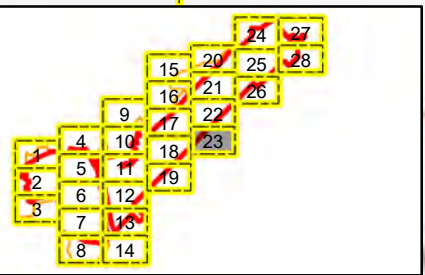
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Sheet 23

Sheet 17

Sheet 18





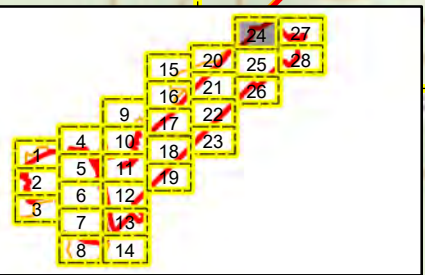
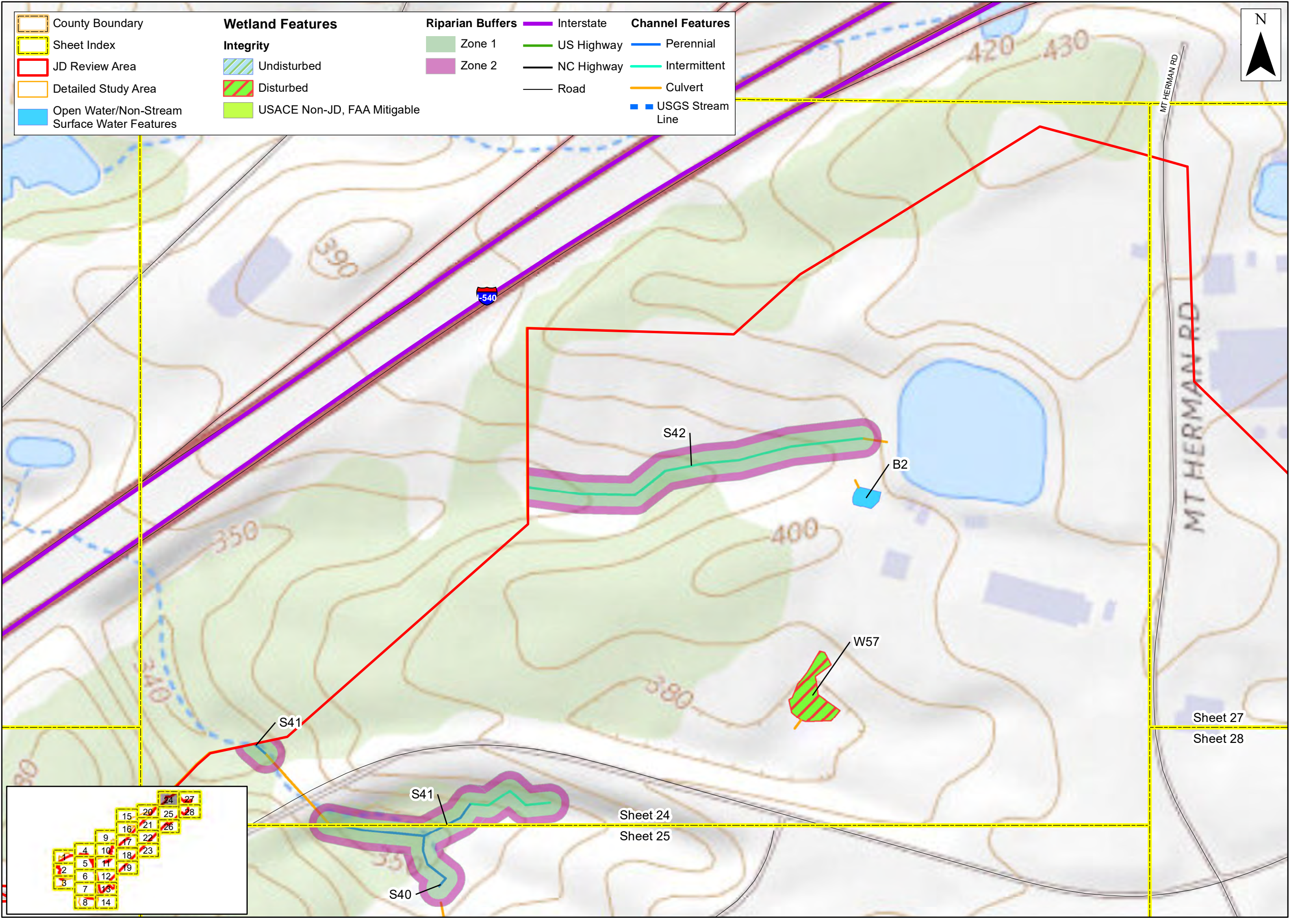
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**Potential Riparian Buffers**  
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Figure  
**7**  
 Sheet 24



Sheet 27  
 Sheet 28

Sheet 24  
 Sheet 25

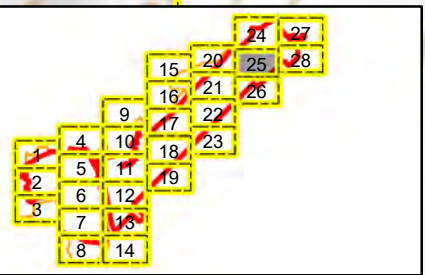
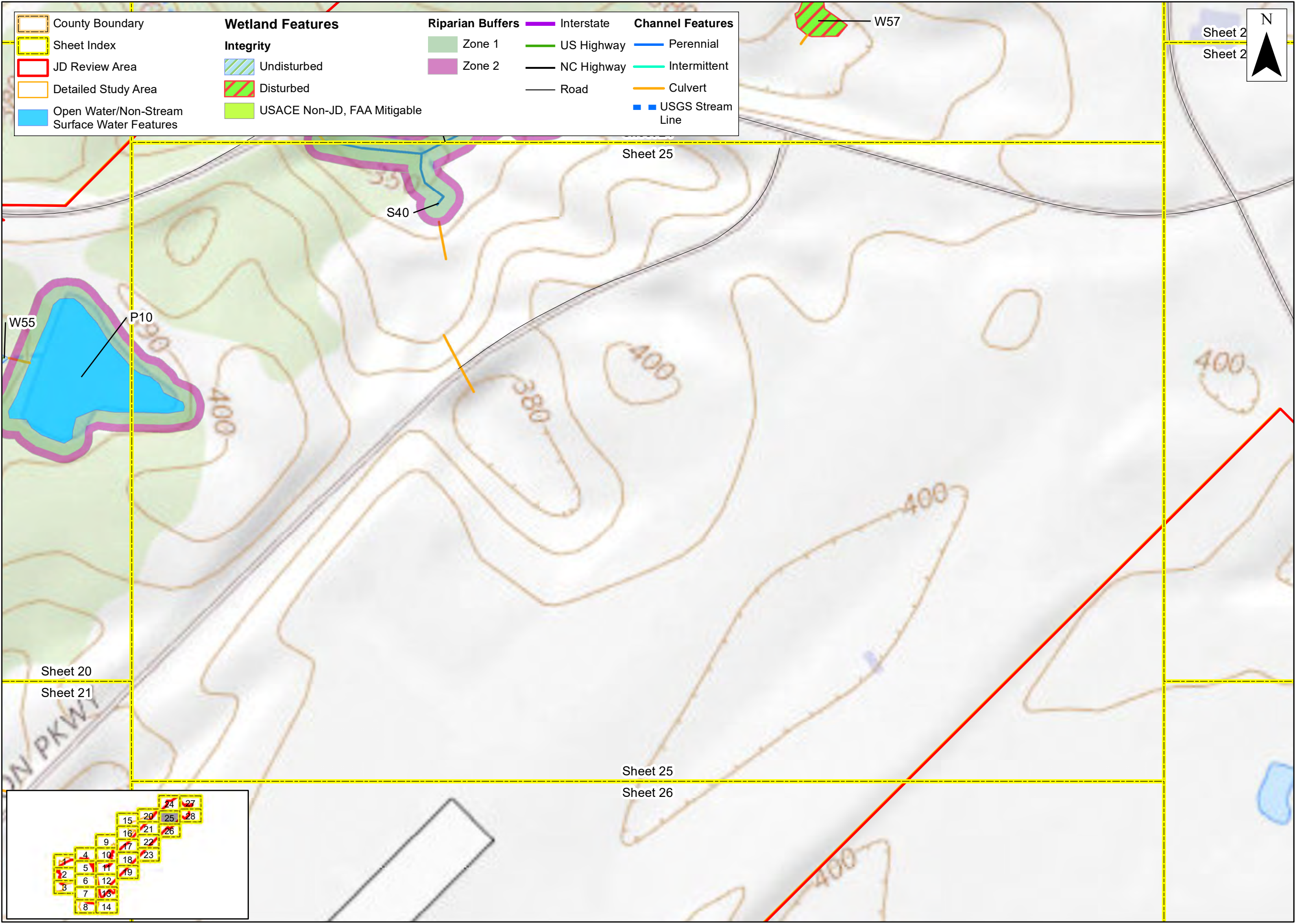


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**Potential Riparian  
Buffers**  
**Wake County,  
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Figure  
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Buffers**

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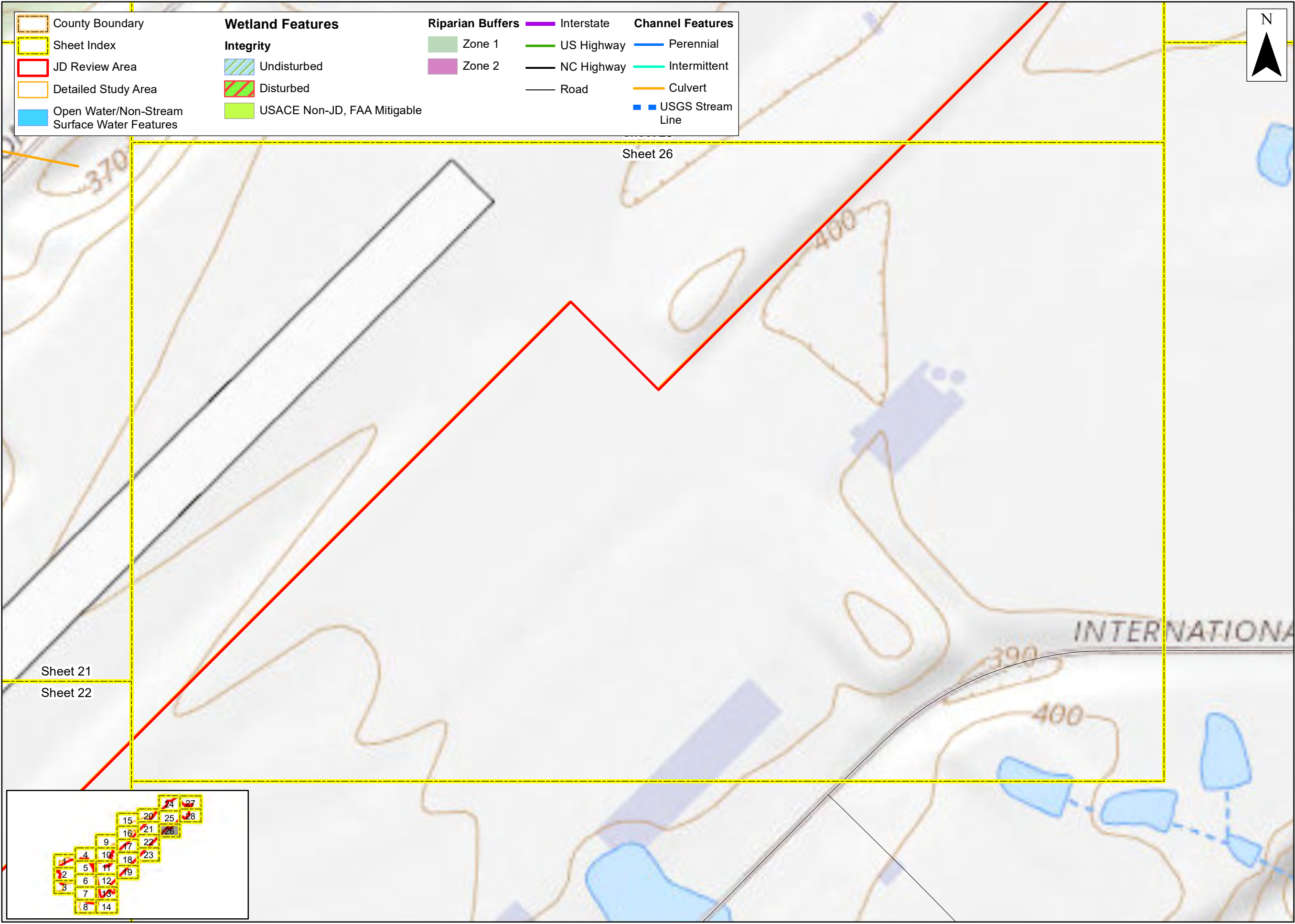
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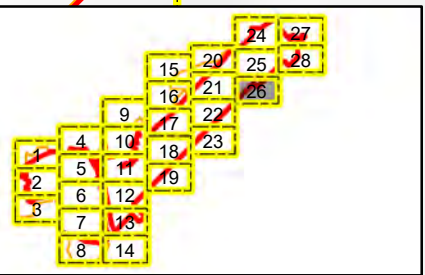
Sheet 26



Sheet 26

Sheet 21

Sheet 22







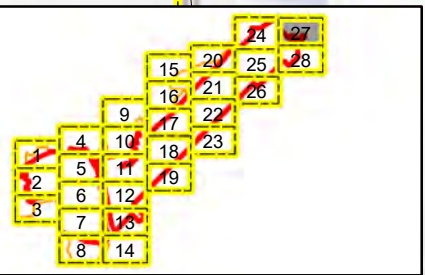
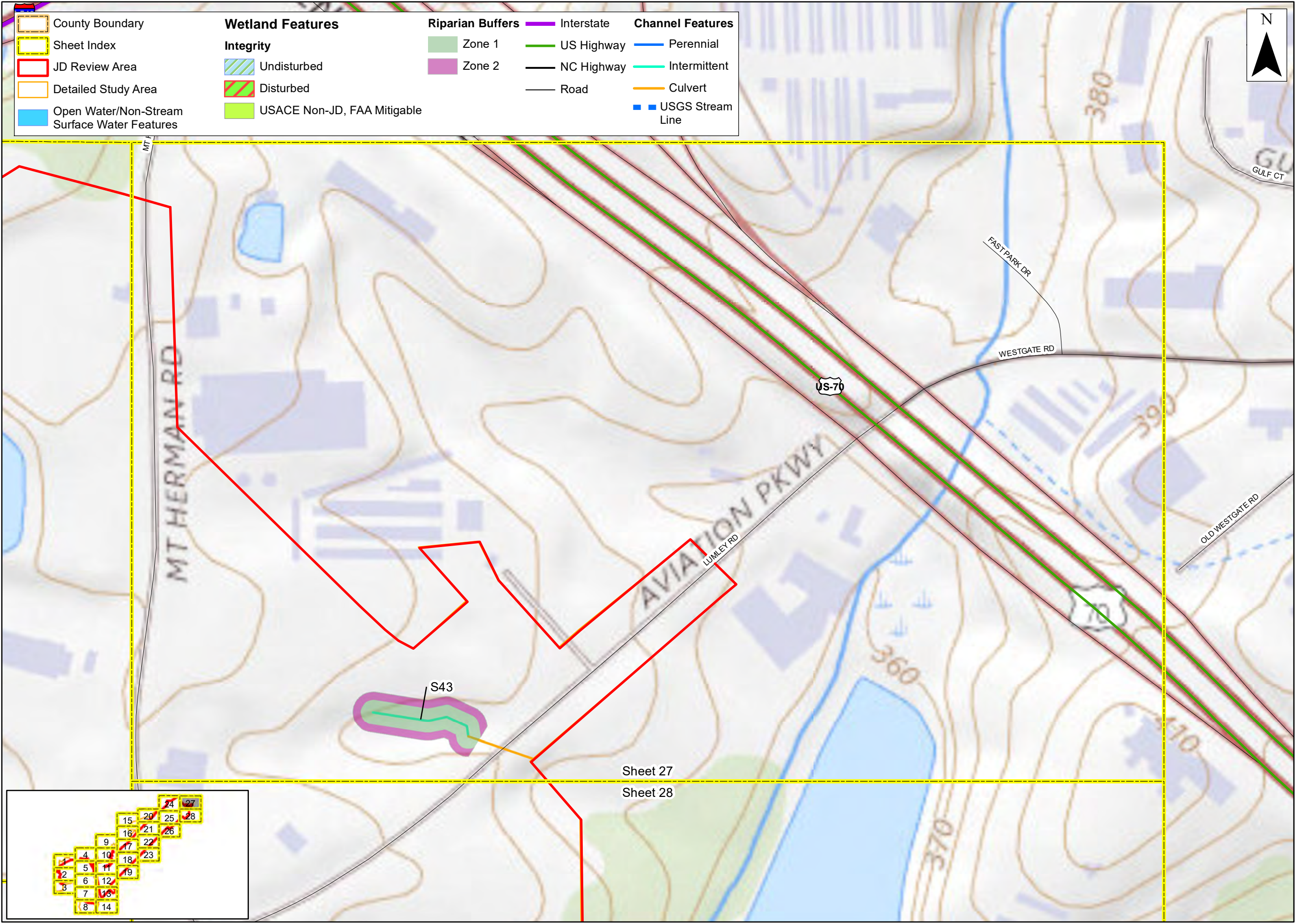
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Figure  
**7**  
 Sheet 27



Sheet 27  
 Sheet 28



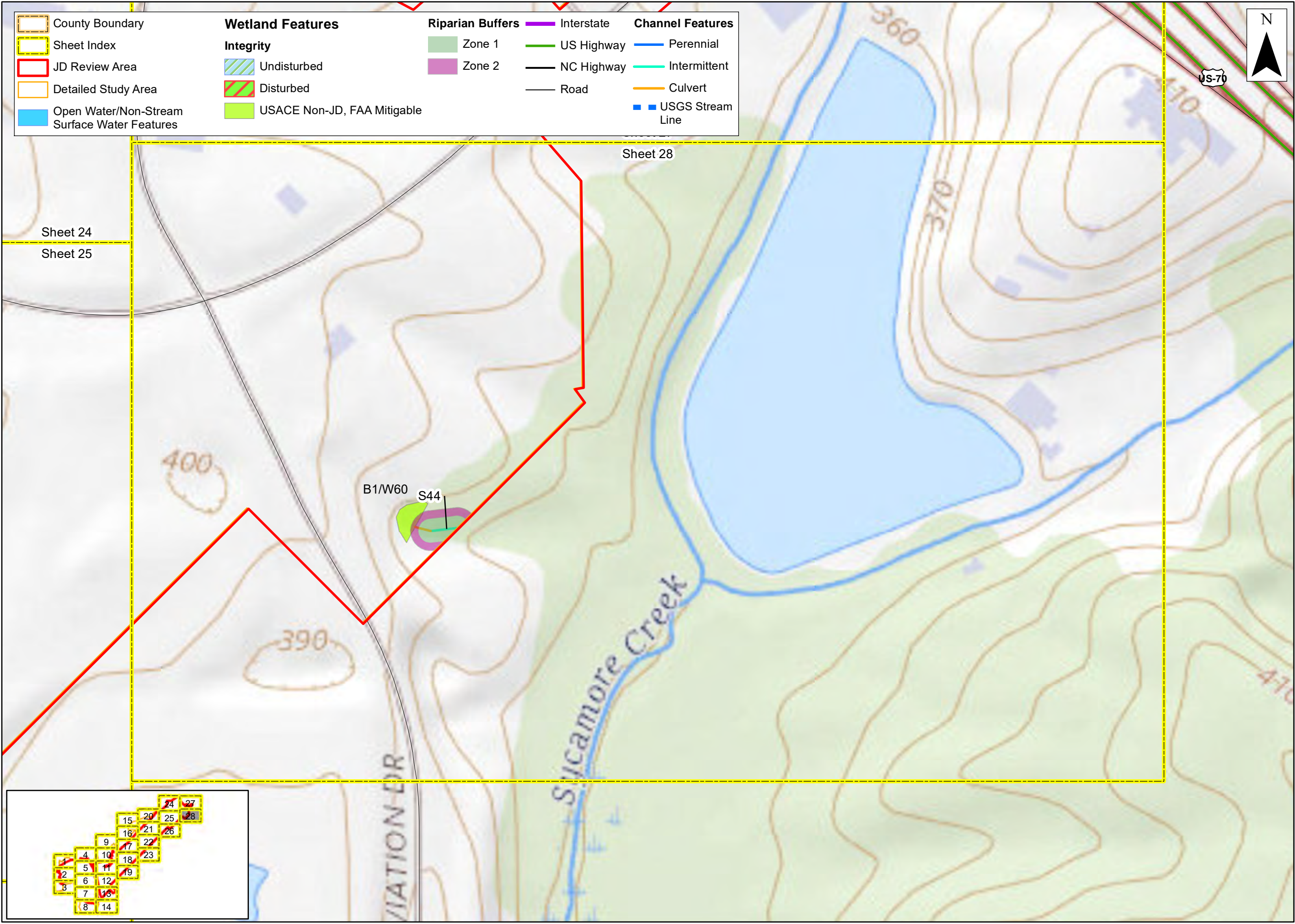
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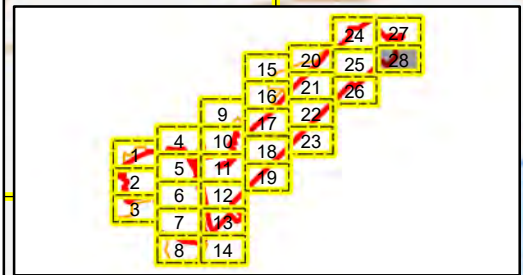
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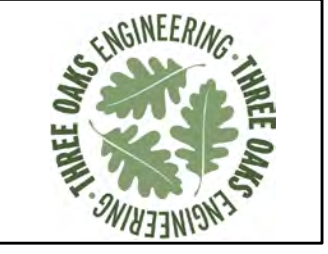
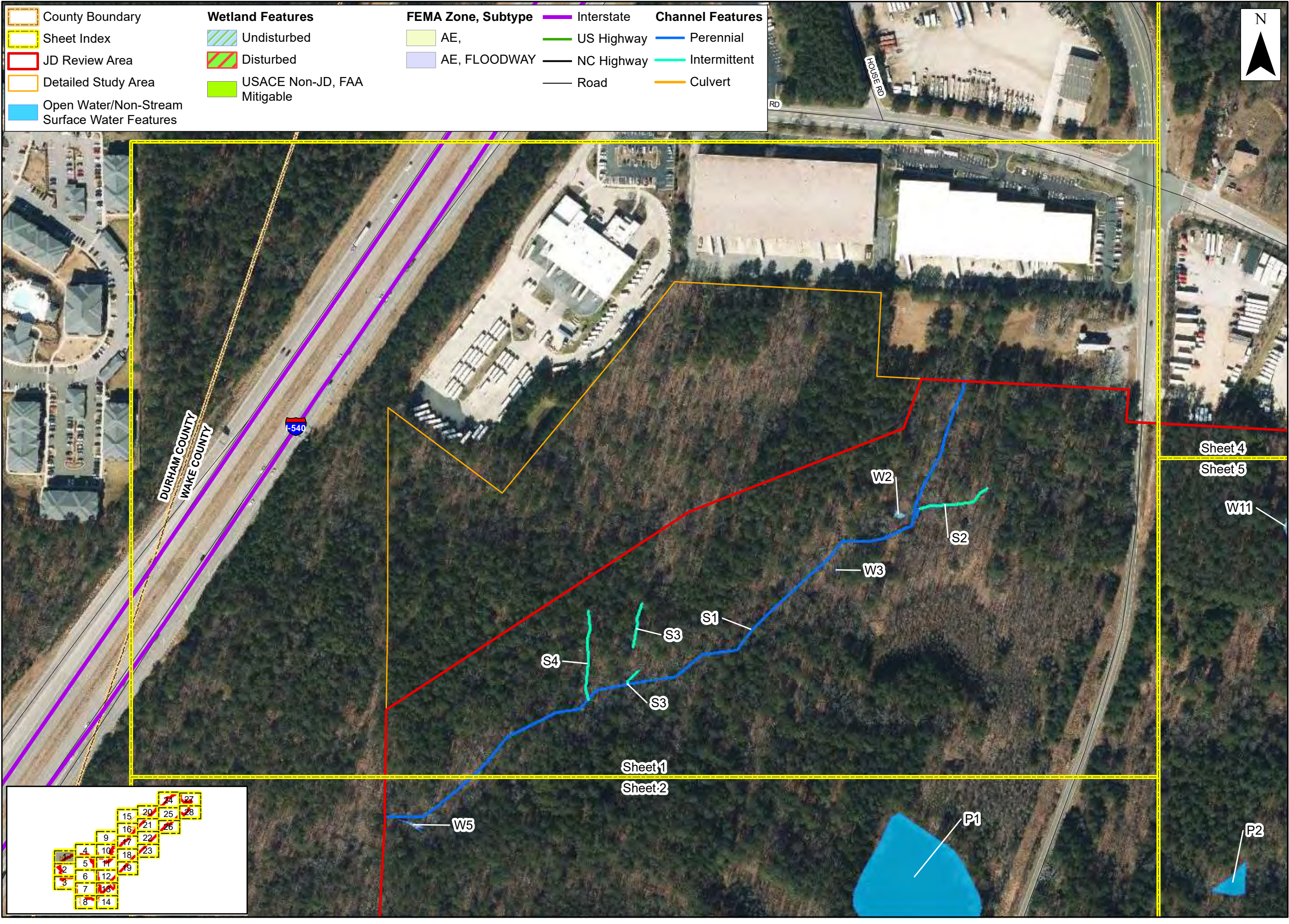
Figure  
**7**  
Sheet 28



County Boundary	<b>Wetland Features</b>	<b>Riparian Buffers</b>	Interstate	<b>Channel Features</b>
Sheet Index	<b>Integrity</b>	Zone 1	US Highway	Perennial
JD Review Area	Undisturbed	Zone 2	NC Highway	Intermittent
Detailed Study Area	Disturbed	Road	Culvert	USGS Stream Line
Open Water/Non-Stream Surface Water Features	USACE Non-JD, FAA Mitigable			



County Boundary	<b>Wetland Features</b>	<b>FEMA Zone, Subtype</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	AE,	US Highway	Perennial
JD Review Area	Disturbed	AE, FLOODWAY	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert	
Open Water/Non-Stream Surface Water Features				



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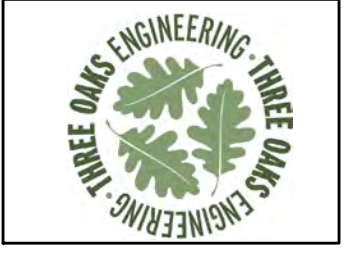
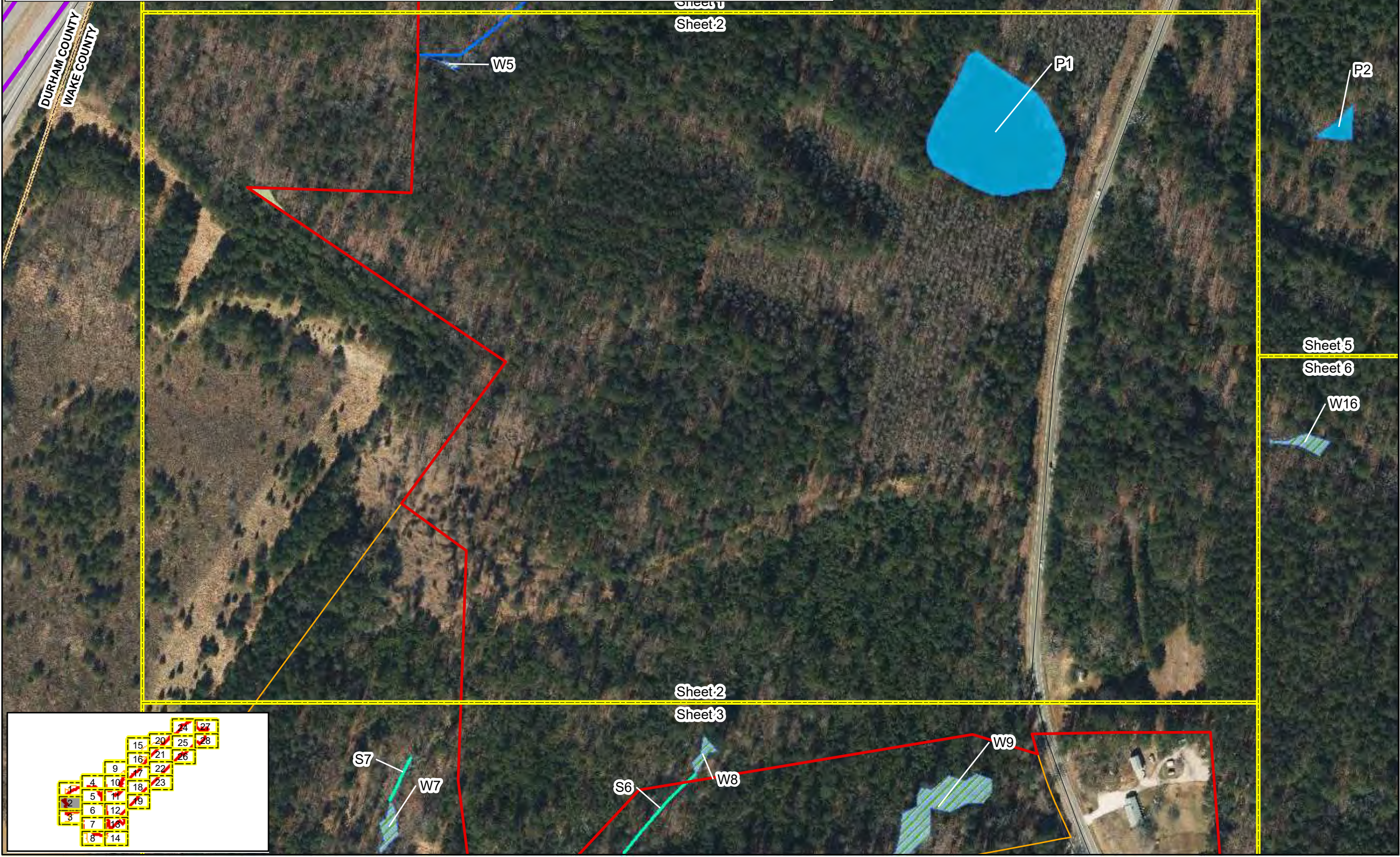
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Figure

# 8

Sheet 1

County Boundary	<b>Wetland Features</b>	<b>FEMA Zone, Subtype</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	AE,	US Highway	Perennial
JD Review Area	Disturbed	AE, FLOODWAY	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert	
Open Water/Non-Stream Surface Water Features				



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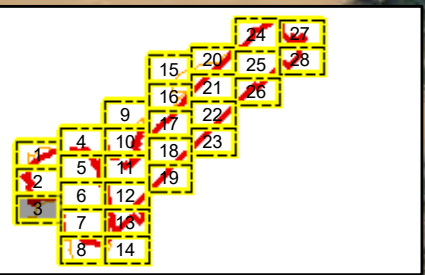
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Job No.:	19-018
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# 8

Sheet 2

County Boundary Sheet	<b>Wetland Features</b>	<b>FEMA Zone, Subtype</b>	Interstate	<b>Channel Features</b>
Index	Undisturbed	AE,	US Highway	Perennial
JD Review Area	Disturbed	AE, FLOODWAY	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert	
Open Water/Non-Stream Surface Water Features				



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**8**

Sheet 3

	County Boundary	<b>Wetland Features</b>	<b>FEMA Zone, Subtype</b>		Interstate	<b>Channel Features</b>	
	Sheet Index				US Highway		Perennial
	JD Review Area				NC Highway		Intermittent
	Detailed Study Area				Road		Culvert
	Open Water/Non-Stream Surface Water Features						



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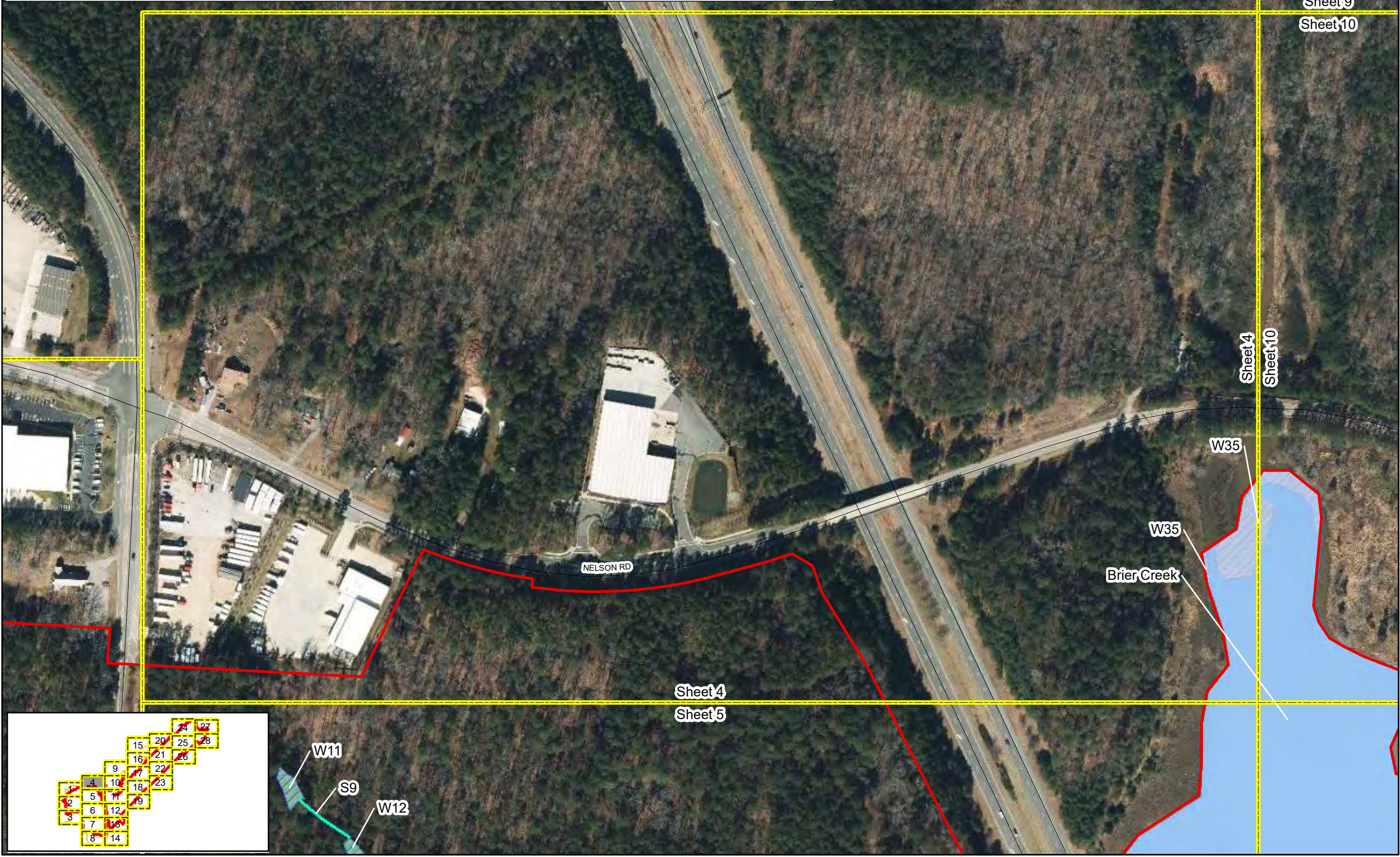
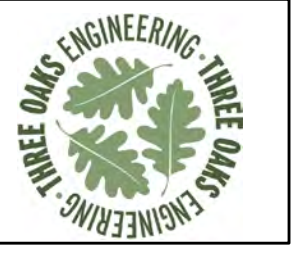
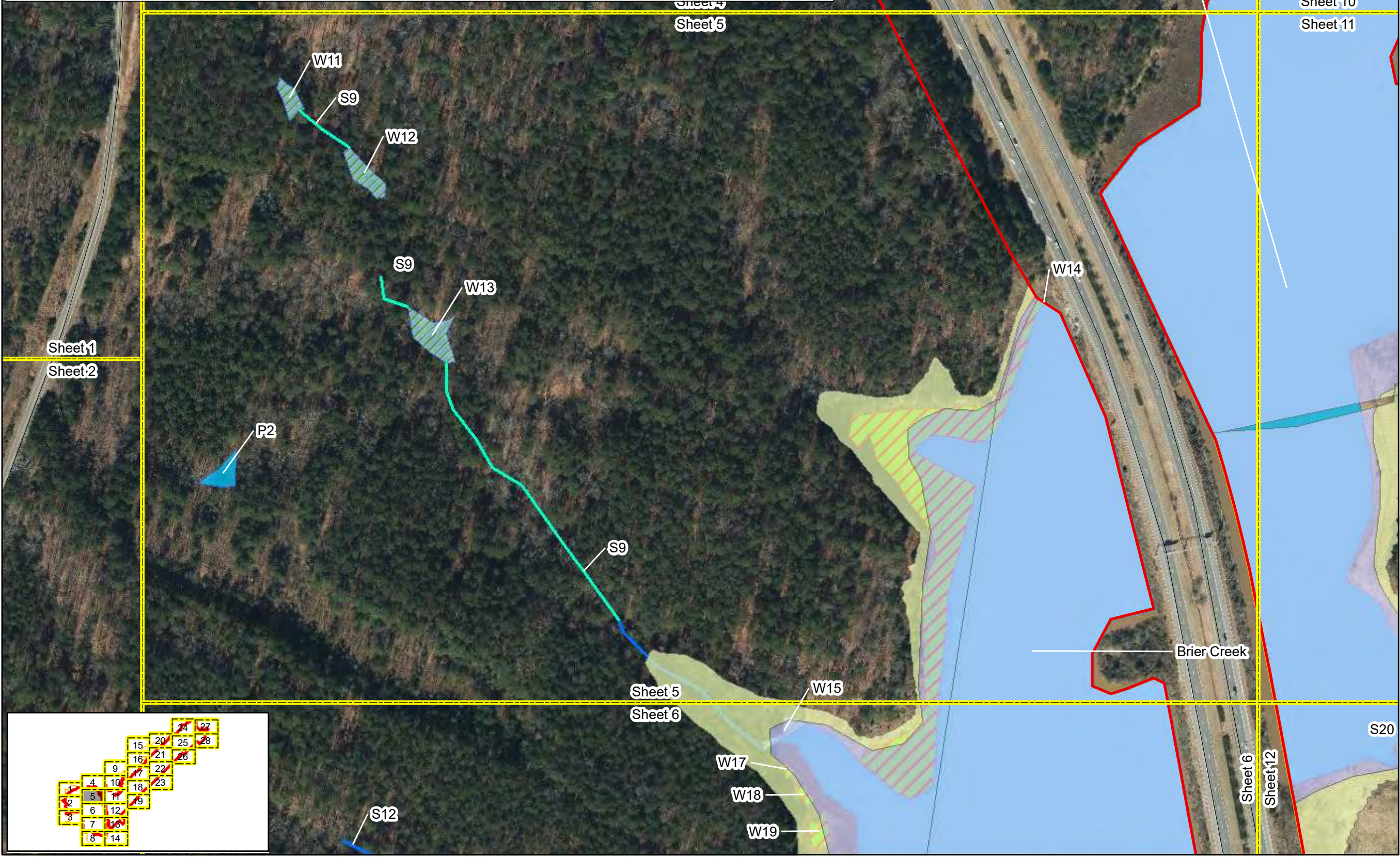


Figure  
**8**  
Sheet 4

	County Boundary Sheet	<b>Wetland Features</b>	<b>FEMA Zone, Subtype</b>	<b>Interstate</b>	<b>Channel Features</b>
	Index				
	JD Review Area				
	Detailed Study Area				
	Open Water/Non-Stream Surface Water Features				



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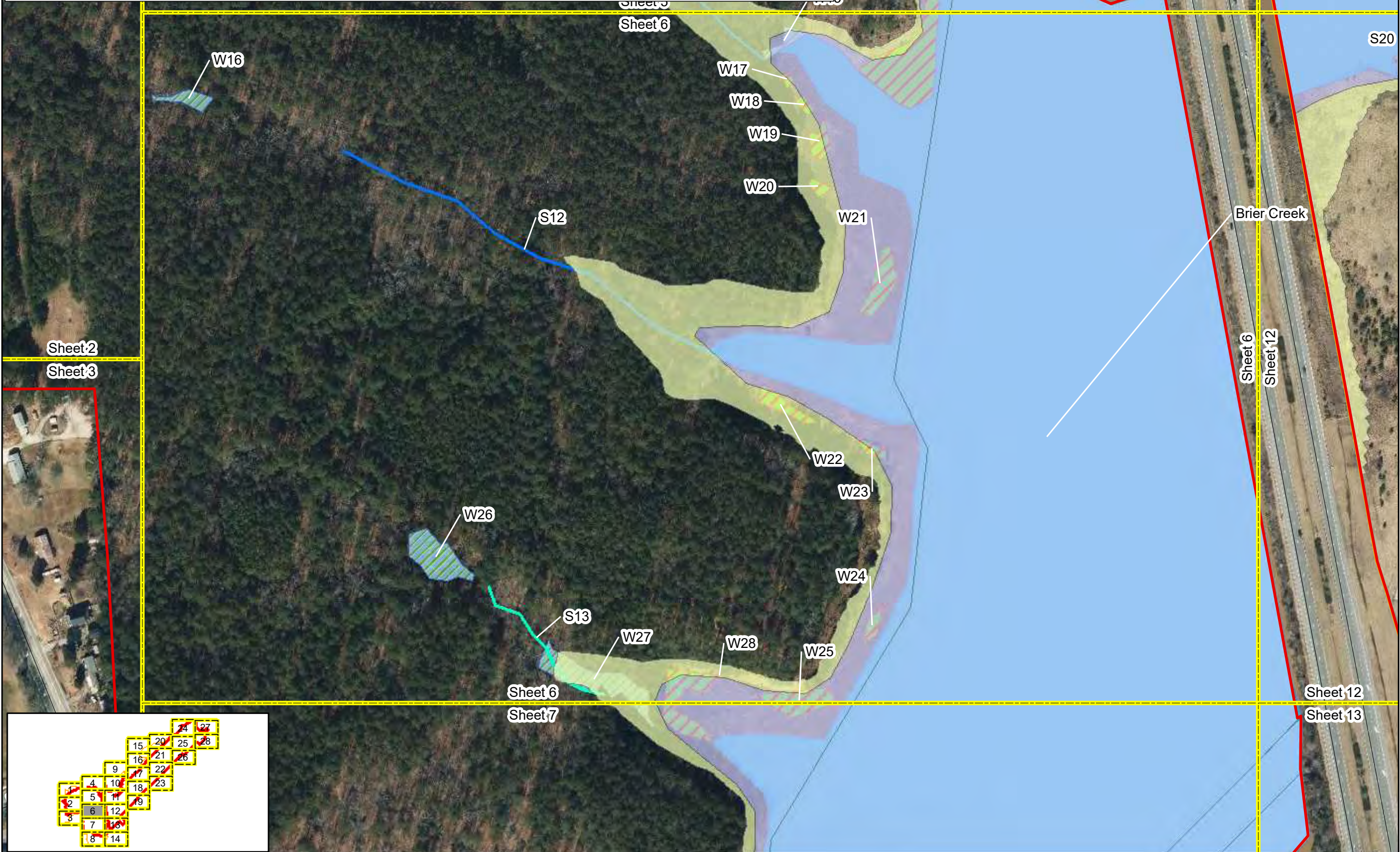
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Figure  
**8**  
Sheet 5

	County Boundary	<b>Wetland Features</b>	<b>FEMA Zone, Subtype</b>	<b>Interstate</b>	<b>Channel Features</b>
	Sheet Index				
	JD Review Area				
	Detailed Study Area				
	Open Water/Non-Stream Surface Water Features				



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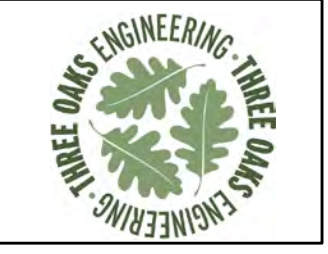
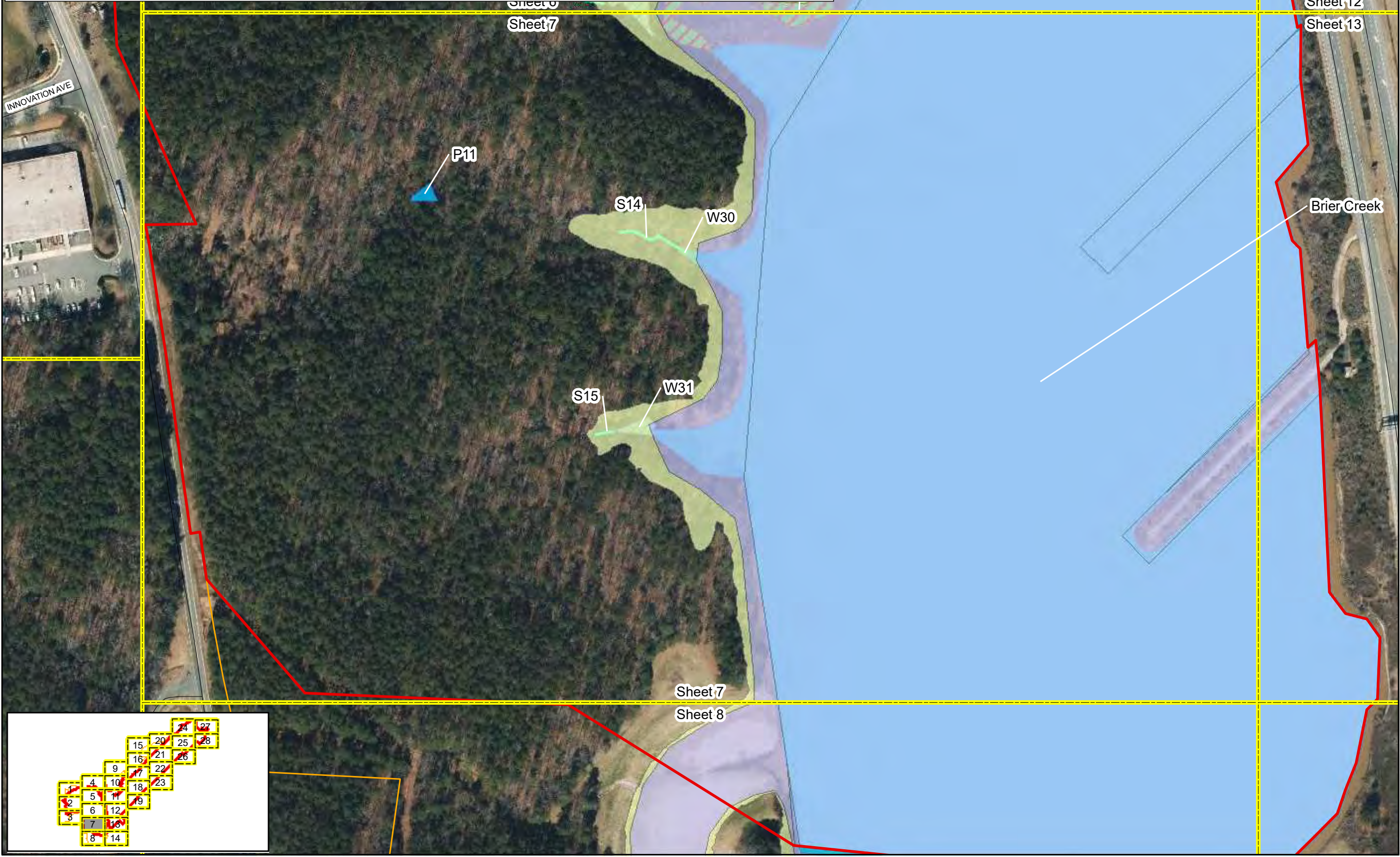
Figure

# 8

Sheet 6



County Boundary	<b>Wetland Features</b>	<b>FEMA Zone, Subtype</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	AE,	US Highway	Perennial
JD Review Area	Disturbed	AE, FLOODWAY	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert	
Open Water/Non-Stream Surface Water Features				



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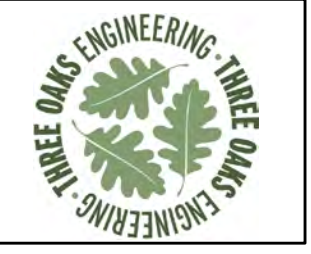
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Figure  
**8**  
Sheet 7

	County Boundary		Wetland Features		FEMA Zone, Subtype		Interstate		Channel Features
	Sheet Index		Disturbed		AE, FLOODWAY		US Highway		Intermittent
	JD Review Area		USACE Non-JD, FAA Mitigable		Road		Culvert		
	Detailed Study Area								
	Open Water/Non-Stream Surface Water Features								



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Sheet 8



County Boundary	<b>Wetland Features</b>	<b>FEMA Zone, Subtype</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	AE,	US Highway	Perennial
JD Review Area	Disturbed	AE, FLOODWAY	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert	
Open Water/Non-Stream Surface Water Features				



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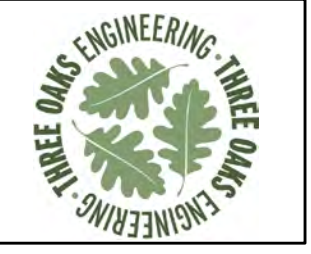
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**8**  
Sheet 9

County Boundary	<b>Wetland Features</b>	<b>FEMA Zone, Subtype</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	AE,	US Highway	Perennial
JD Review Area	Disturbed	AE, FLOODWAY	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert	
Open Water/Non-Stream Surface Water Features				



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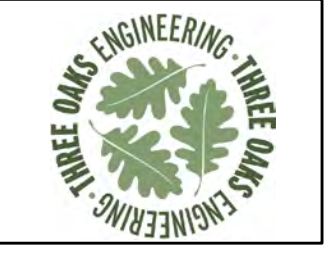
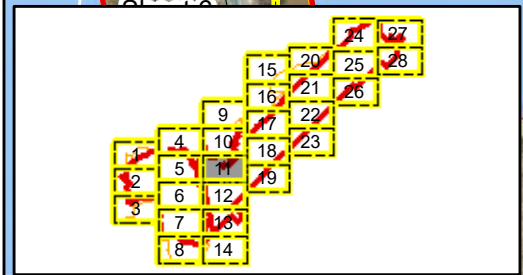
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 Sheet 10



County Boundary	<b>Wetland Features</b>	<b>FEMA Zone, Subtype</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	AE,	US Highway	Perennial
JD Review Area	Disturbed	AE, FLOODWAY	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert	
Open Water/Non-Stream Surface Water Features				



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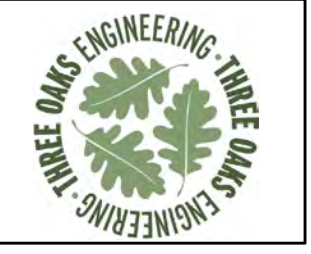
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Figure

**8**

Sheet 11

	County Boundary	<b>Wetland Features</b>	<b>FEMA Zone, Subtype</b>	<b>Interstate</b>	<b>Channel Features</b>
	Sheet Index				
	JD Review Area				
	Detailed Study Area				
	Open Water/Non-Stream Surface Water Features				



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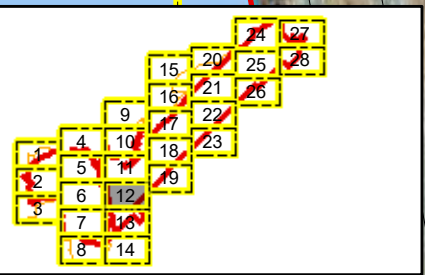
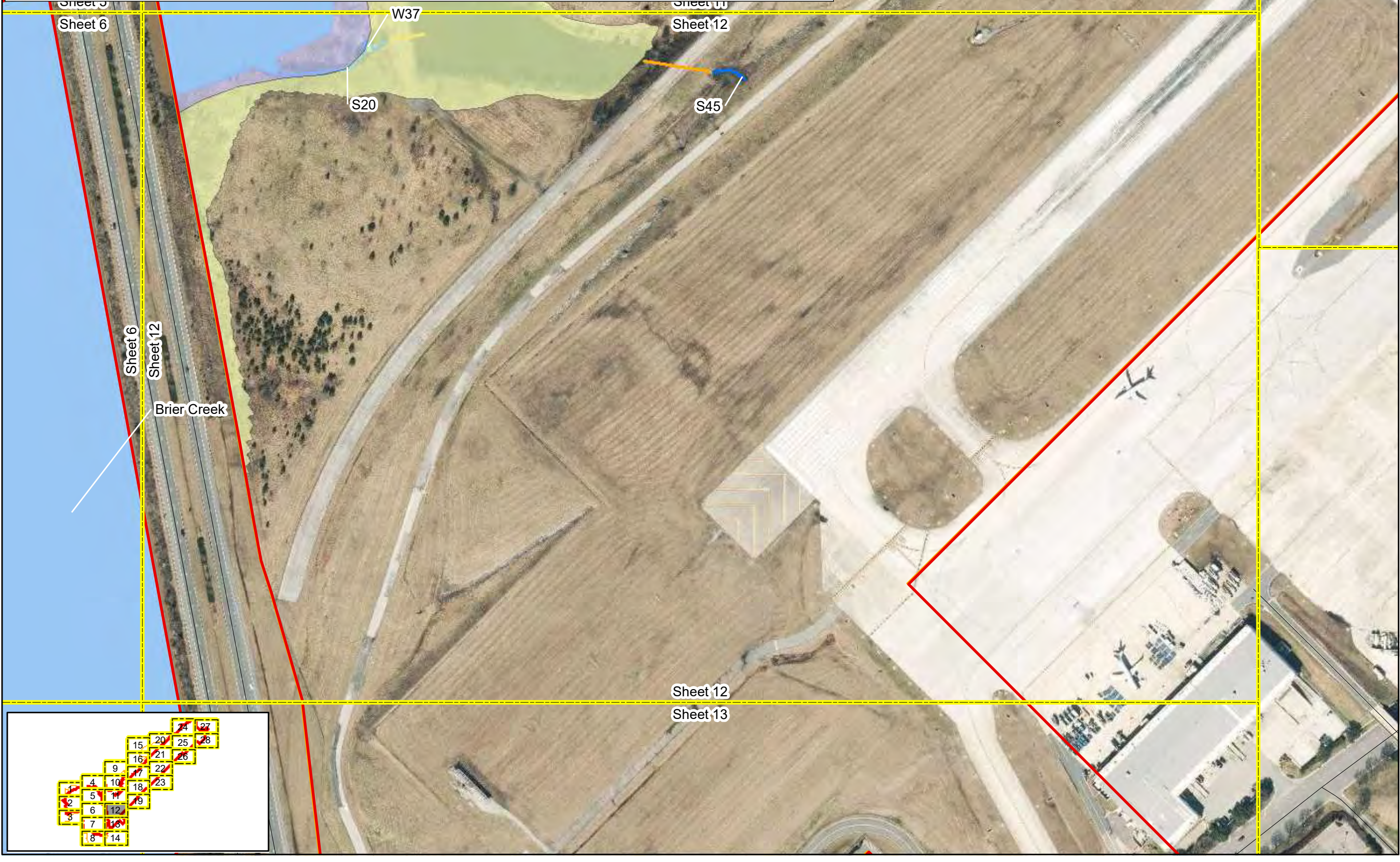
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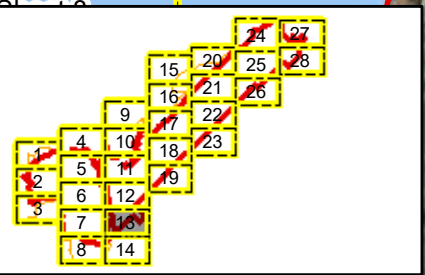
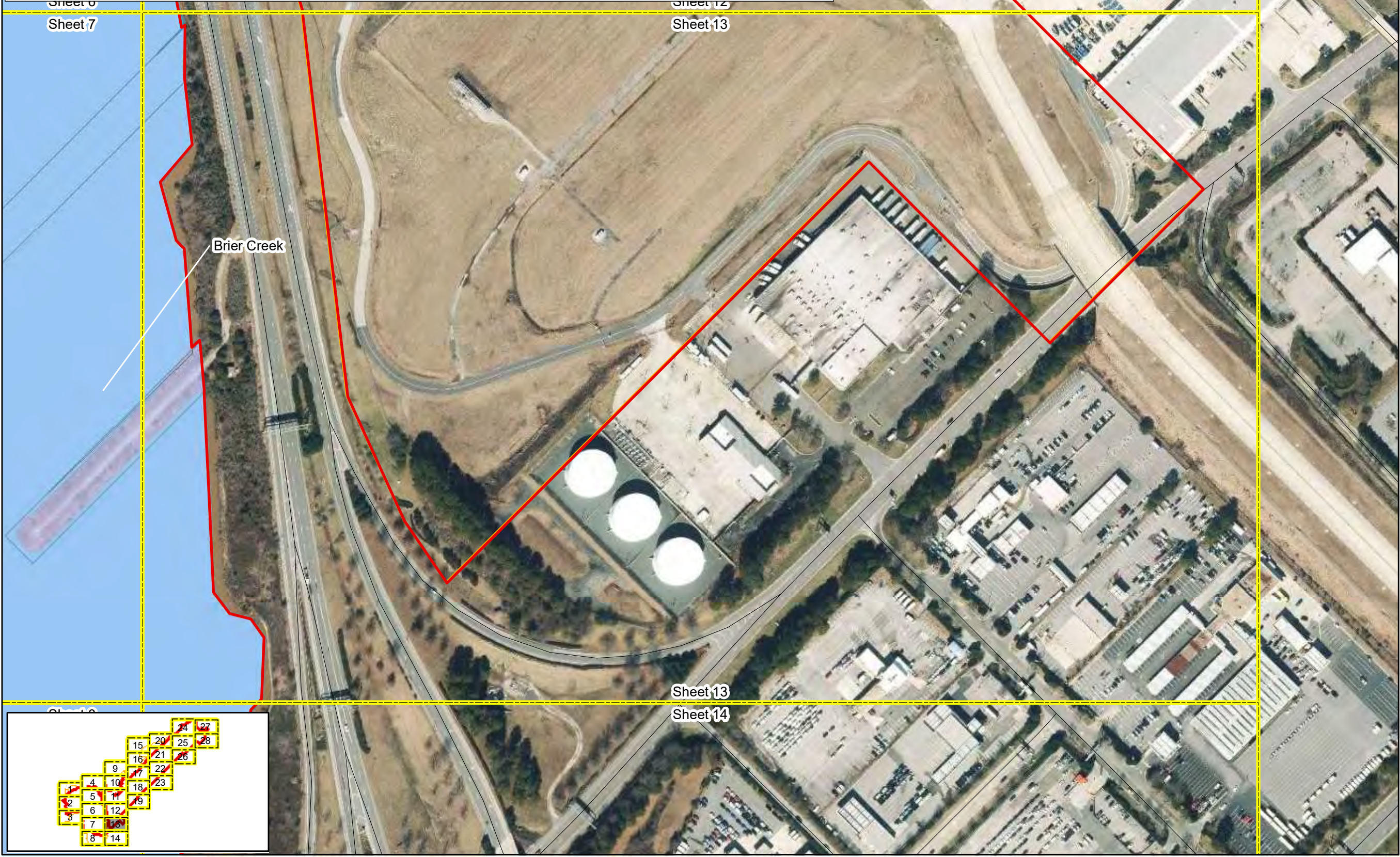
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Figure  
**8**  
Sheet 12



County Boundary	<b>Wetland Features</b>	<b>FEMA Zone, Subtype</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	AE,	US Highway	Perennial
JD Review Area	Disturbed	AE, FLOODWAY	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert	
Open Water/Non-Stream Surface Water Features				



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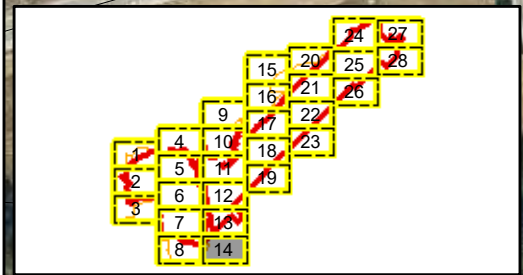
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Figure

**8**

Sheet 13

County Boundary	<b>Wetland Features</b>	<b>FEMA Zone, Subtype</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	AE,	US Highway	Perennial
JD Review Area	Disturbed	AE, FLOODWAY	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert	
Open Water/Non-Stream Surface Water Features				



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**Wake County, North Carolina**

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Job No.:	19-018
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KEMS	NDH

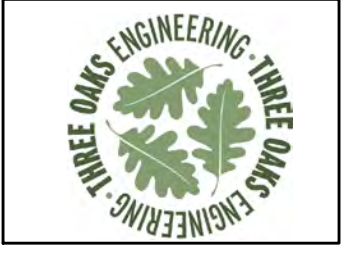
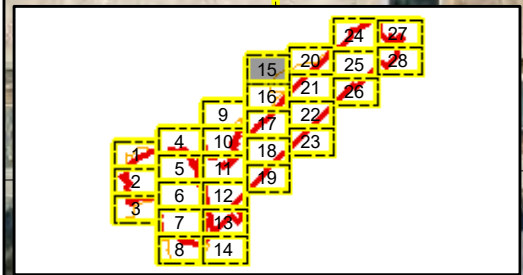
Figure

# 8

Sheet 14



	County Boundary		Wetland Features		FEMA Zone, Subtype		Interstate		Channel Features
	Sheet Index		Disturbed		AE, FLOODWAY		US Highway		Intermittent
	JD Review Area		USACE Non-JD, FAA Mitigable		Road		NC Highway		Culvert
	Detailed Study Area								
	Open Water/Non-Stream Surface Water Features								



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**Wake County, North Carolina**

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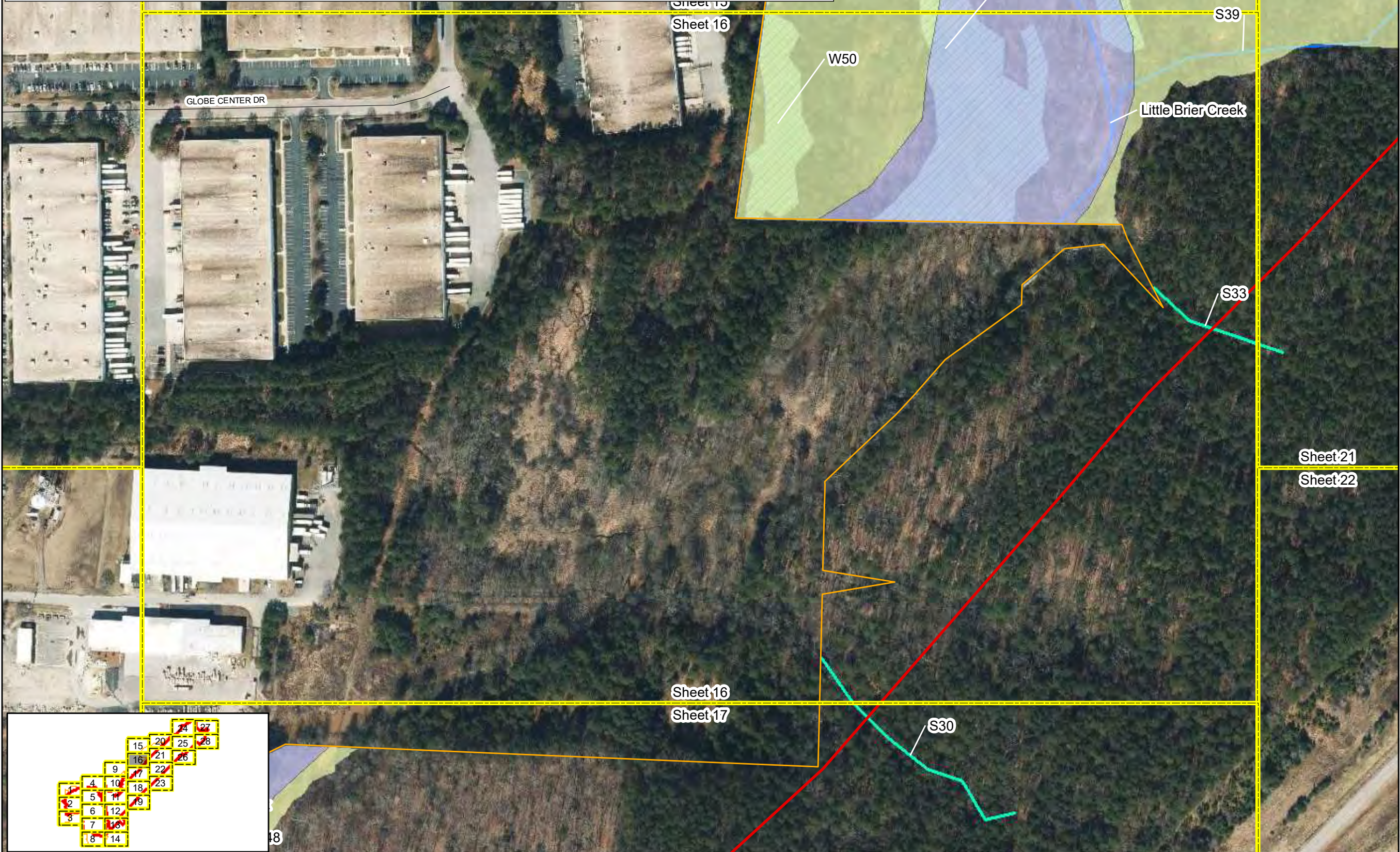
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Figure

# 8

Sheet 15

County Boundary	<b>Wetland Features</b>	<b>FEMA Zone, Subtype</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	AE,	US Highway	Perennial
JD Review Area	Disturbed	AE, FLOODWAY	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert	
Open Water/Non-Stream Surface Water Features				



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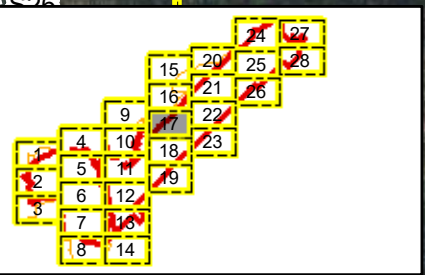
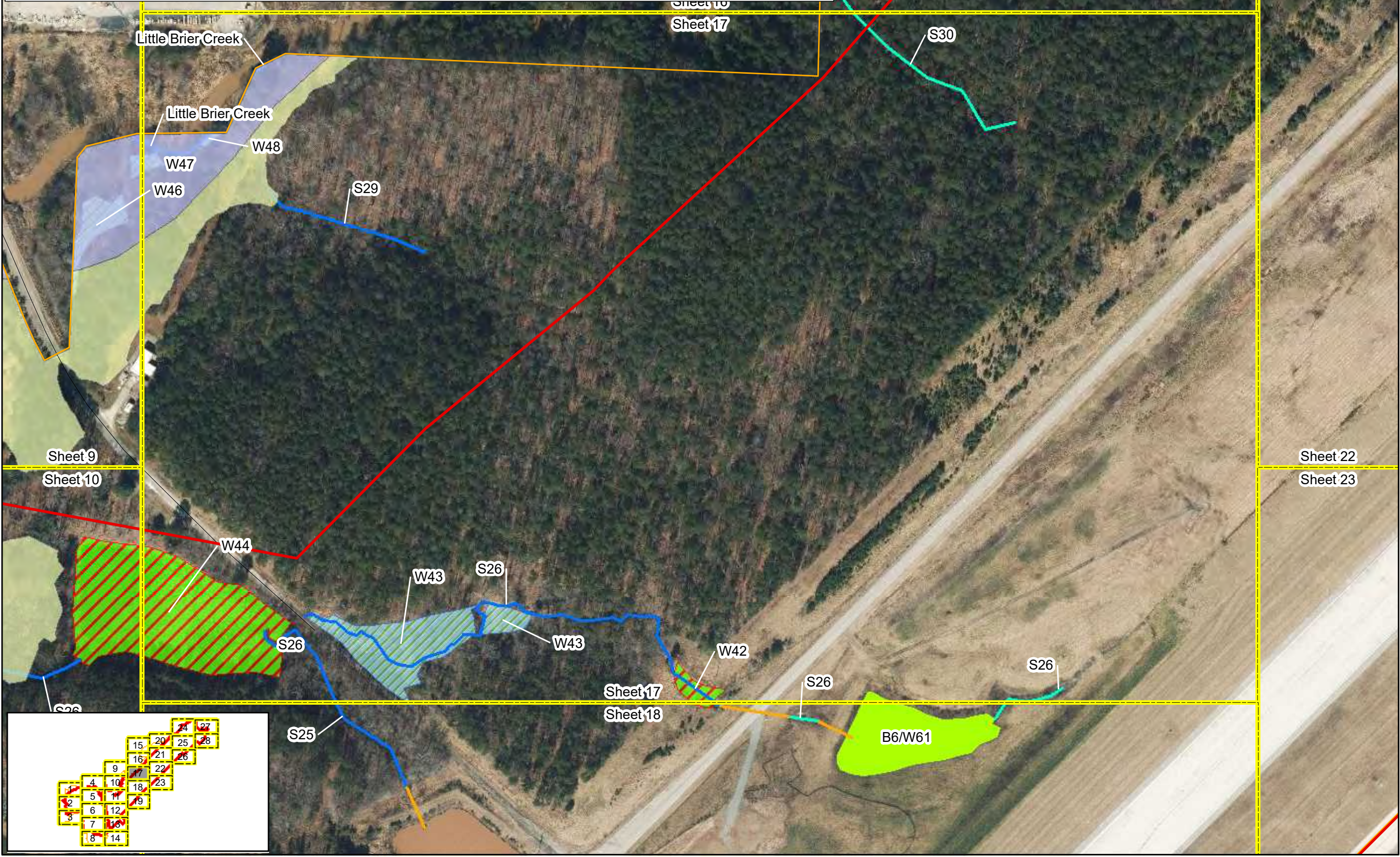


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**Federal Environmental Assessment**  
**FEMA Floodplains**  
**Wake County, North Carolina**

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Figure  
**8**  
 Sheet 16

	County Boundary	<b>Wetland Features</b>	<b>FEMA Zone, Subtype</b>	<b>Interstate</b>	<b>Channel Features</b>
	Sheet Index				
	JD Review Area				
	Detailed Study Area				
	Open Water/Non-Stream Surface Water Features				



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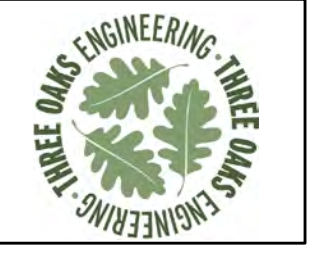
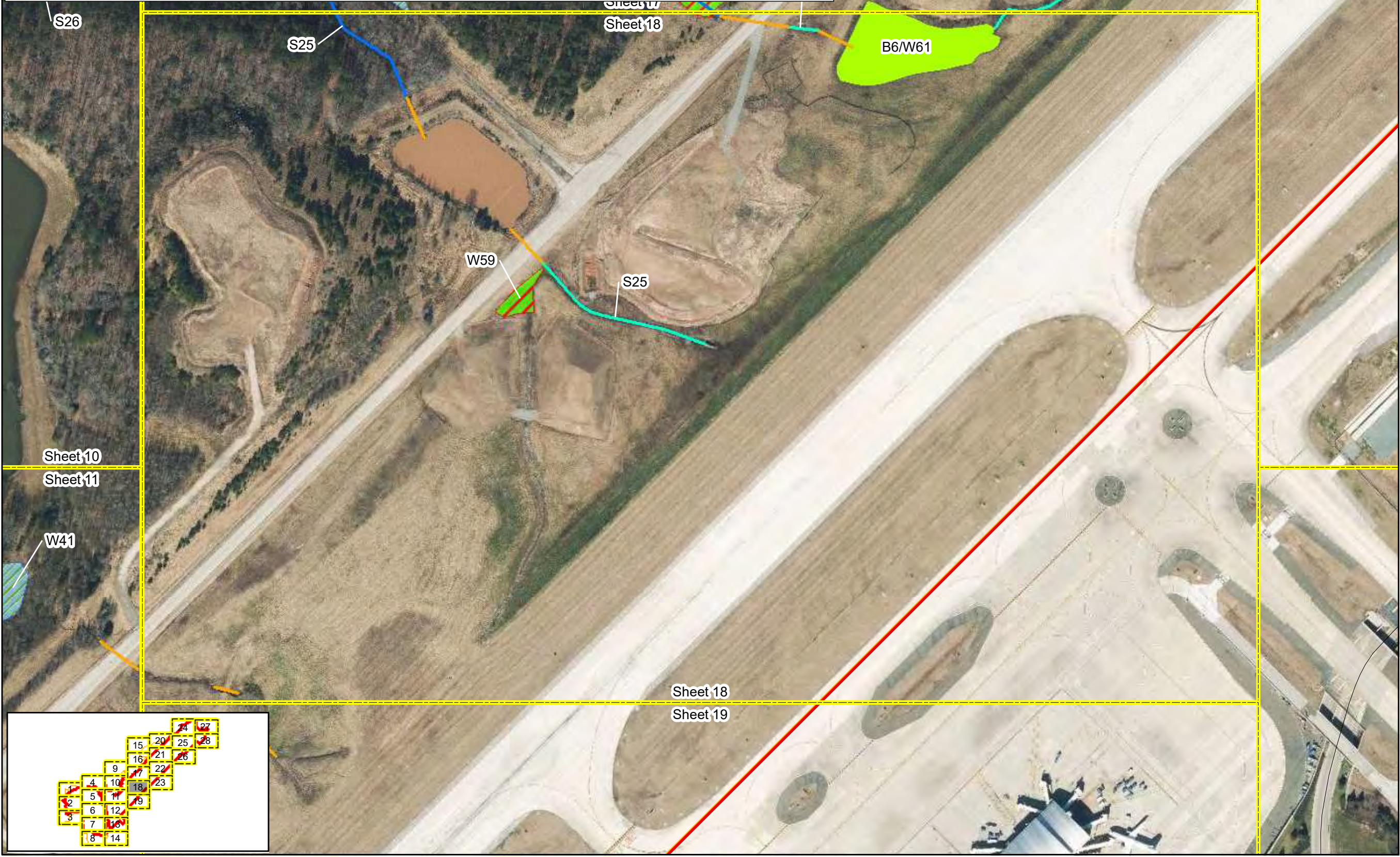
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Figure  
**8**  
Sheet 17

	County Boundary	<b>Wetland Features</b>	<b>FEMA Zone, Subtype</b>	<b>Interstate</b>	<b>Channel Features</b>
	Sheet Index				
	JD Review Area				
	Detailed Study Area				
	Open Water/Non-Stream Surface Water Features				



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Figure

# 8

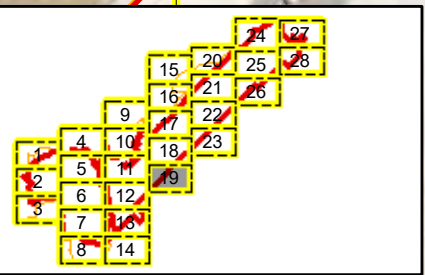
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County Boundary	<b>Wetland Features</b>	<b>FEMA Zone, Subtype</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	AE,	US Highway	Perennial
JD Review Area	Disturbed	AE, FLOODWAY	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert	
Open Water/Non-Stream Surface Water Features				



Sheet 10  
Sheet 19

Sheet 11  
Sheet 12



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Figure  
**8**  
Sheet 19

	County Boundary	<b>Wetland Features</b>	<b>FEMA Zone, Subtype</b>	<b>Interstate</b>	<b>Channel Features</b>
	Sheet Index				
	JD Review Area				
	Detailed Study Area				
	Open Water/Non-Stream Surface Water Features				



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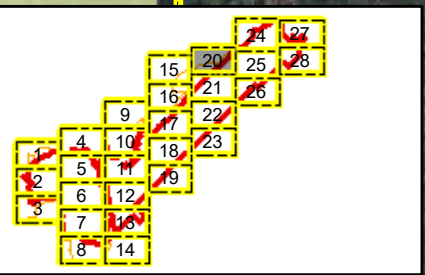
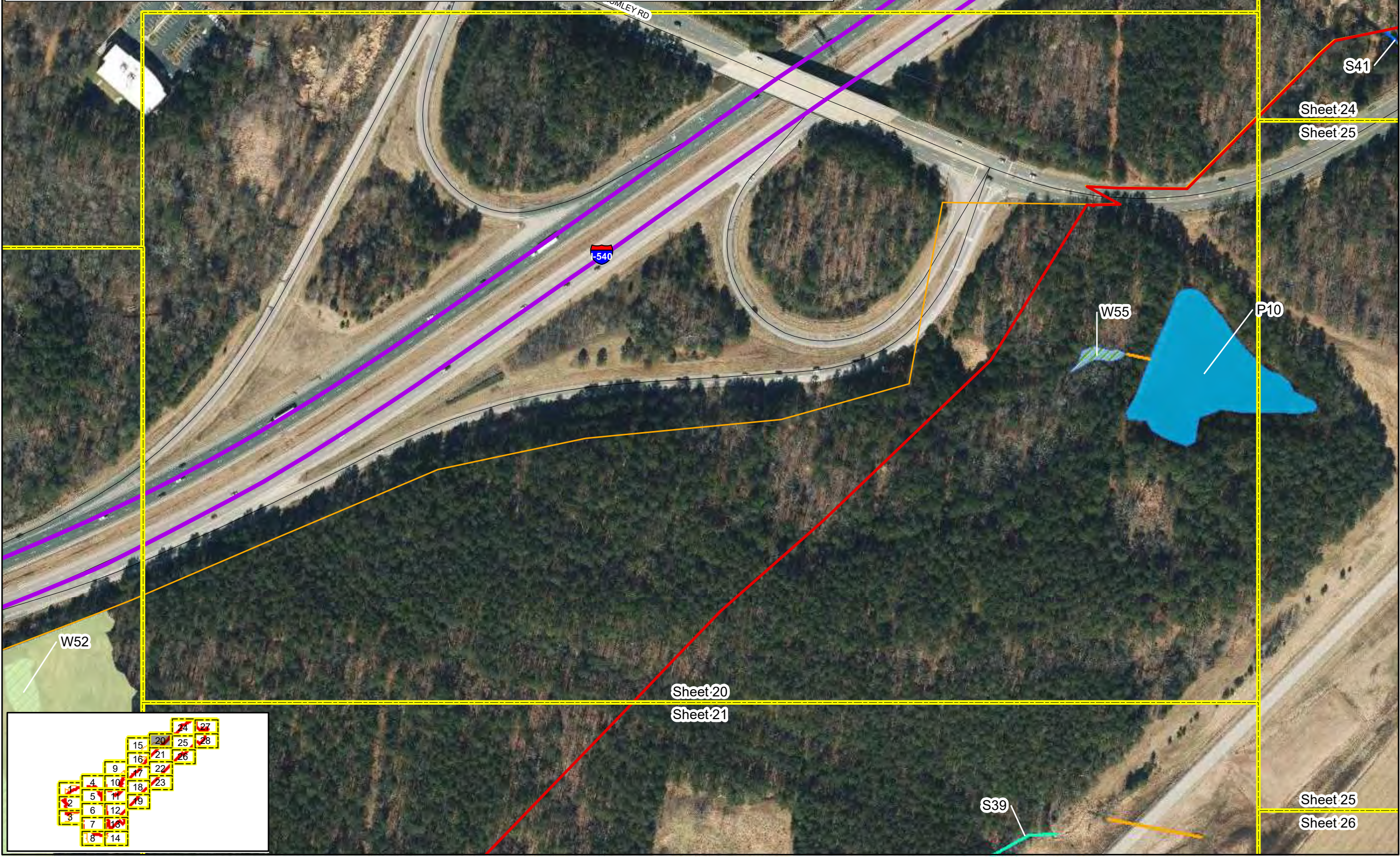
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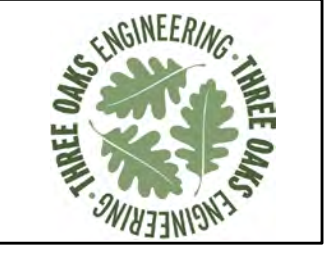
Figure

# 8

Sheet 20



County Boundary	<b>Wetland Features</b>	<b>FEMA Zone, Subtype</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	AE,	US Highway	Perennial
JD Review Area	Disturbed	AE, FLOODWAY	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert	
Open Water/Non-Stream Surface Water Features				



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Figure  
**8**  
Sheet 21

County Boundary	<b>Wetland Features</b>	<b>FEMA Zone, Subtype</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	AE,	US Highway	Perennial
JD Review Area	Disturbed	AE, FLOODWAY	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert	
Open Water/Non-Stream Surface Water Features				



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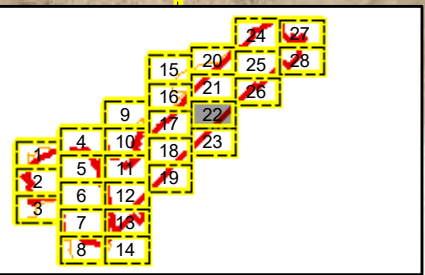
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Figure

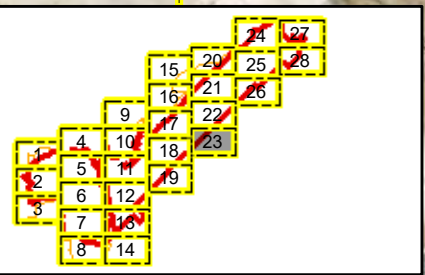
**8**

Sheet 22





County Boundary	<b>Wetland Features</b>	<b>FEMA Zone, Subtype</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	AE,	US Highway	Perennial
JD Review Area	Disturbed	AE, FLOODWAY	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert	
Open Water/Non-Stream Surface Water Features				



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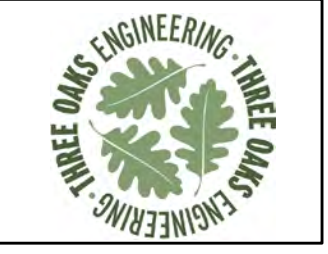
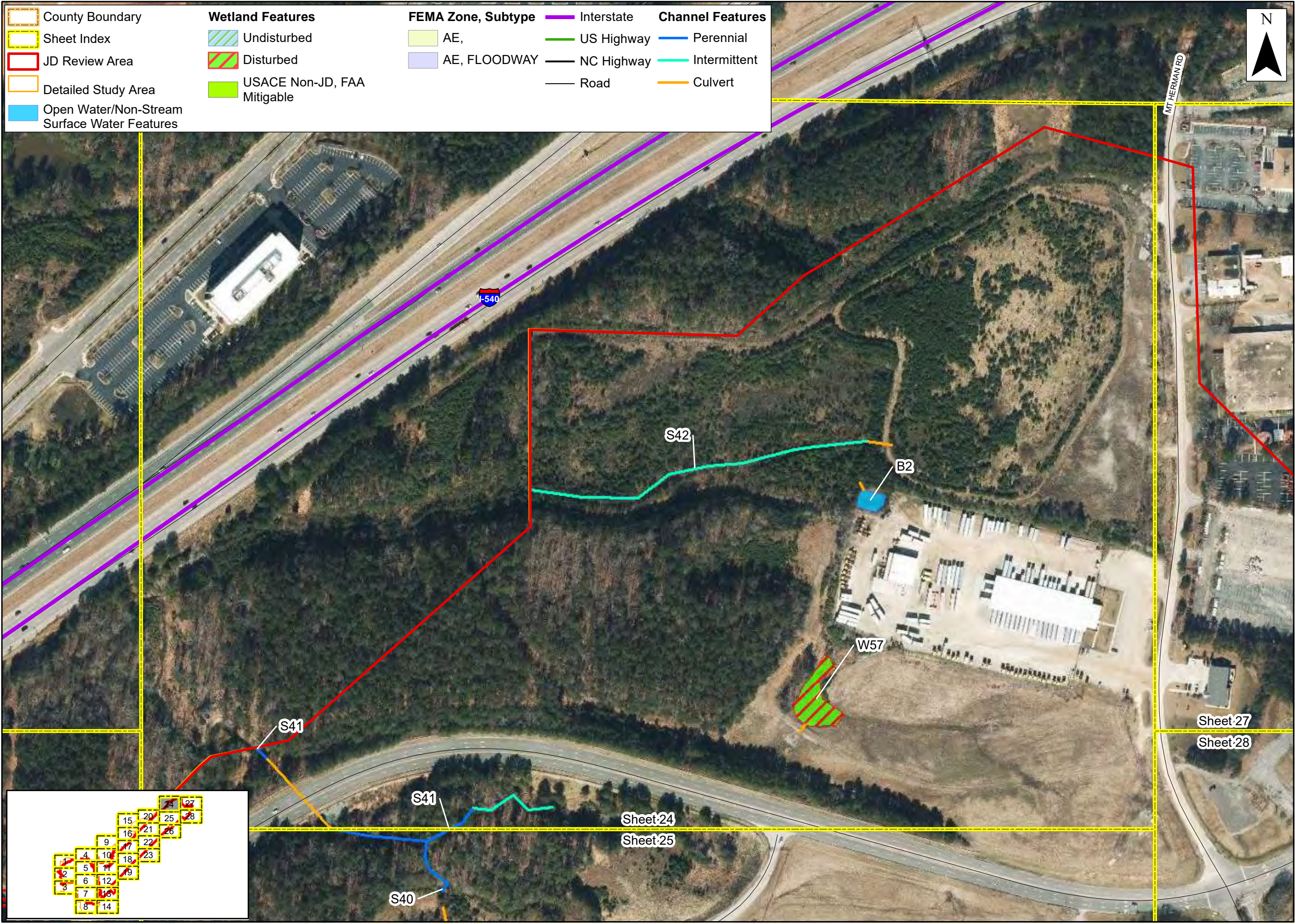
Date:	November 2022
Scale:	0 100 200 Ft
Job No.:	19-018
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Figure

**8**

Sheet 23

County Boundary	<b>Wetland Features</b>	<b>FEMA Zone, Subtype</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	AE,	US Highway	Perennial
JD Review Area	Disturbed	AE, FLOODWAY	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert	
Open Water/Non-Stream Surface Water Features				



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Figure  
**8**  
 Sheet 24

	County Boundary	<b>Wetland Features</b>	<b>FEMA Zone, Subtype</b>	<b>Interstate</b>	<b>Channel Features</b>
	Sheet Index				
	JD Review Area				
	Detailed Study Area				
	Open Water/Non-Stream Surface Water Features				



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Figure  
**8**  
Sheet 25



	County Boundary	<b>Wetland Features</b>	<b>FEMA Zone, Subtype</b>	<b>Interstate</b>	<b>Channel Features</b>
	Sheet Index				
	JD Review Area				
	Detailed Study Area				
	Open Water/Non-Stream Surface Water Features				



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Figure


# 8

Sheet 26

County Boundary	<b>Wetland Features</b>	<b>FEMA Zone, Subtype</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	AE,	US Highway	Perennial
JD Review Area	Disturbed	AE, FLOODWAY	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert	
Open Water/Non-Steam Surface Water Features				



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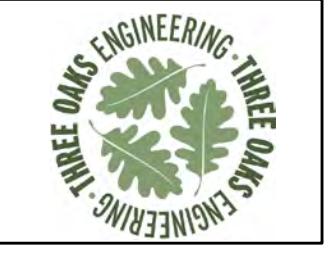
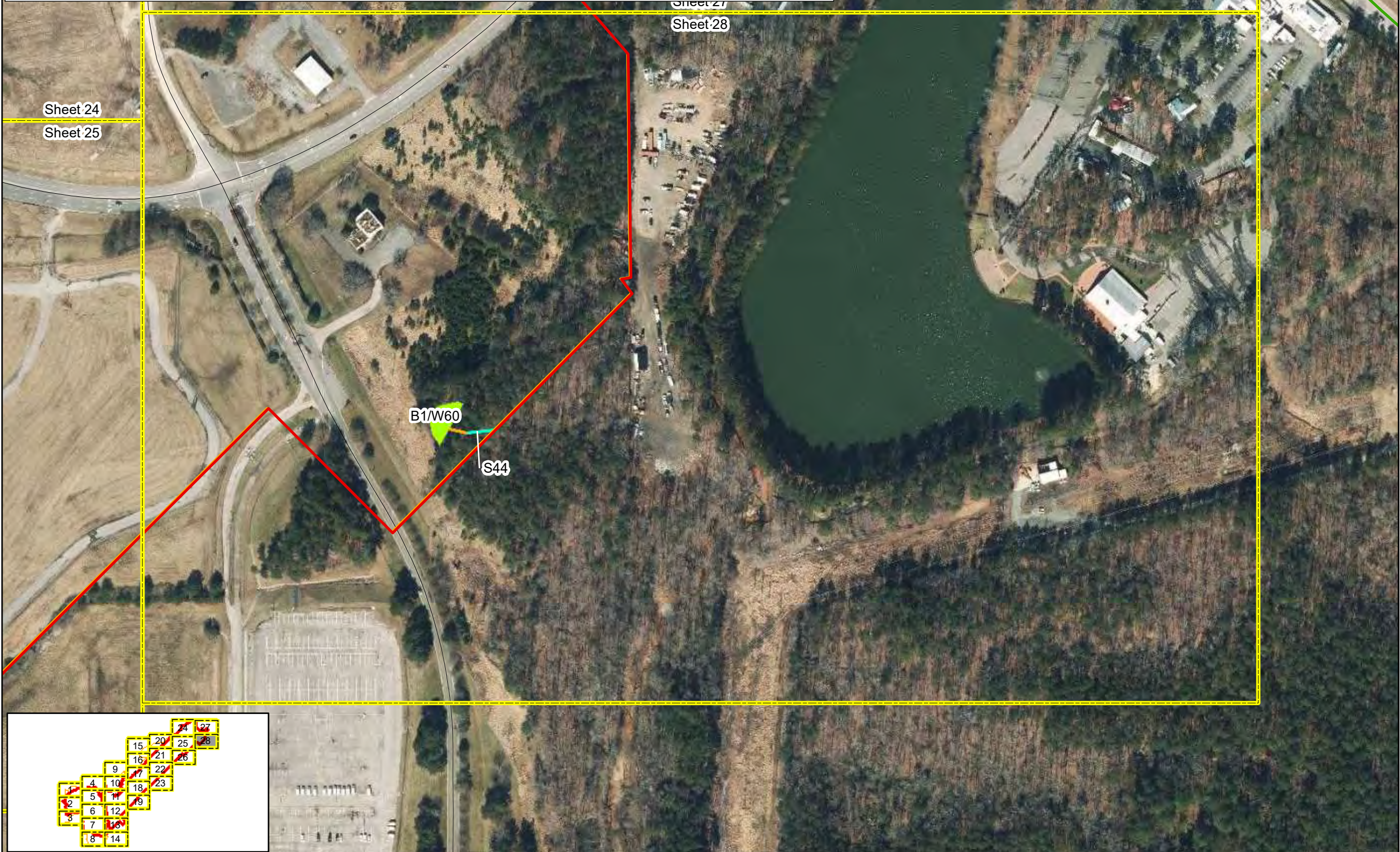


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Figure  
**8**  
 Sheet 27

County Boundary	<b>Wetland Features</b>	<b>FEMA Zone, Subtype</b>	Interstate	<b>Channel Features</b>
Sheet Index	Undisturbed	AE,	US Highway	Perennial
JD Review Area	Disturbed	AE, FLOODWAY	NC Highway	Intermittent
Detailed Study Area	USACE Non-JD, FAA Mitigable	Road	Culvert	
Open Water/Non-Stream Surface Water Features				



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Figure  
**8**  
 Sheet 28

## Appendix B Qualifications of Contributors

Investigator:	Trevor Hall
Education:	BS, Environmental Science: Ecology and Organismal Biology, University of Delaware, 2016
Experience:	Environmental Scientist, Three Oaks Engineering, July 2021-Present Jr. Environmental Scientist, NV5 Consultants and Engineers, April 2019-July 2021 Senior Fisheries Technician, North Carolina State University, October 2018-April 2019
Responsibilities:	Wetland and stream delineations
Investigator:	Nathan Howell, PWS
Education:	B.S. Fisheries, Wildlife, and Conservation Biology, North Carolina State University, 2013 M.S. Plant and Microbial Biology, North Carolina State University, 2015
Experience:	Environmental Scientist, Three Oaks Engineering, October 2015-Present
Responsibilities:	Document preparation and review, wetland and stream delineations
Investigator:	Byron Levan
Education:	B.S. Fisheries, Wildlife, and Conservation Biology; North Carolina State University, 2011 M.F.W. Fisheries, Wildlife, and Conservation Biology, North Carolina State University, 2019
Experience:	Environmental Scientist, Three Oaks Engineering, 2021-Present Junior Environmental Scientist, NV5 Global Inc. 2019-2021
Responsibilities:	Document preparation and review, wetland and stream delineations
Investigator:	James Mason, PWS
Education:	B.A. Biology, Colby College, 2000 M.S. Biology/Ecology, UNC-Charlotte, 2004
Experience:	Environmental Senior Scientist, Three Oaks Engineering, April 2018-Present
Responsibilities:	Document preparation and review, wetland and stream delineations
Investigator:	Tess Moody
Education:	B.S. in Natural Resources Management – Wildlife Biology, University of Tennessee at Martin, 2011 M.S. in Forestry, Wildlife, and Fisheries – Wildlife Health, University of Tennessee, 2013
Experience:	Wildlife Research Technician/Assistant, UT Knoxville, May 2011-September 2013 Natural History Interpretive Aide, Charleston County Parks, February 2016-September 2018 Environmental Scientist, Three Oaks Engineering, September 2018-Present
Responsibilities:	Wetland and stream delineations
Investigator:	Cary Rowells



Education: Coursework, Civil Engineering, Wake Technical Community College  
Coursework, Geology, University of North Carolina at Wilmington

Experience: GIS Analyst, Three Oaks Engineering, 2015-Present  
GIS analyst, Michael Baker Engineering, 2002-2015  
Analytical Surveys, Inc., CADD Technician/GIS Technician/GIS Project  
Coordinator, 1989-2002

Responsibilities: GIS mapping, Microstation

Investigator: Joanna Salvucci  
Education: B.S. Environmental Geoscience, Bridgewater State University, 2020  
Experience: Environmental Scientist, Three Oaks Engineering, March 2021-Present  
Responsibilities: Document preparation and review, wetland and stream delineations

Investigator: Kate Sevick  
Education: M.S. Environmental Sciences, University of Rhode Island, 2004  
B.A. Biology, Reed College, 2000  
Experience: Environmental Scientist, Three Oaks Engineering, June 2015-present  
Environmental Scientist, The Catena Group, November 2004-June 2015  
Responsibilities: GIS Mapping

Investigator: Lizzy Stokes-Cawley  
Education: M.E.M. Water Resources, Duke University, 2016  
B.S. Conservation Biology, St. Lawrence University, 2011  
Experience: Environmental Scientist, Three Oaks Engineering, April 2017-Present  
Responsibilities: Wetland and stream delineations

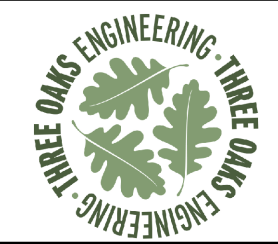
Investigator: Elizabeth Workman-Maurer  
Education: B.S. Fisheries and Wildlife Sciences at North Carolina State University, 1996  
Experience: Senior Environmental Planner, Three Oaks Engineering, 2021-Present  
AECOM, Planner/Project Manager, 2016-2021  
RK&K, Biologist/Planner, 2000-2016  
Responsibilities: Wetland and stream delineations






## **Potential Impact Map Set**

In order to determine the potential impacts to wetlands, an ArcView GIS program was used to calculate potential impacts based on the limits of disturbance. The limits of disturbance identify a boundary where within this area resources are assumed to be disturbed during construction activities. The limits of disturbance are within the DSA but are smaller to only account for areas that would be impacted by construction activities or resources that have been avoided. Detailed impacted streams, wetlands, and surface water maps are being provided to the USACE as part of the 404-permit application.

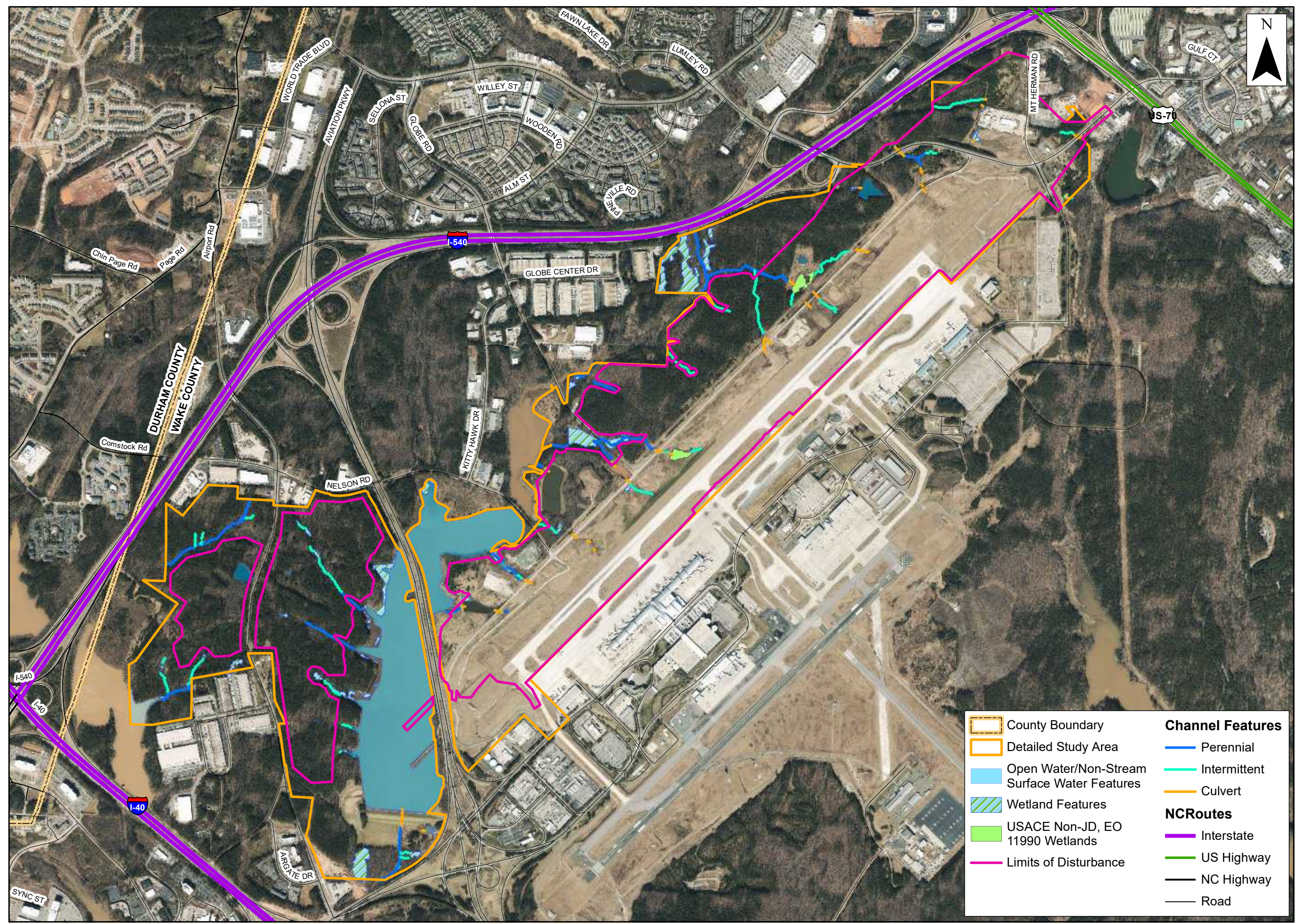















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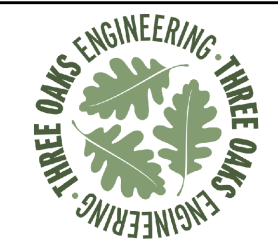
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Replacement**  
**Federal  
Environmental  
Assessment**  
**Limits of Disturbance  
Sheet Index Map**  
**Wake County,  
North Carolina**

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Figure  
**1**



- |   |  |
|---|--|
|  County Boundary                                 |  Perennial    |
|  Detailed Study Area                             |  Intermittent |
|  Open Water/Non-Stream<br>Surface Water Features |  Culvert      |
|  Wetland Features                                | <b>NCRoutes</b>  |
|  USACE Non-JD, EO<br>11990 Wetlands              |  Interstate   |
|  Limits of Disturbance                           |  US Highway   |
|   |  NC Highway   |
|   |  Road         |



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Disturbance**

**Wake County,  
North Carolina**

Date: January 2023

Scale: 0 100 200 Ft

Job No.: 19-018

Drawn By: KEMS

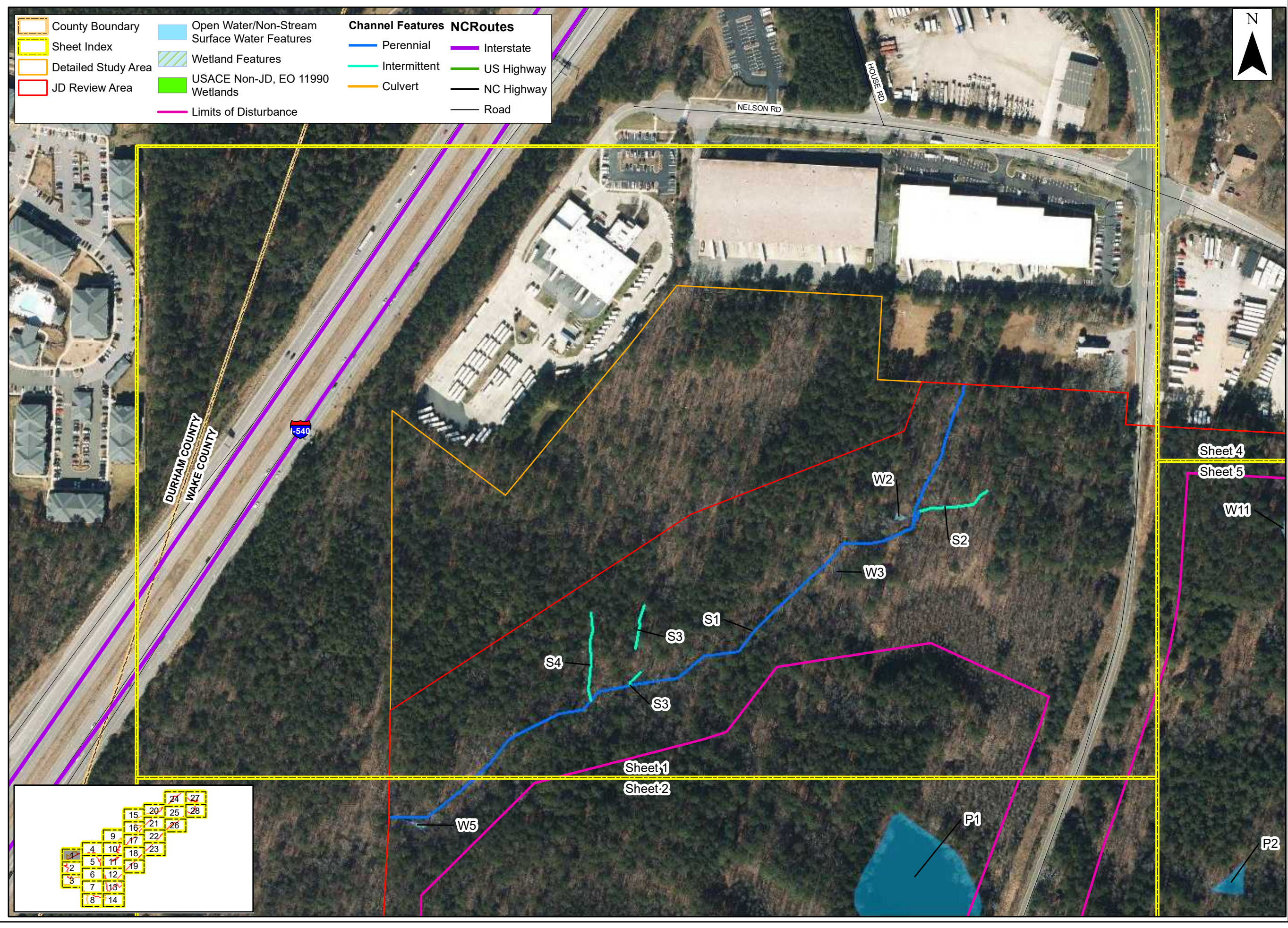
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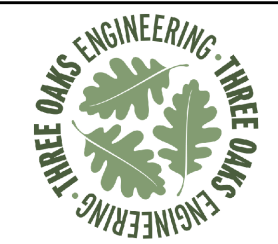
Figure

**1**

Sheet 1

County Boundary	Open Water/Non-Stream Surface Water Features	<b>Channel Features</b>	<b>NCRoutes</b>
Sheet Index	Wetland Features	Perennial	Interstate
Detailed Study Area	USACE Non-JD, EO 11990 Wetlands	Intermittent	US Highway
JD Review Area	Limits of Disturbance	Culvert	NC Highway
			Road





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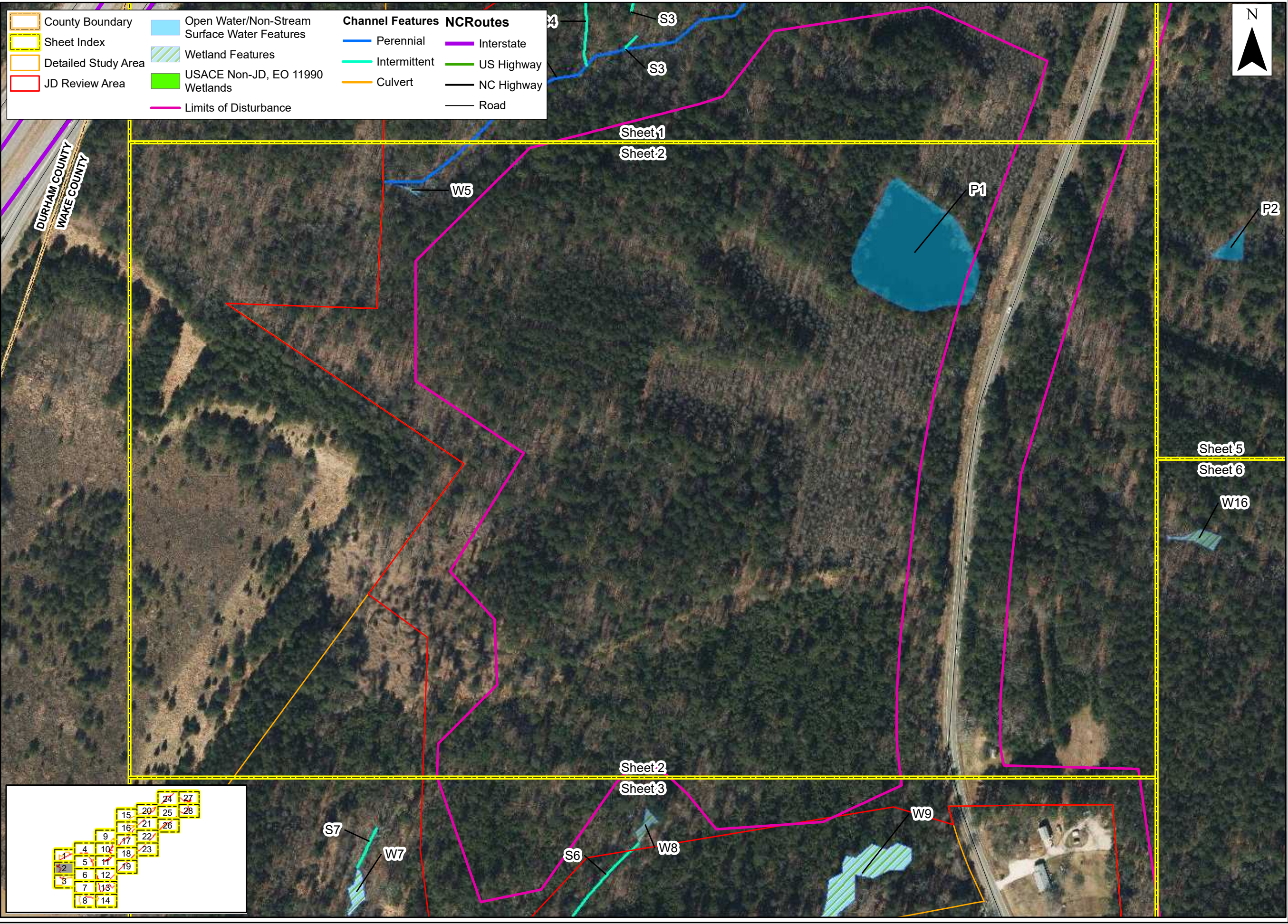
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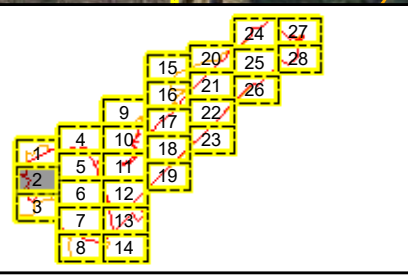
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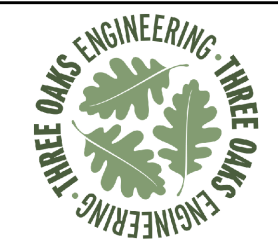
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Checked By: NDH

Figure  
**1**  
Sheet 2



County Boundary	Open Water/Non-Stream Surface Water Features	<b>Channel Features</b>	<b>NCRoutes</b>
Sheet Index	Wetland Features	Perennial	Interstate
Detailed Study Area	USACE Non-JD, EO 11990 Wetlands	Intermittent	US Highway
JD Review Area		Culvert	NC Highway
			Road
			Limits of Disturbance





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Disturbance**

**Wake County,  
North Carolina**

Date: January 2023

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Job No.: 19-018

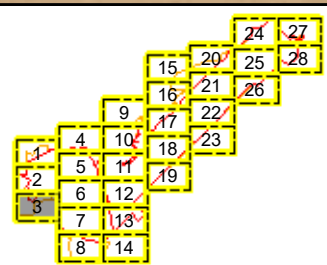
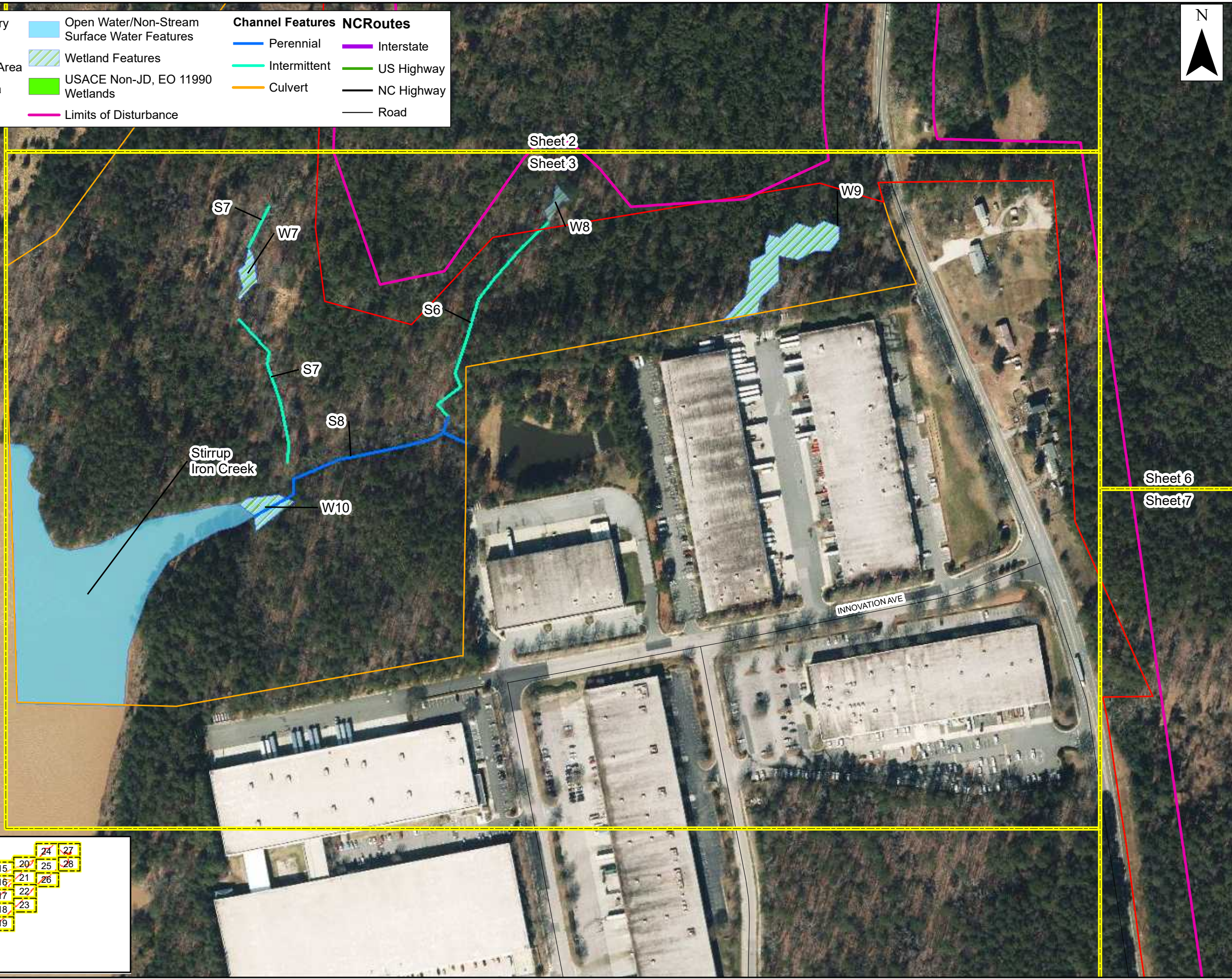
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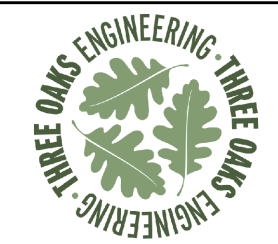
Figure

**1**

Sheet 3

	County Boundary		Open Water/Non-Stream Surface Water Features	<b>Channel Features</b>		<b>NCRoutes</b>	
	Sheet Index		Wetland Features		Perennial		Interstate
	Detailed Study Area		USACE Non-JD, EO 11990 Wetlands		Intermittent		US Highway
	JD Review Area		Limits of Disturbance		Culvert		NC Highway
							Road





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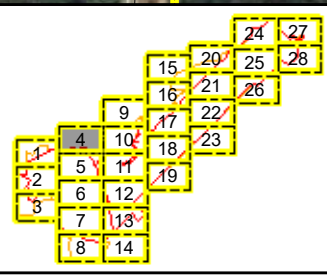
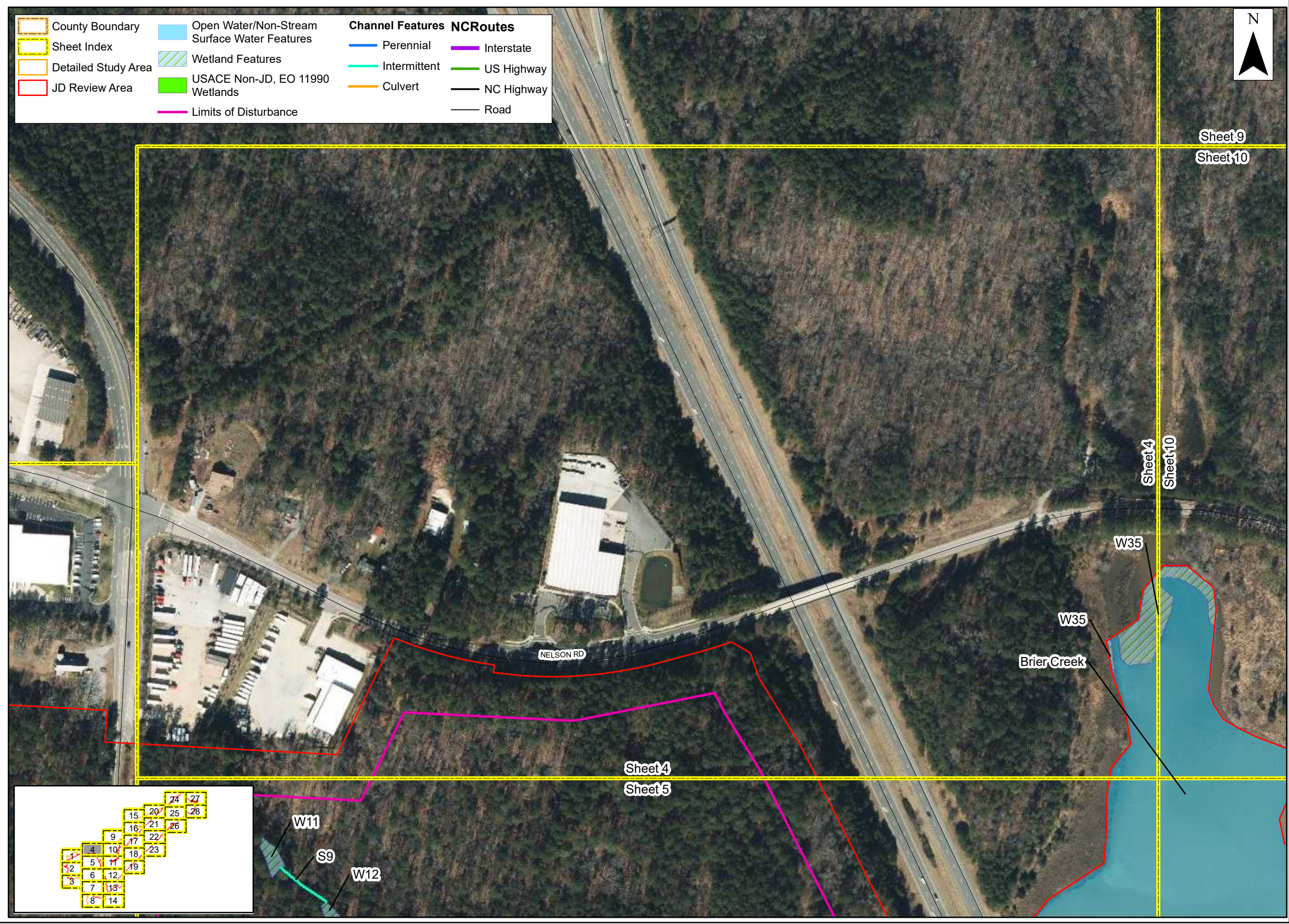
**Limits of  
Disturbance**

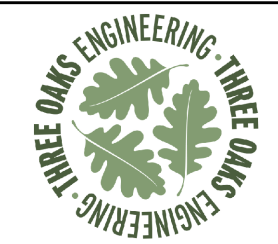
**Wake County,  
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Date:	January 2023
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Job No.:	19-018
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Checked By:	NDH

Figure  
**1**  
Sheet 4

County Boundary	Open Water/Non-Stream Surface Water Features	<b>Channel Features</b>	<b>NCRoutes</b>
Sheet Index	Wetland Features	Perennial	Interstate
Detailed Study Area	USACE Non-JD, EO 11990 Wetlands	Intermittent	US Highway
JD Review Area	Limits of Disturbance	Culvert	NC Highway
		Road	





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Disturbance**

**Wake County,  
North Carolina**

Date: January 2023

Scale: 0 100 200 Ft

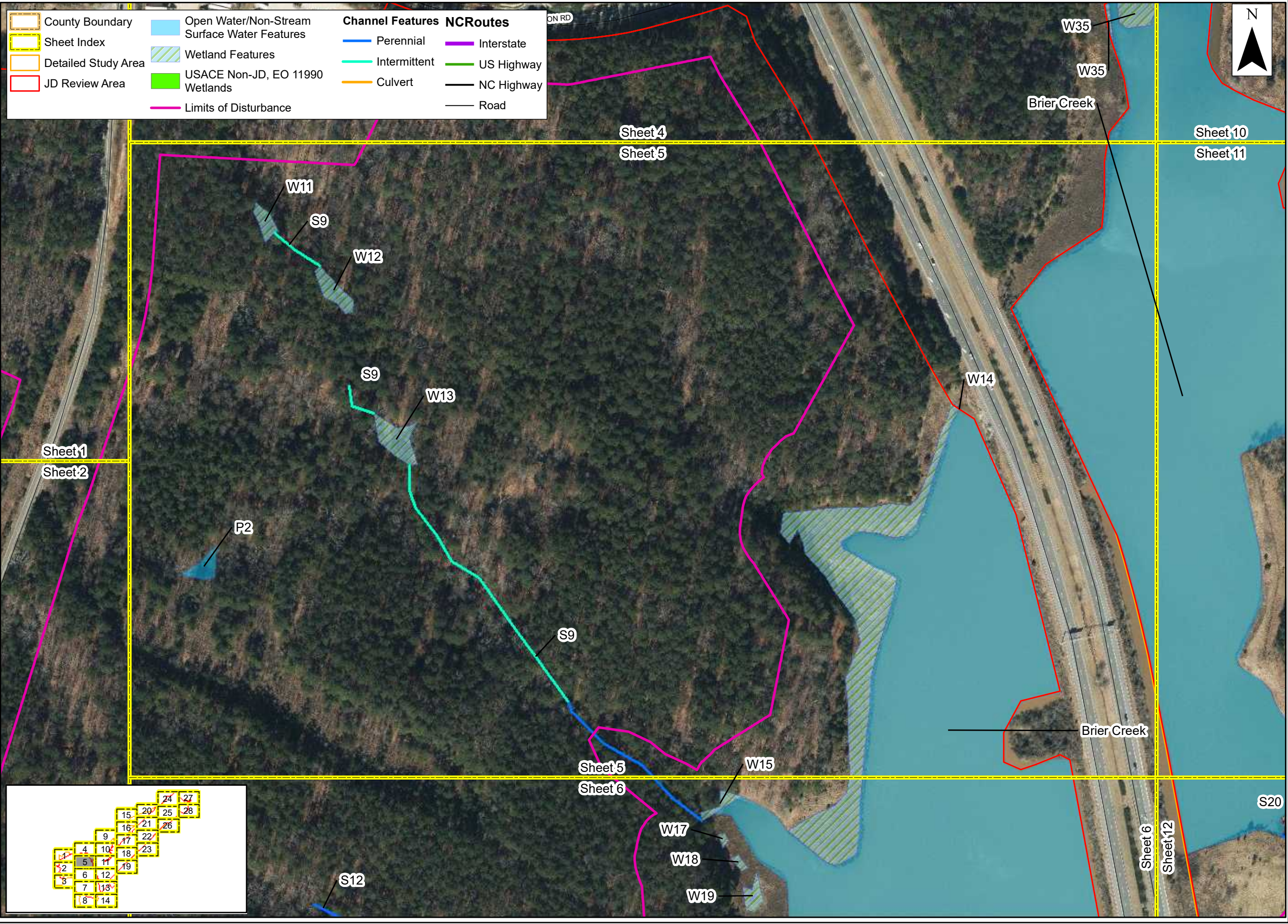
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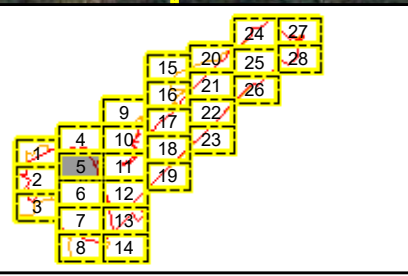
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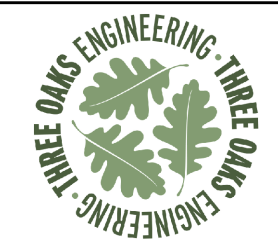
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Sheet 5



County Boundary	Open Water/Non-Stream Surface Water Features	<b>Channel Features</b>	<b>NCRoutes</b>
Sheet Index	Wetland Features	Perennial	Interstate
Detailed Study Area	USACE Non-JD, EO 11990 Wetlands	Intermittent	US Highway
JD Review Area		Culvert	NC Highway
			Road
			Limits of Disturbance





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**Proposed Runway  
5L/23R  
Replacement**

**Federal  
Environmental  
Assessment**

**Limits of  
Disturbance**

**Wake County,  
North Carolina**

Date: January 2023

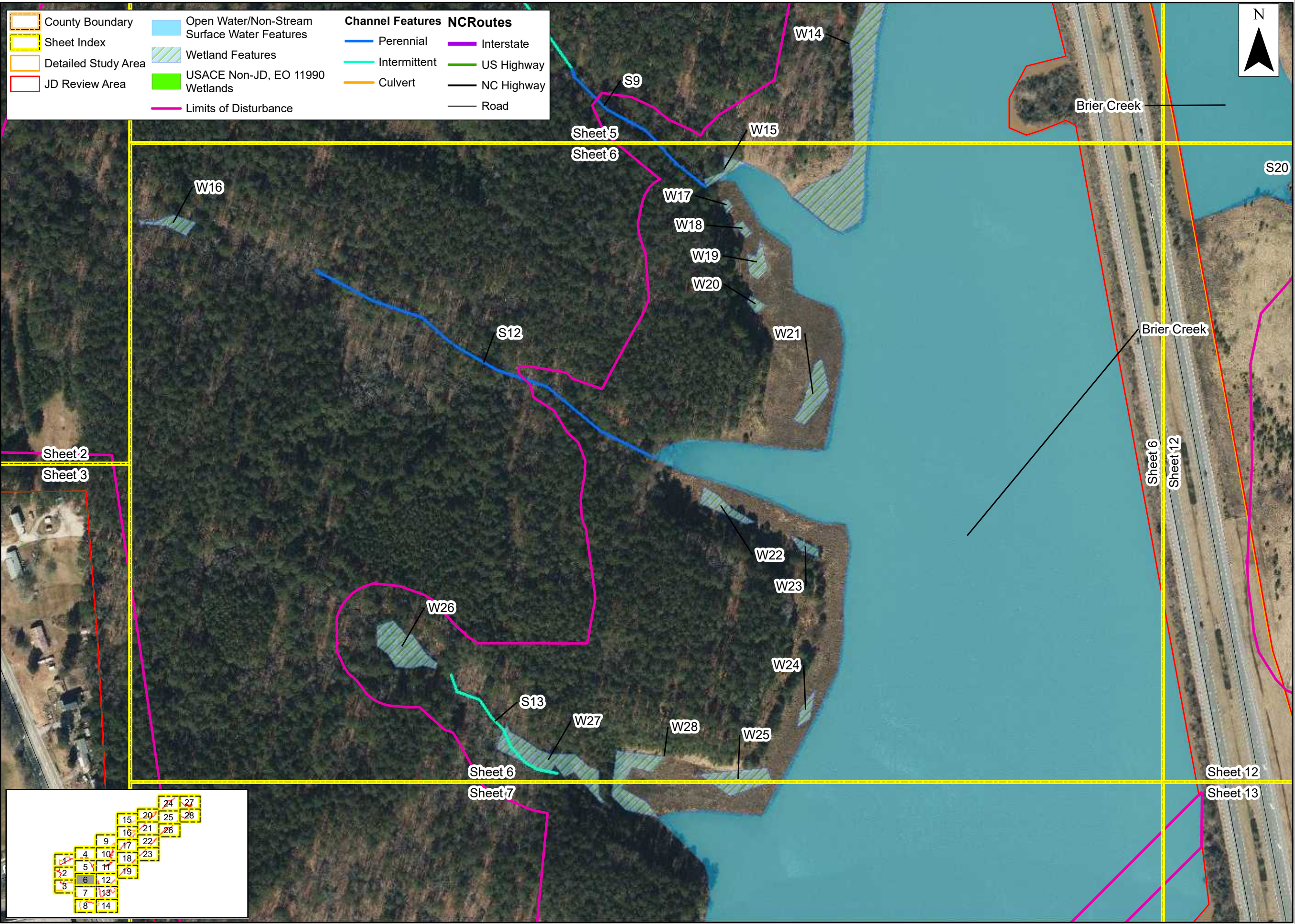
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Job No.: 19-018

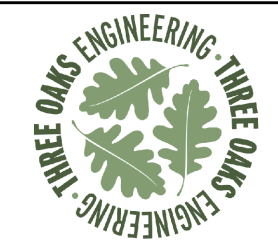
Drawn By: KEMS  
Checked By: NDH

Figure  
**1**  
Sheet 6

County Boundary	Open Water/Non-Stream Surface Water Features	<b>Channel Features</b>	<b>NCRoutes</b>
Sheet Index	Wetland Features	Perennial	Interstate
Detailed Study Area	USACE Non-JD, EO 11990 Wetlands	Intermittent	US Highway
JD Review Area	Limits of Disturbance	Culvert	NC Highway
			Road







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**Limits of  
Disturbance**

**Wake County,  
North Carolina**

Date: January 2023

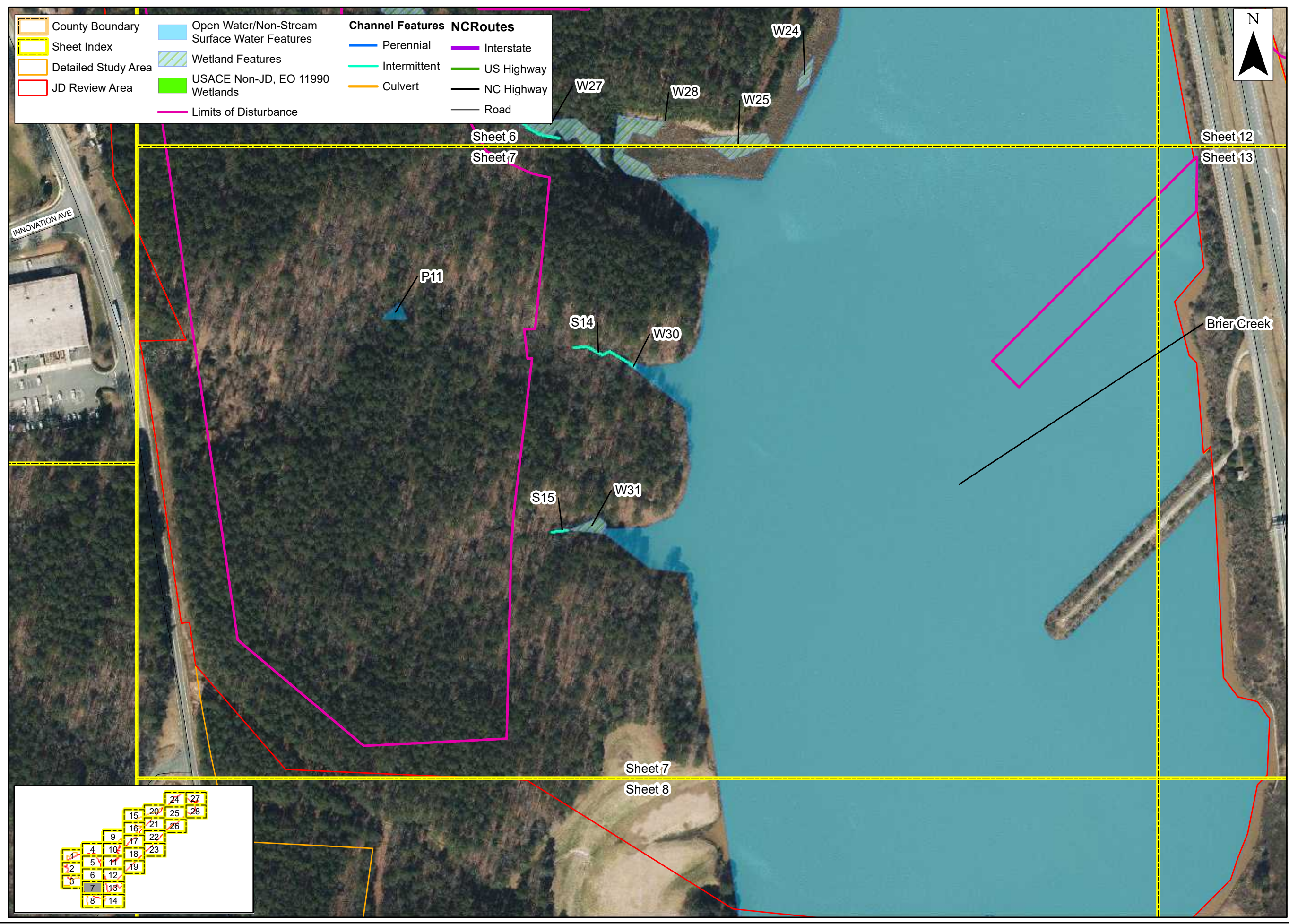
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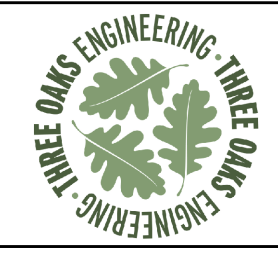
Job No.: 19-018

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Checked By: NDH

Figure  
**1**  
Sheet 7

County Boundary	Open Water/Non-Stream Surface Water Features	<b>Channel Features</b>	<b>NCRoutes</b>
Sheet Index	Wetland Features	Perennial	Interstate
Detailed Study Area	USACE Non-JD, EO 11990 Wetlands	Intermittent	US Highway
JD Review Area		Culvert	NC Highway
			Road
			Limits of Disturbance





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Assessment**

**Limits of  
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**Wake County,  
North Carolina**

Date: January 2023

Scale: 0 100 200 Ft

Job No.: 19-018

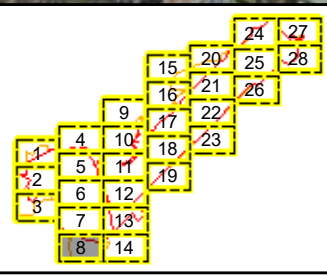
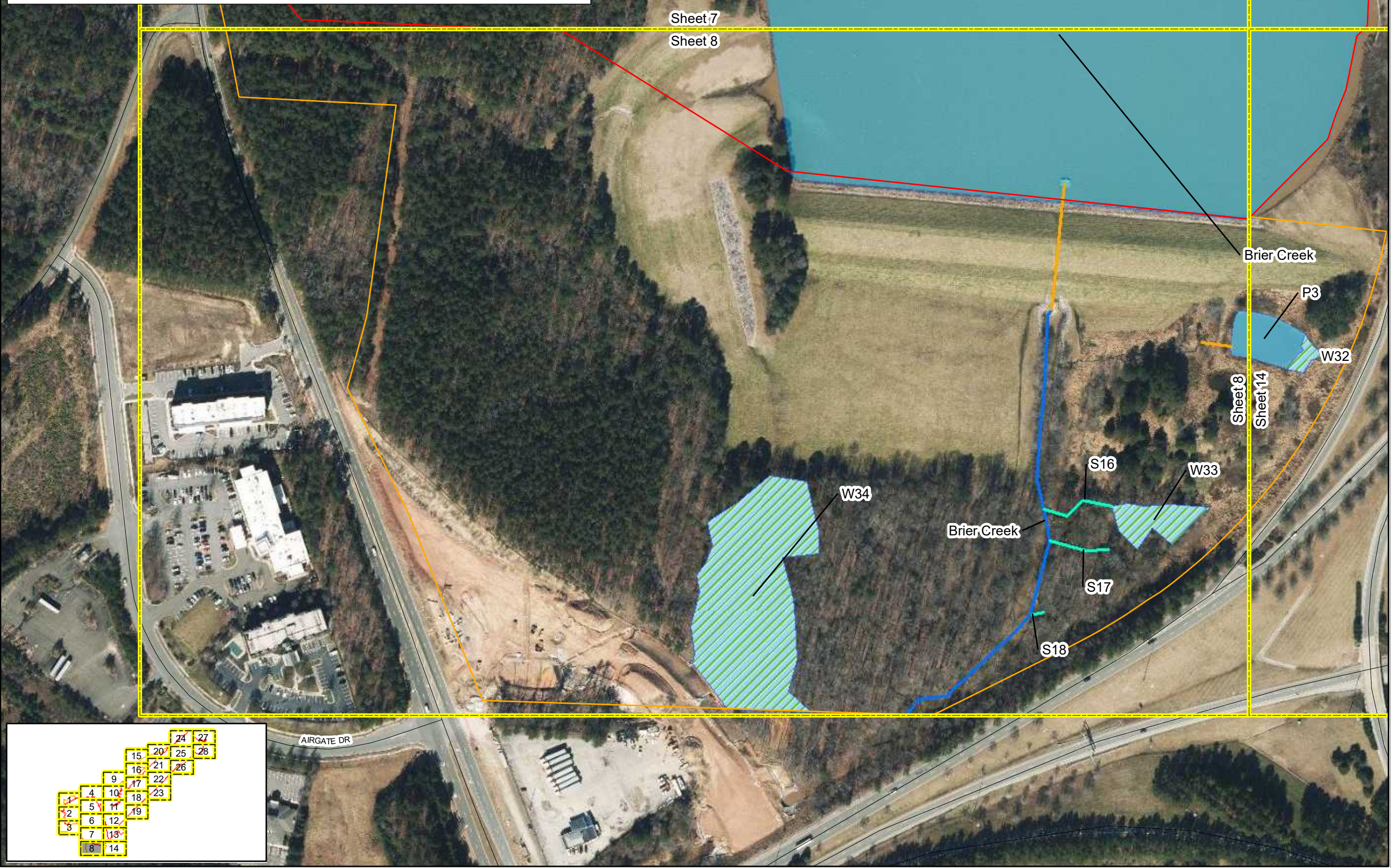
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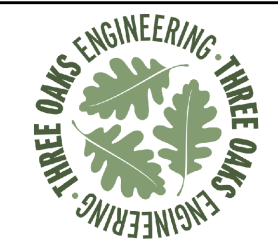
Figure

**1**

Sheet 8

County Boundary	Open Water/Non-Stream Surface Water Features	<b>Channel Features</b>	<b>NCRoutes</b>
Sheet Index	Wetland Features	Perennial	Interstate
Detailed Study Area	USACE Non-JD, EO 11990 Wetlands	Intermittent	US Highway
JD Review Area	Limits of Disturbance	Culvert	NC Highway
		Road	





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Disturbance**

**Wake County,  
North Carolina**

Date: January 2023

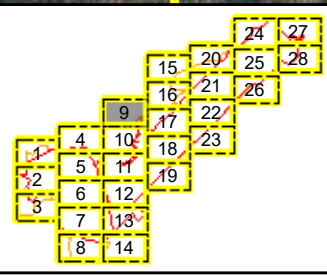
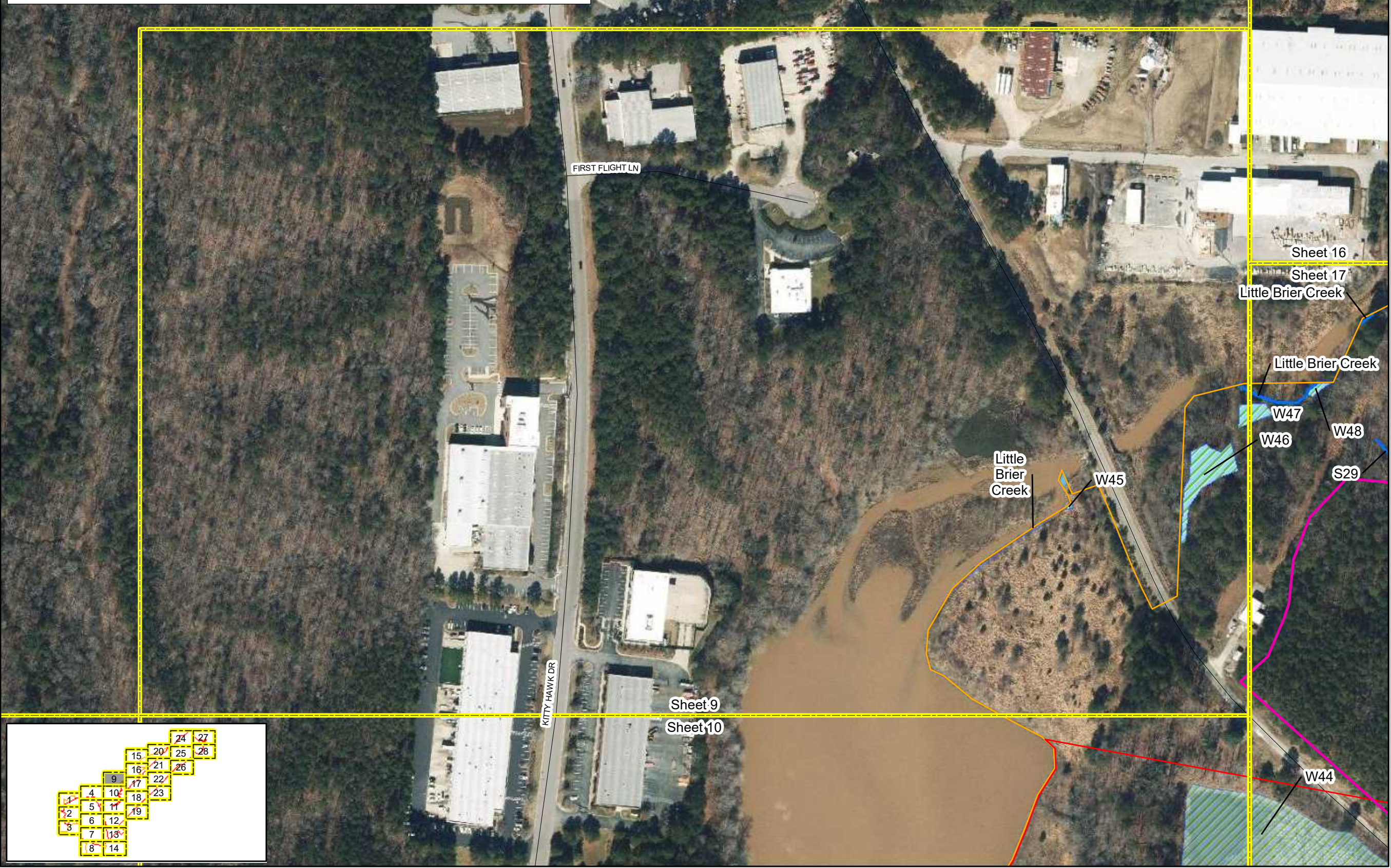
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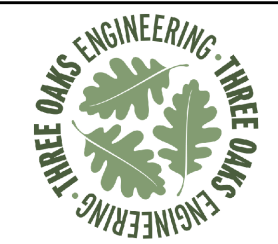
Job No.: 19-018

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Figure  
**1**  
Sheet 9

County Boundary	Open Water/Non-Stream Surface Water Features	<b>Channel Features</b>	<b>NCRoutes</b>
Sheet Index	Wetland Features	Perennial	Interstate
Detailed Study Area	USACE Non-JD, EO 11990 Wetlands	Intermittent	US Highway
JD Review Area	Limits of Disturbance	Culvert	NC Highway
			Road





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Assessment**

**Limits of  
Disturbance**

**Wake County,  
North Carolina**

Date: January 2023

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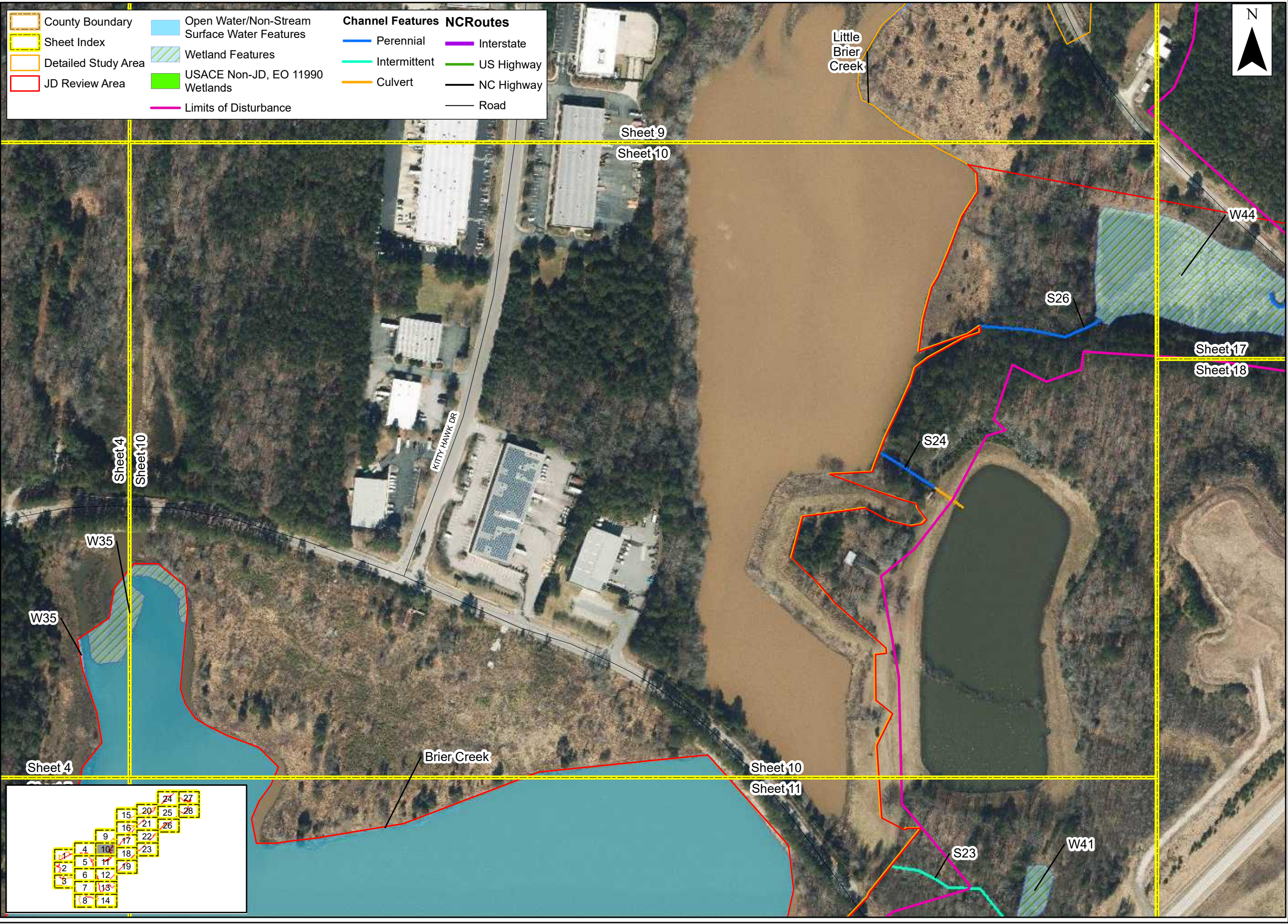
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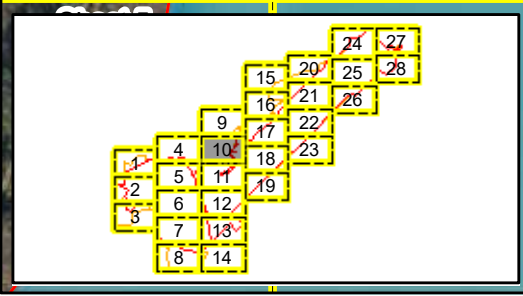
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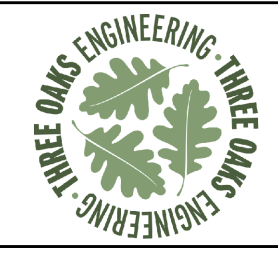
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Sheet 10



County Boundary	Open Water/Non-Stream Surface Water Features	<b>Channel Features</b>	<b>NCRoutes</b>
Sheet Index	Wetland Features	Perennial	Interstate
Detailed Study Area	USACE Non-JD, EO 11990 Wetlands	Intermittent	US Highway
JD Review Area	Limits of Disturbance	Culvert	NC Highway
			Road





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**Limits of  
Disturbance**

**Wake County,  
North Carolina**

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Scale: 0 100 200 Ft

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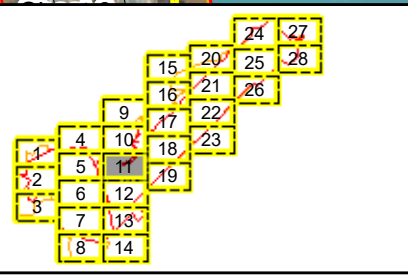
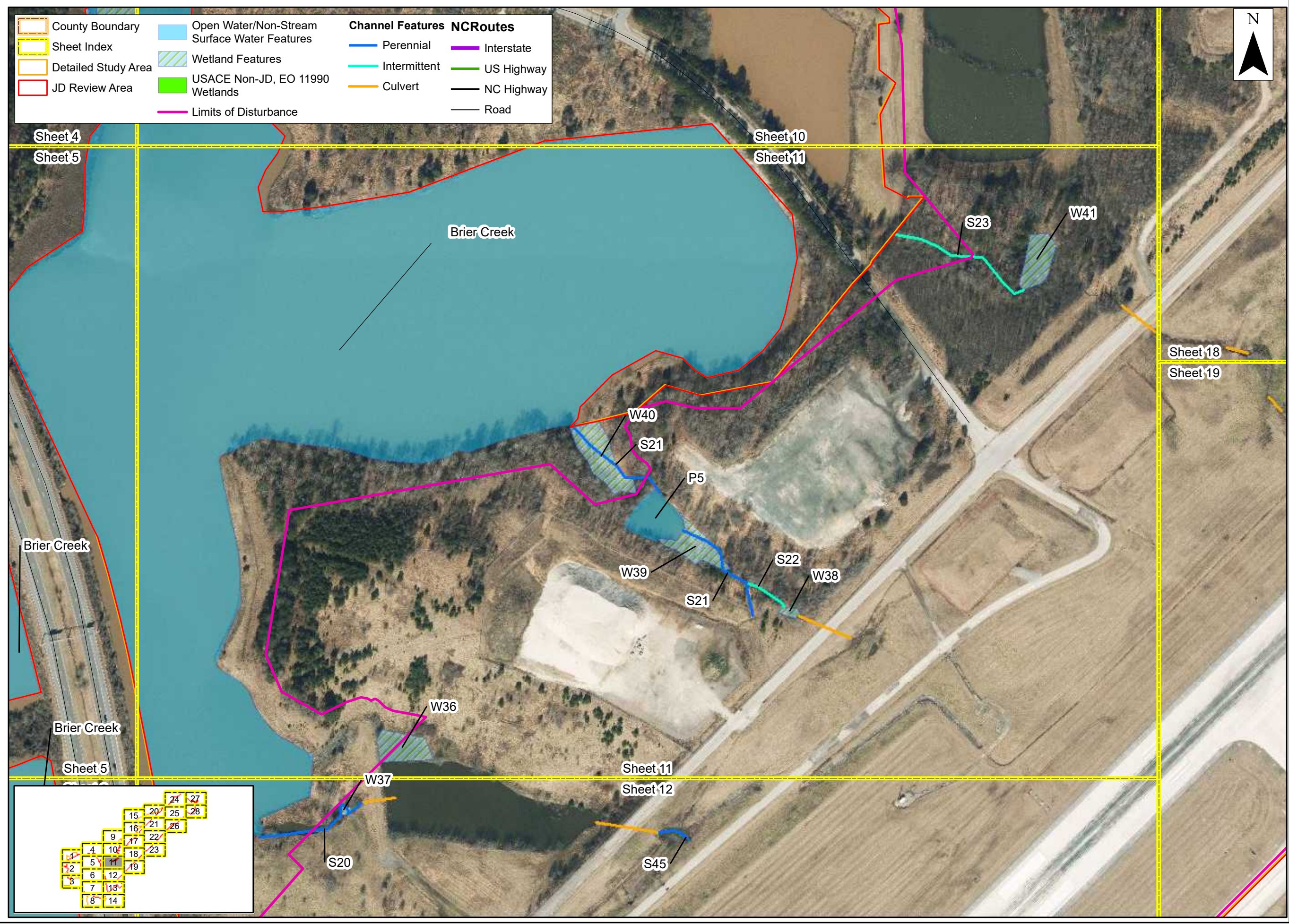
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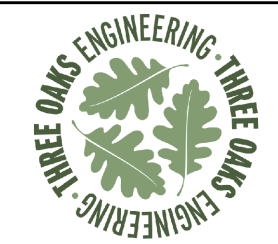
Figure

**1**

Sheet 11

County Boundary	Open Water/Non-Stream Surface Water Features	<b>Channel Features</b>	<b>NCRoutes</b>
Sheet Index	Wetland Features	Perennial	Interstate
Detailed Study Area	USACE Non-JD, EO 11990 Wetlands	Intermittent	US Highway
JD Review Area	Limits of Disturbance	Culvert	NC Highway
			Road





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**Wake County,  
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Date: January 2023

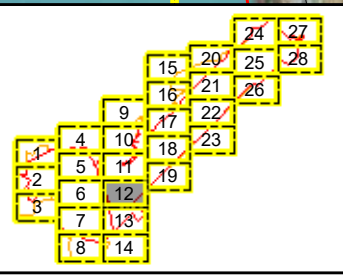
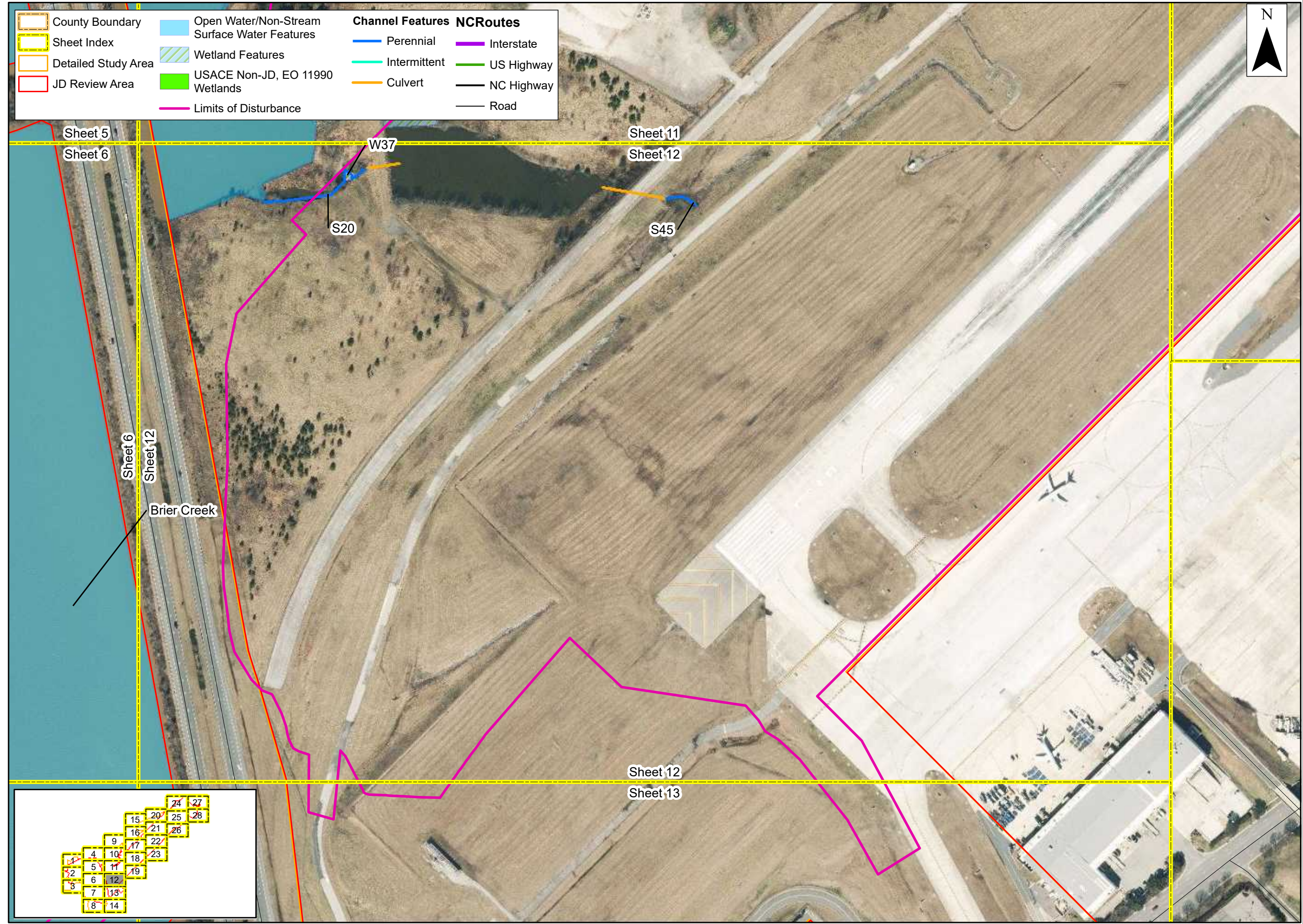
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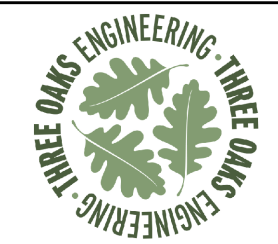
Job No.: 19-018

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Checked By: NDH

Figure  
**1**  
Sheet 12

County Boundary	Open Water/Non-Stream Surface Water Features	<b>Channel Features</b>	<b>NCRoutes</b>
Sheet Index	Wetland Features	Perennial	Interstate
Detailed Study Area	USACE Non-JD, EO 11990 Wetlands	Intermittent	US Highway
JD Review Area		Culvert	NC Highway
			Road
			Limits of Disturbance





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**Limits of  
Disturbance**

**Wake County,  
North Carolina**

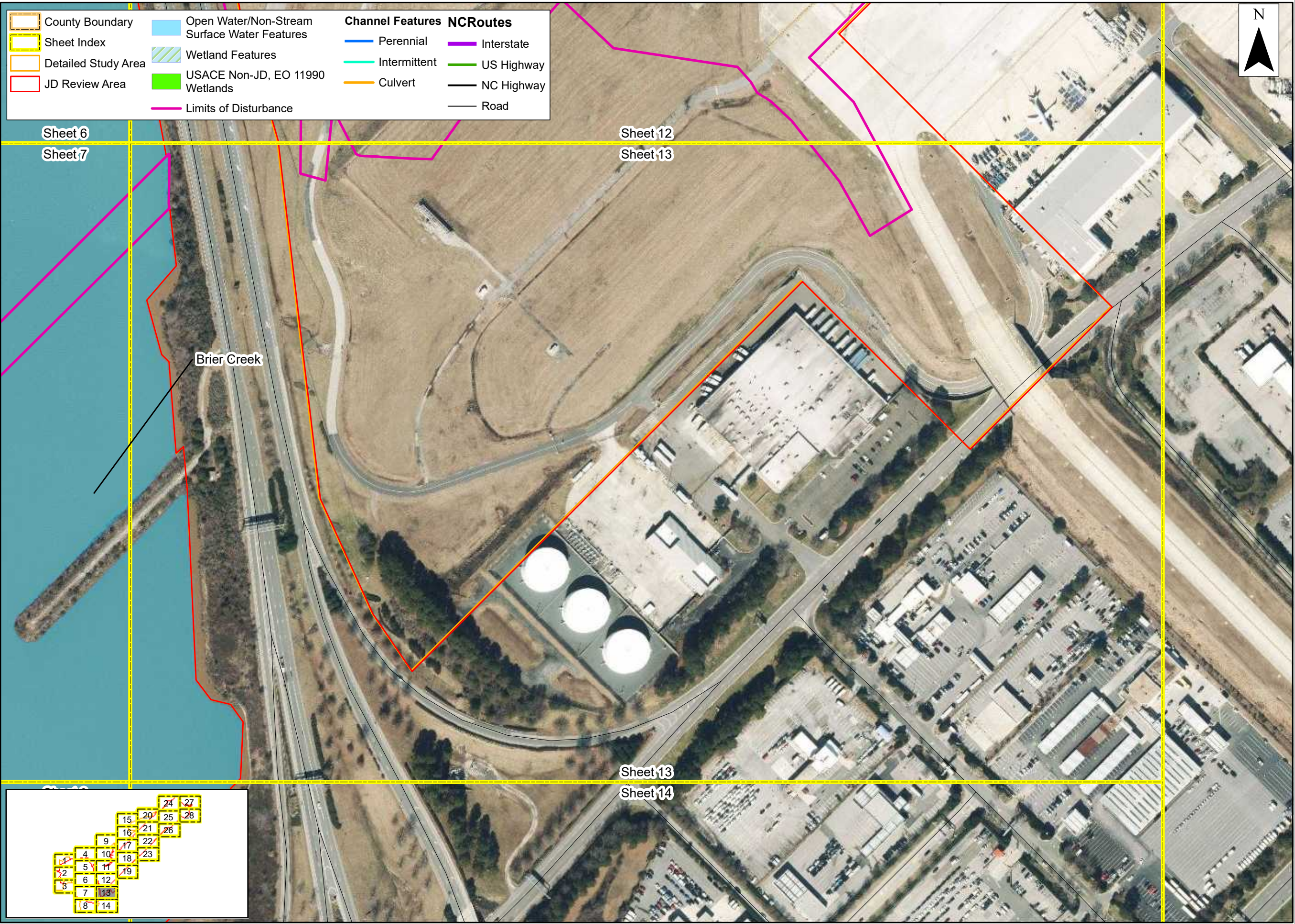
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Job No.: 19-018

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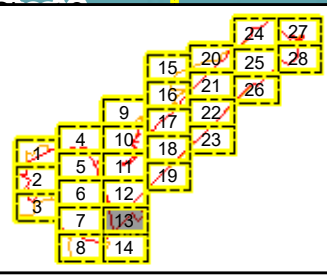
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Sheet 13

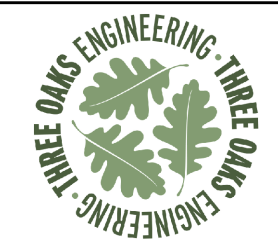


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Sheet 13

Sheet 13  
Sheet 14





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North Carolina**

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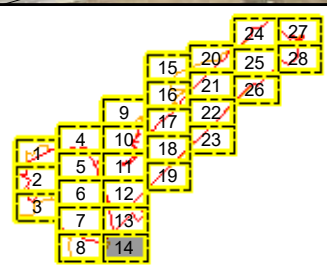
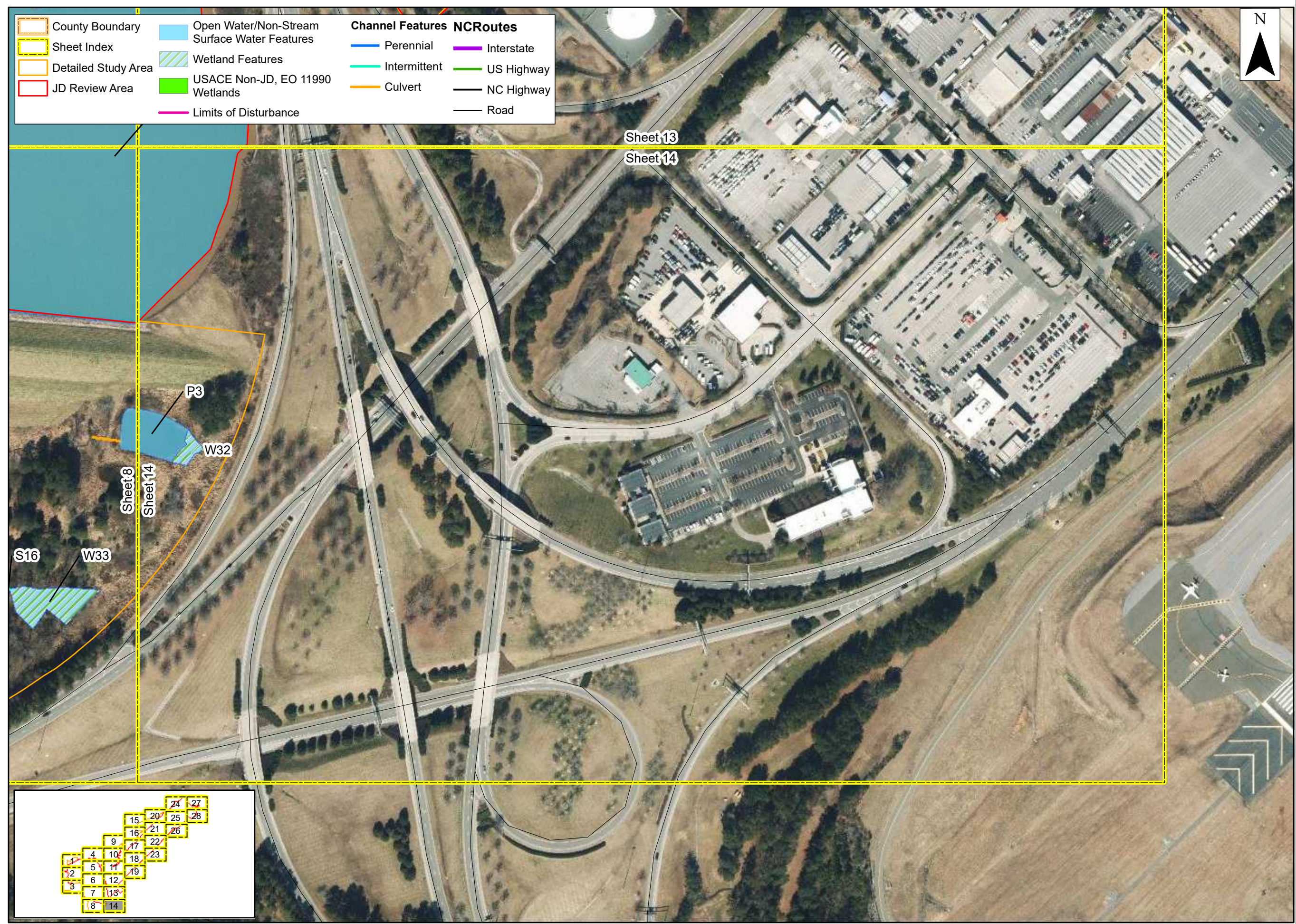
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Figure

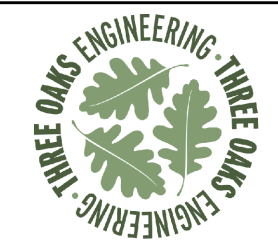
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Sheet 14

County Boundary	Open Water/Non-Stream Surface Water Features	<b>Channel Features</b>	<b>NCRoutes</b>
Sheet Index	Wetland Features	Perennial	Interstate
Detailed Study Area	USACE Non-JD, EO 11990 Wetlands	Intermittent	US Highway
JD Review Area	Limits of Disturbance	Culvert	NC Highway
			Road







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North Carolina**

Date: January 2023

Scale: 0 100 200 Ft

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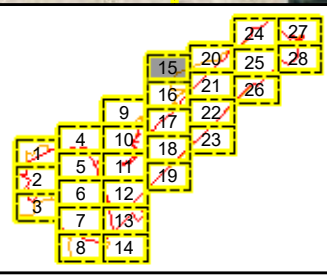
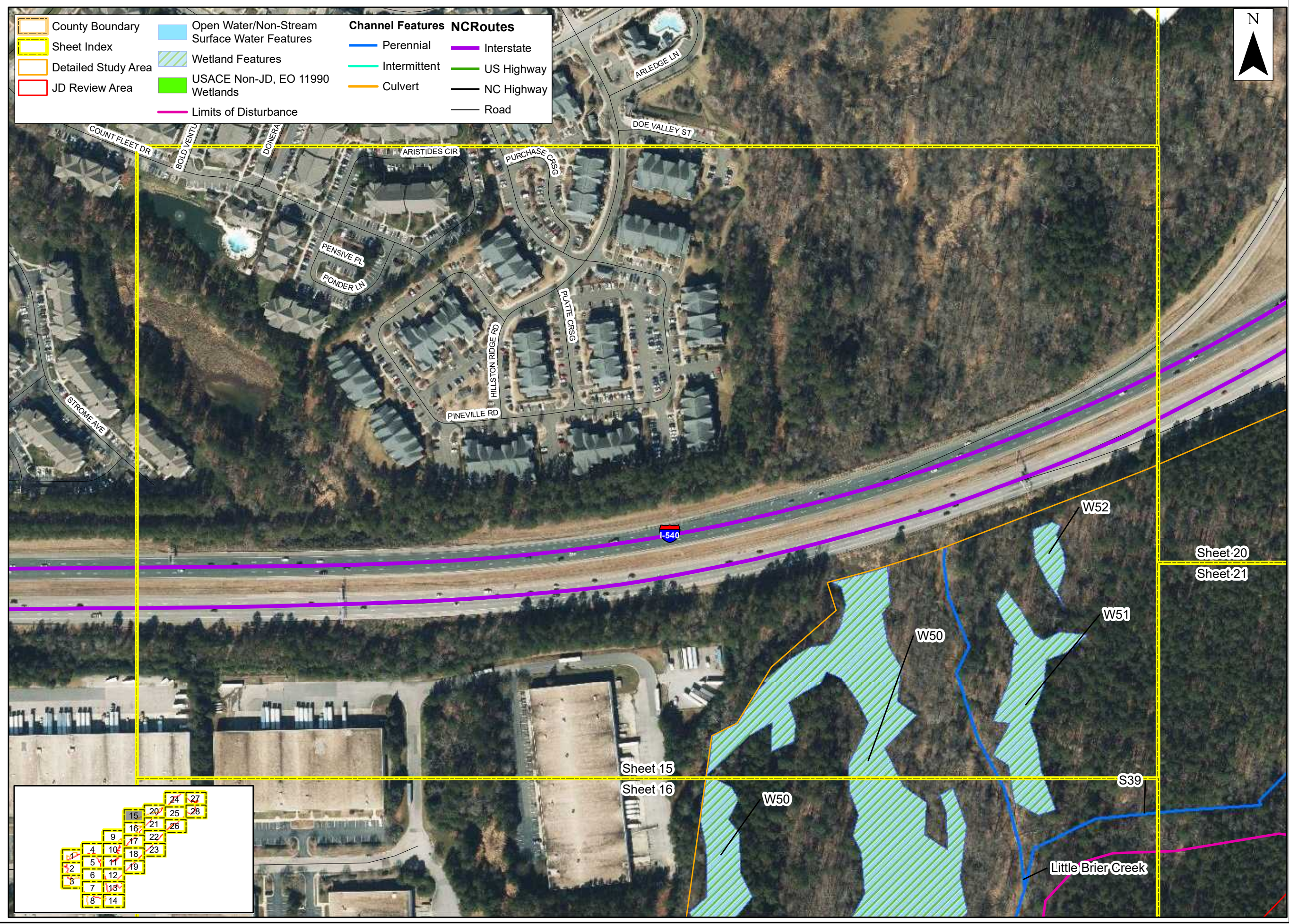
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Figure

**1**

Sheet 15

	County Boundary		Open Water/Non-Stream Surface Water Features	<b>Channel Features</b>	<b>NCRoutes</b>
	Sheet Index		Wetland Features		Perennial
	Detailed Study Area		USACE Non-JD, EO 11990 Wetlands		Intermittent
	JD Review Area		Limits of Disturbance		Culvert
					Interstate
					US Highway
					NC Highway
					Road



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Sheet 16

Sheet 20  
Sheet 21

I-540

W52

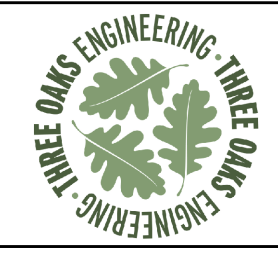
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W51

W50

S39

Little Brier Creek



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**Wake County,  
North Carolina**

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Scale: 0 100 200 Ft

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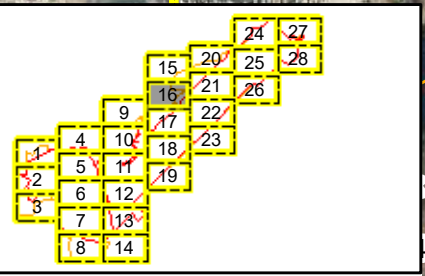
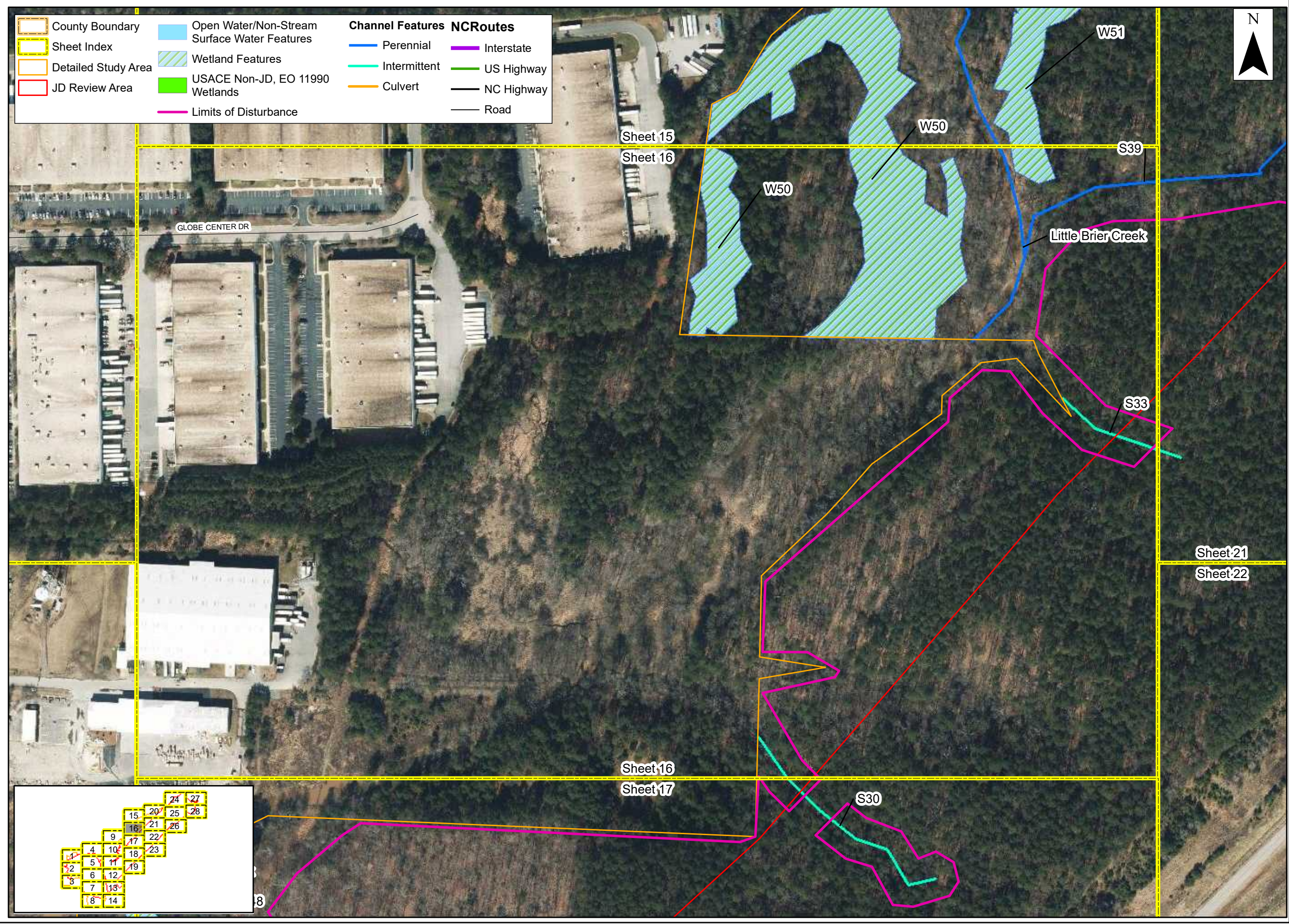
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Figure

**1**

Sheet 16

- |                     |  |                         |                 |
|---------------------|--|-------------------------|-----------------|
| County Boundary     | Open Water/Non-Stream Surface Water Features | <b>Channel Features</b> | <b>NCRoutes</b> |
| Sheet Index         | Wetland Features                             | Perennial               | Interstate      |
| Detailed Study Area | USACE Non-JD, EO 11990 Wetlands              | Intermittent            | US Highway      |
| JD Review Area      | Limits of Disturbance                        | Culvert                 | NC Highway      |
|                     |  |                         | Road            |



County Boundary	Open Water/Non-Stream Surface Water Features	<b>Channel Features</b>	<b>NCRoutes</b>
Sheet Index	Wetland Features	Perennial	Interstate
Detailed Study Area	USACE Non-JD, EO 11990 Wetlands	Intermittent	US Highway
JD Review Area	Limits of Disturbance	Culvert	NC Highway
			Road



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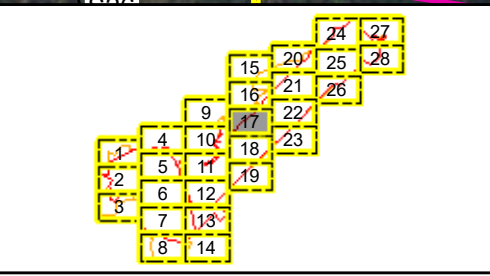
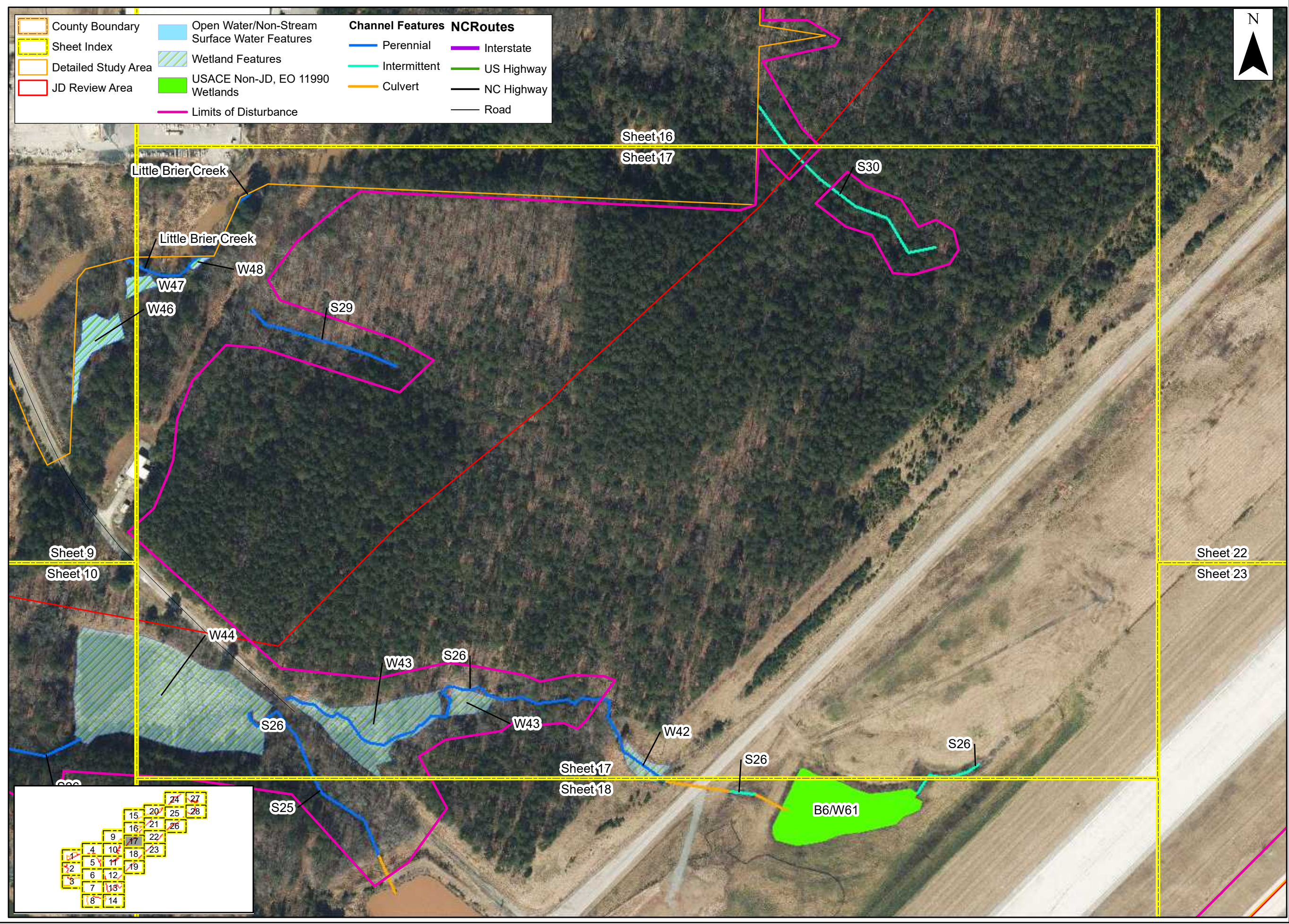
**Federal Environmental Assessment**

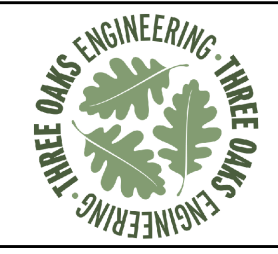
**Limits of Disturbance**

**Wake County, North Carolina**

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Figure  
**1**  
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**Limits of  
Disturbance**

**Wake County,  
North Carolina**

Date: January 2023

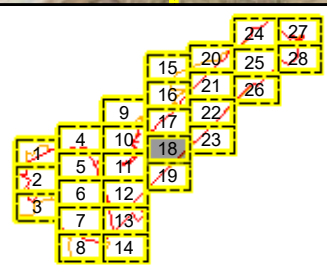
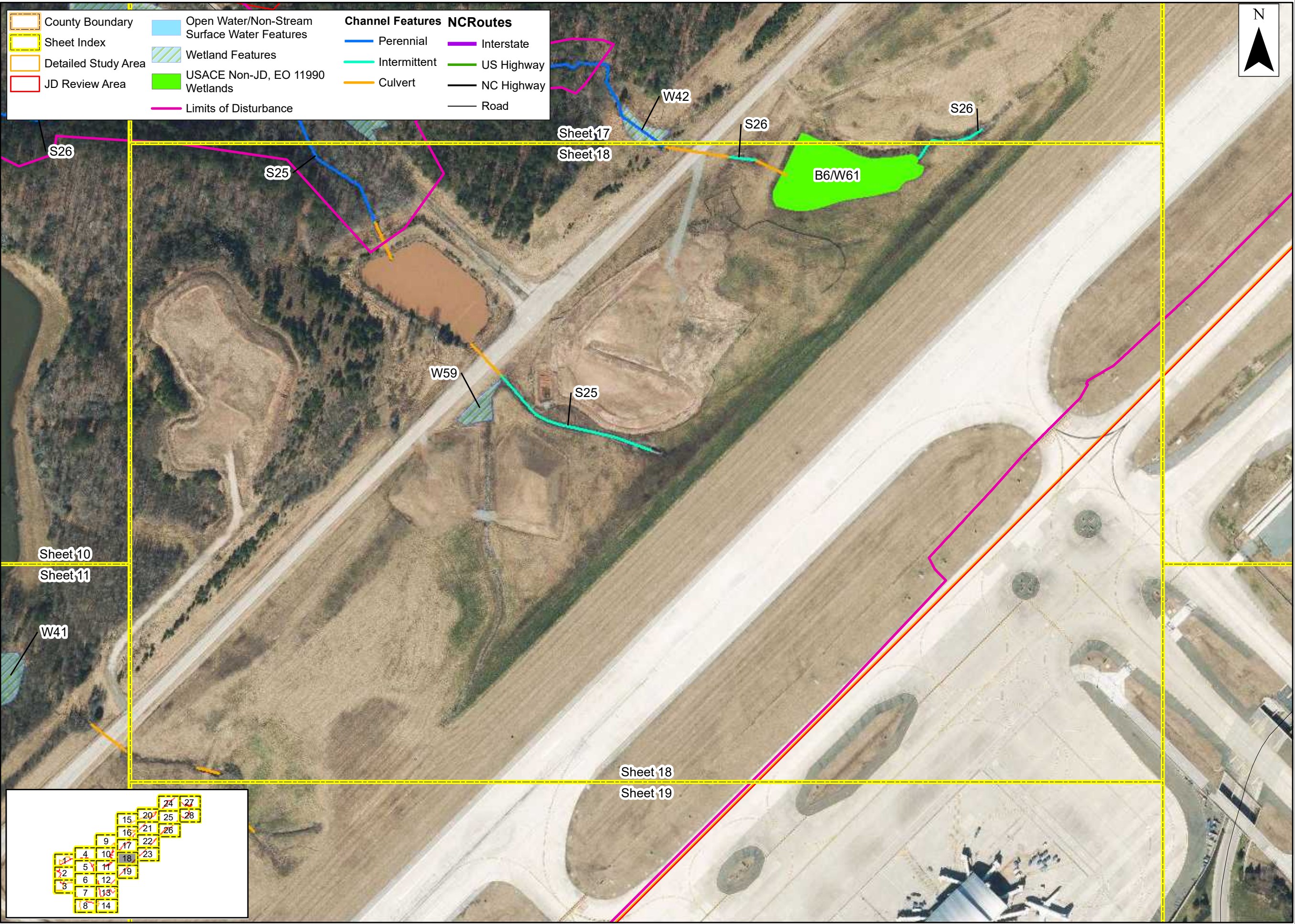
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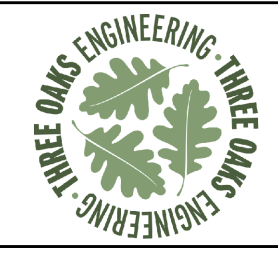
Job No.: 19-018

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Figure  
**1**  
Sheet 18

County Boundary	Open Water/Non-Stream Surface Water Features	<b>Channel Features</b>	<b>NCRoutes</b>
Sheet Index	Wetland Features	Perennial	Interstate
Detailed Study Area	USACE Non-JD, EO 11990 Wetlands	Intermittent	US Highway
JD Review Area	Limits of Disturbance	Culvert	NC Highway
			Road





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North Carolina**

Date: January 2023

Scale: 0 100 200 Ft

Job No.: 19-018

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Figure

**1**

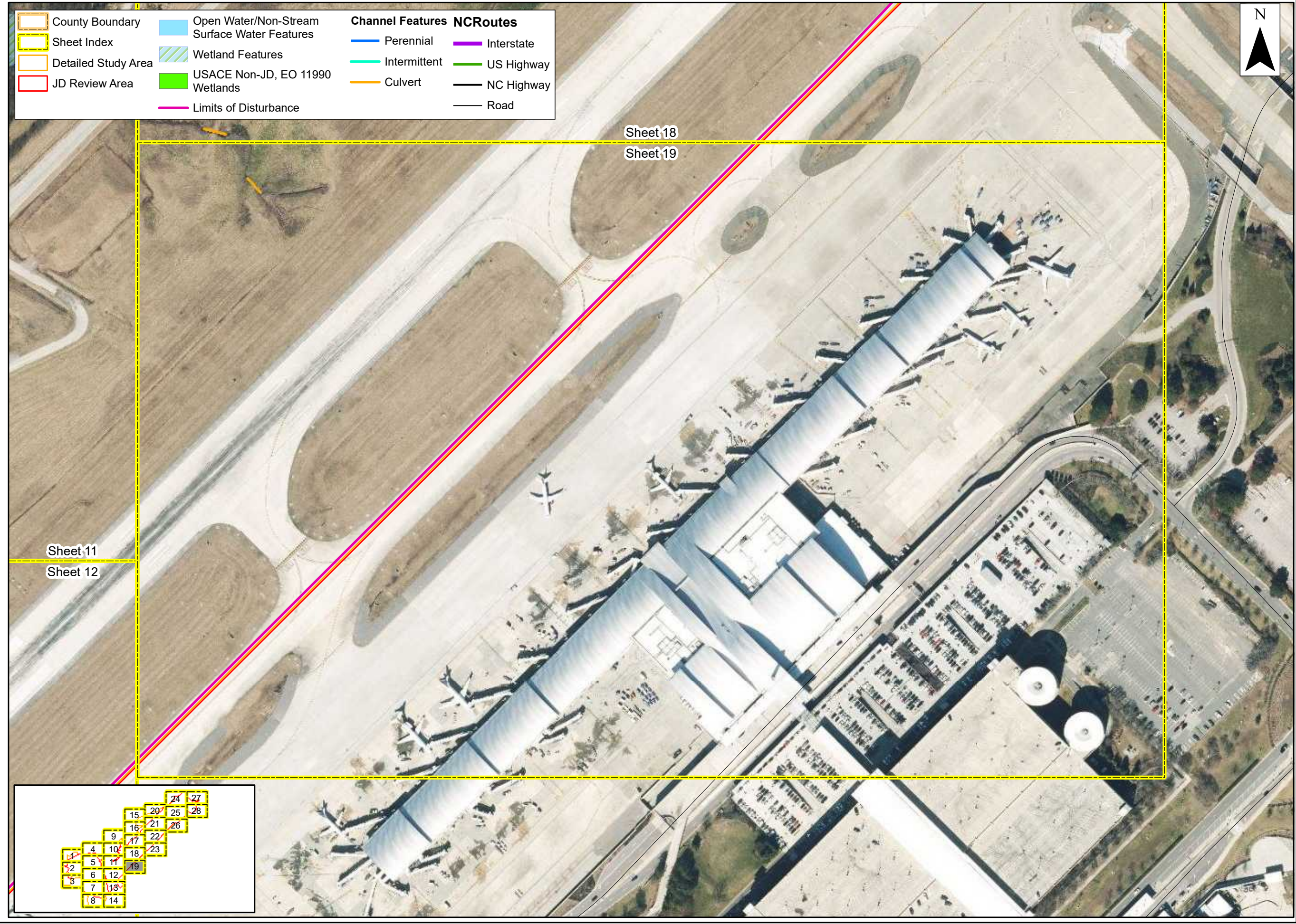
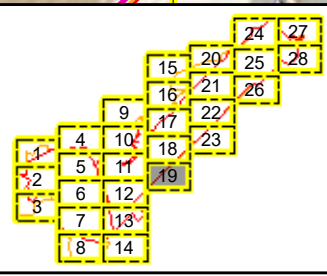
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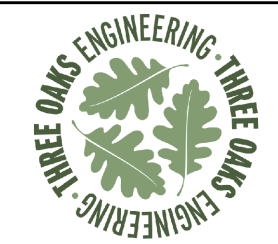
County Boundary	Open Water/Non-Stream Surface Water Features	<b>Channel Features</b>		Interstate
Sheet Index	Wetland Features	Perennial	Intermittent	US Highway
Detailed Study Area	USACE Non-JD, EO 11990 Wetlands	Culvert	NC Highway	Road
JD Review Area	Limits of Disturbance			



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Sheet 19

Sheet 11  
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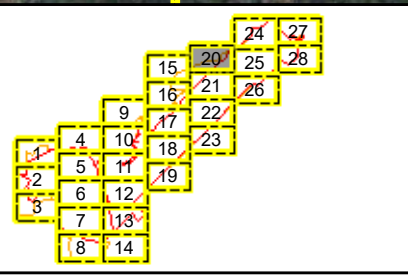
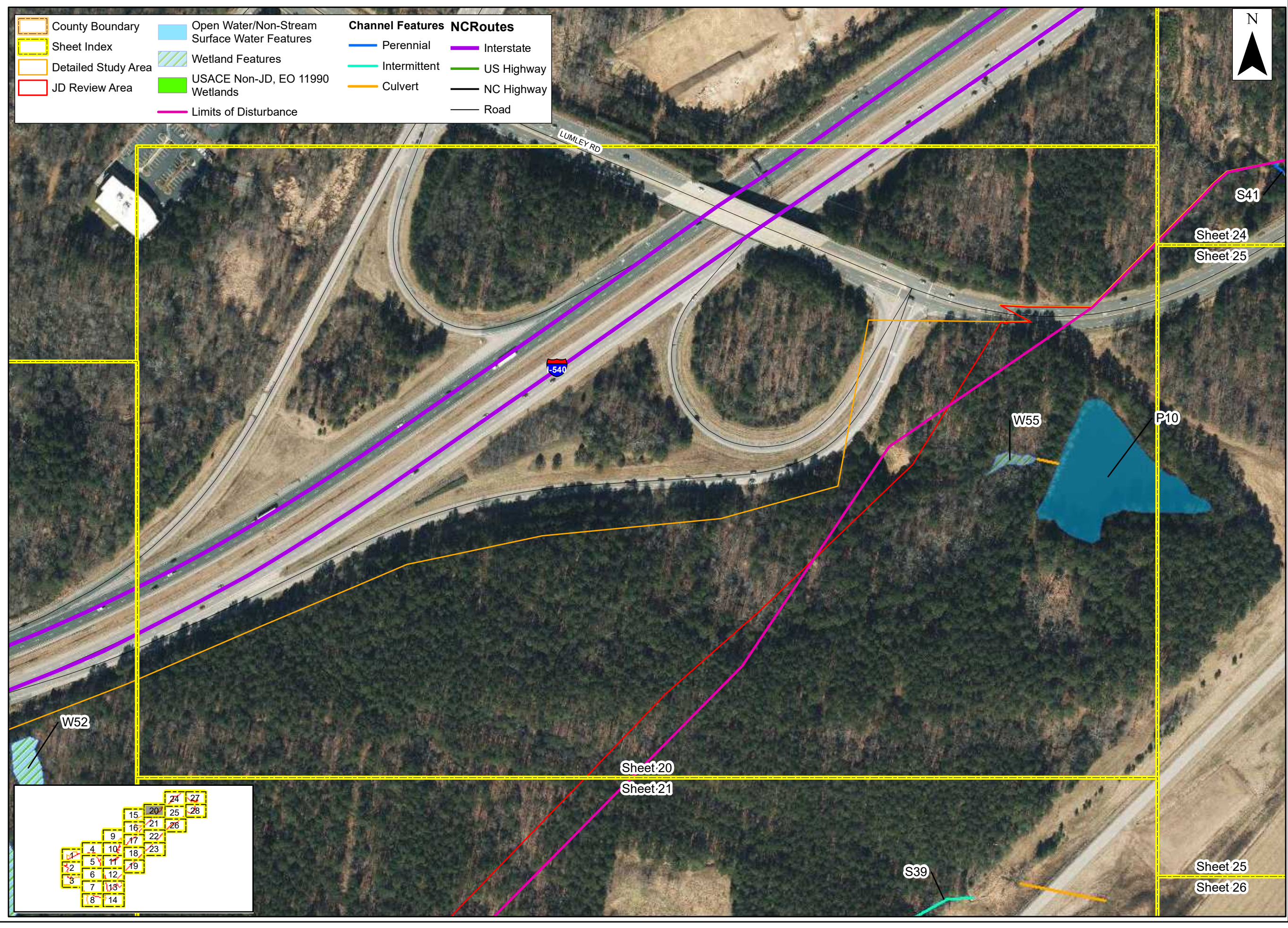
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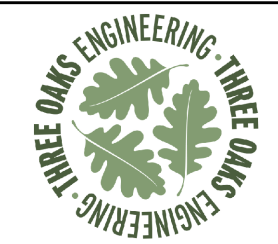
Figure

**1**

Sheet 20

County Boundary	Open Water/Non-Stream Surface Water Features	<b>Channel Features</b>	<b>NCRoutes</b>
Sheet Index	Wetland Features	Perennial	Interstate
Detailed Study Area	USACE Non-JD, EO 11990 Wetlands	Intermittent	US Highway
JD Review Area	Limits of Disturbance	Culvert	NC Highway
			Road





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Replacement**

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Disturbance**

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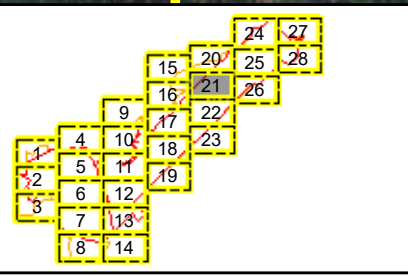
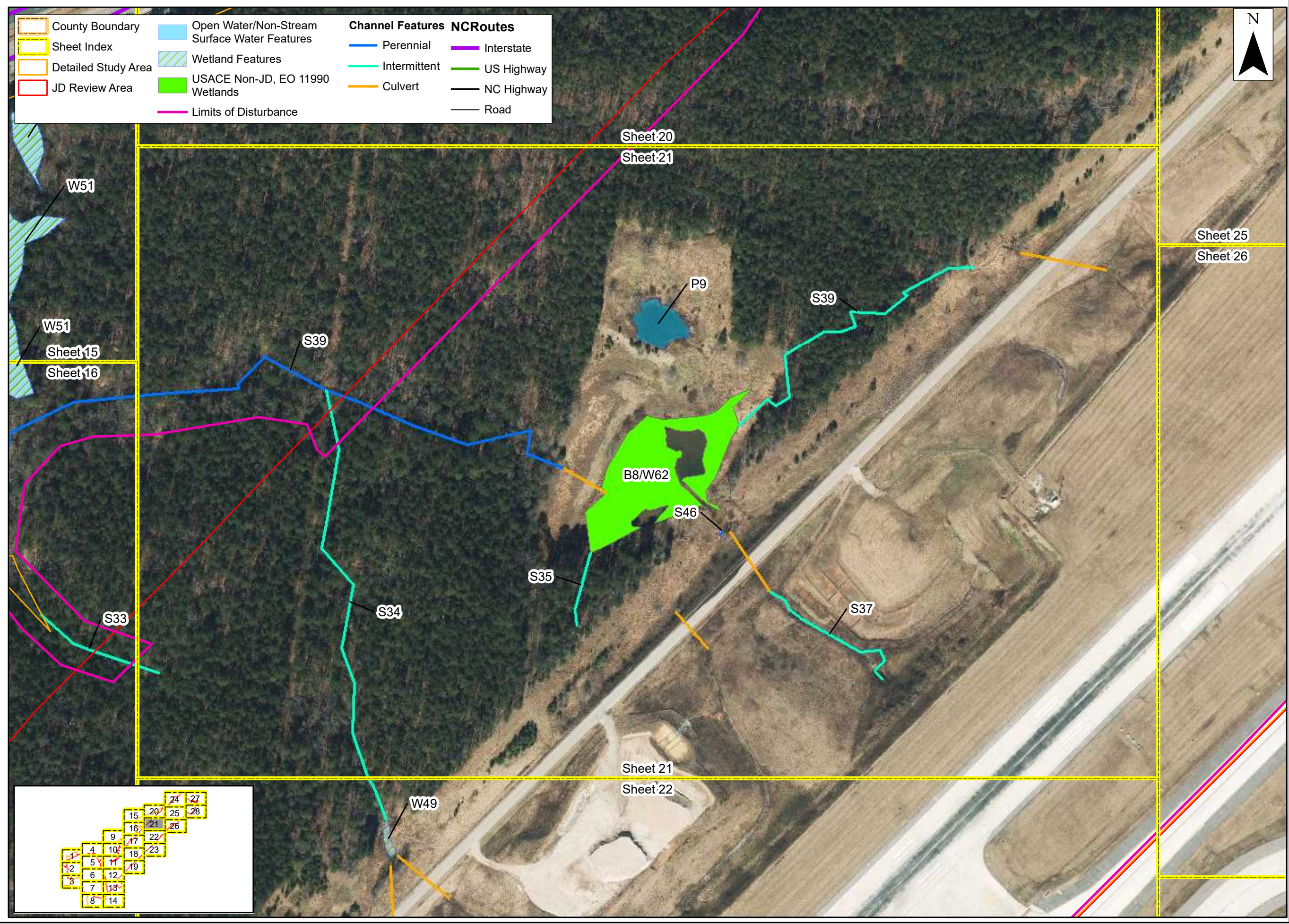
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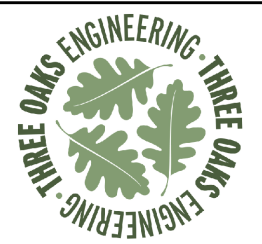
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Figure  
**1**  
Sheet 21

County Boundary	Open Water/Non-Stream Surface Water Features	<b>Channel Features</b>	<b>NCRoutes</b>
Sheet Index	Wetland Features	Perennial	Interstate
Detailed Study Area	USACE Non-JD, EO 11990 Wetlands	Intermittent	US Highway
JD Review Area		Culvert	NC Highway
			Road
			Limits of Disturbance



County Boundary	Open Water/Non-Stream Surface Water Features	<b>Channel Features</b>	<b>NCRoutes</b>
Sheet Index	Wetland Features	Perennial	Interstate
Detailed Study Area	USACE Non-JD, EO 11990 Wetlands	Intermittent	US Highway
JD Review Area	Limits of Disturbance	Culvert	NC Highway
			Road



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**Federal Environmental Assessment**

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Date: January 2023

Scale: 0 100 200 Ft

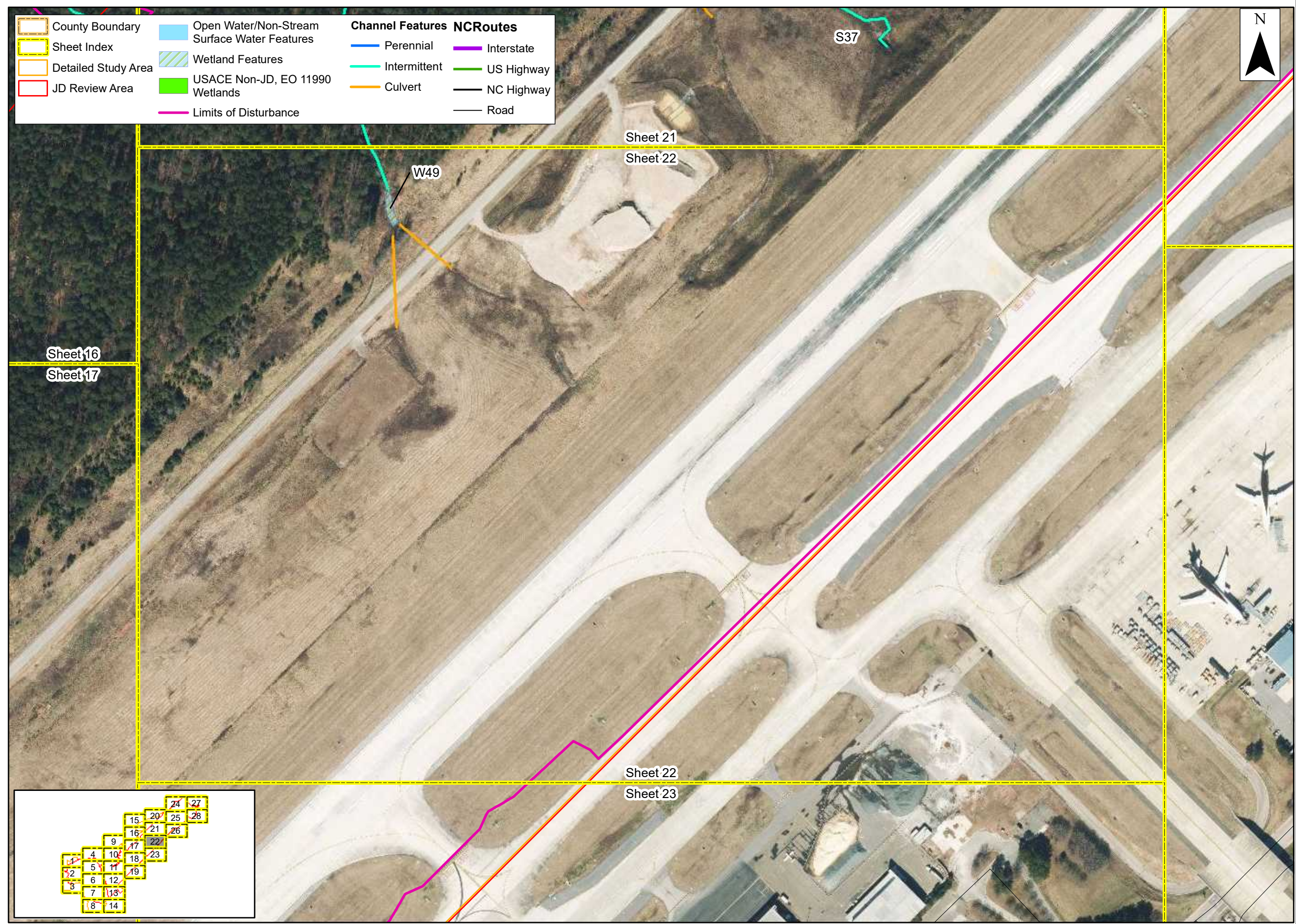
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Figure

**1**

Sheet 22



Sheet 16

Sheet 17

Sheet 21

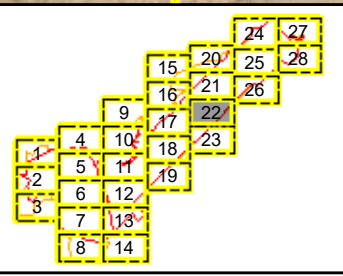
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Sheet 22

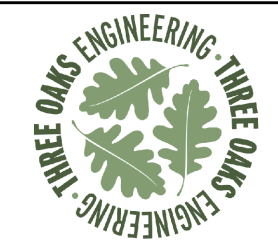
Sheet 23

W49

S37







Prepared For:



**Raleigh-Durham  
International  
Airport**

**Proposed Runway  
5L/23R  
Replacement**

**Federal  
Environmental  
Assessment**

**Limits of  
Disturbance**

**Wake County,  
North Carolina**

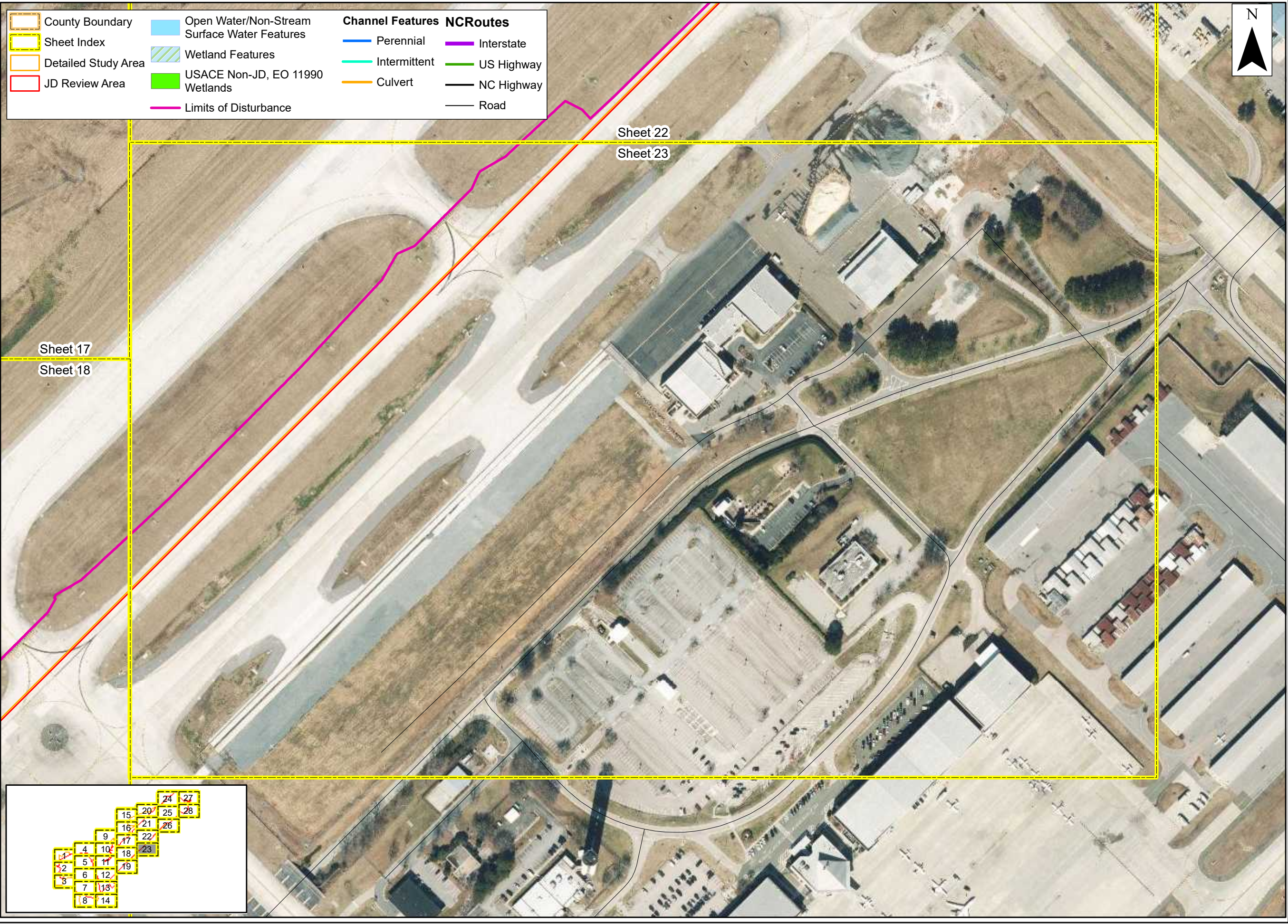
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Job No.: 19-018

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Checked By: NDH

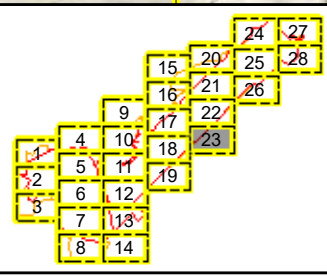
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Sheet 23

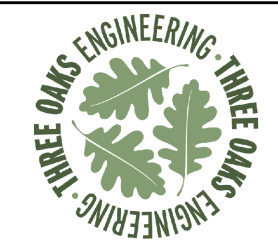


County Boundary	Open Water/Non-Stream Surface Water Features	<b>Channel Features</b>		<b>NCRoutes</b>	
Sheet Index	Wetland Features	Perennial	Interstate	US Highway	NC Highway
Detailed Study Area	USACE Non-JD, EO 11990 Wetlands	Intermittent	Culvert	Road	
JD Review Area	Limits of Disturbance				

Sheet 17  
Sheet 18

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Sheet 23





Prepared For:



**Raleigh-Durham  
International  
Airport**

**Proposed Runway  
5L/23R  
Replacement**

**Federal  
Environmental  
Assessment**

**Limits of  
Disturbance**

**Wake County,  
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Date: January 2023

Scale: 0 100 200 Ft

Job No.: 19-018

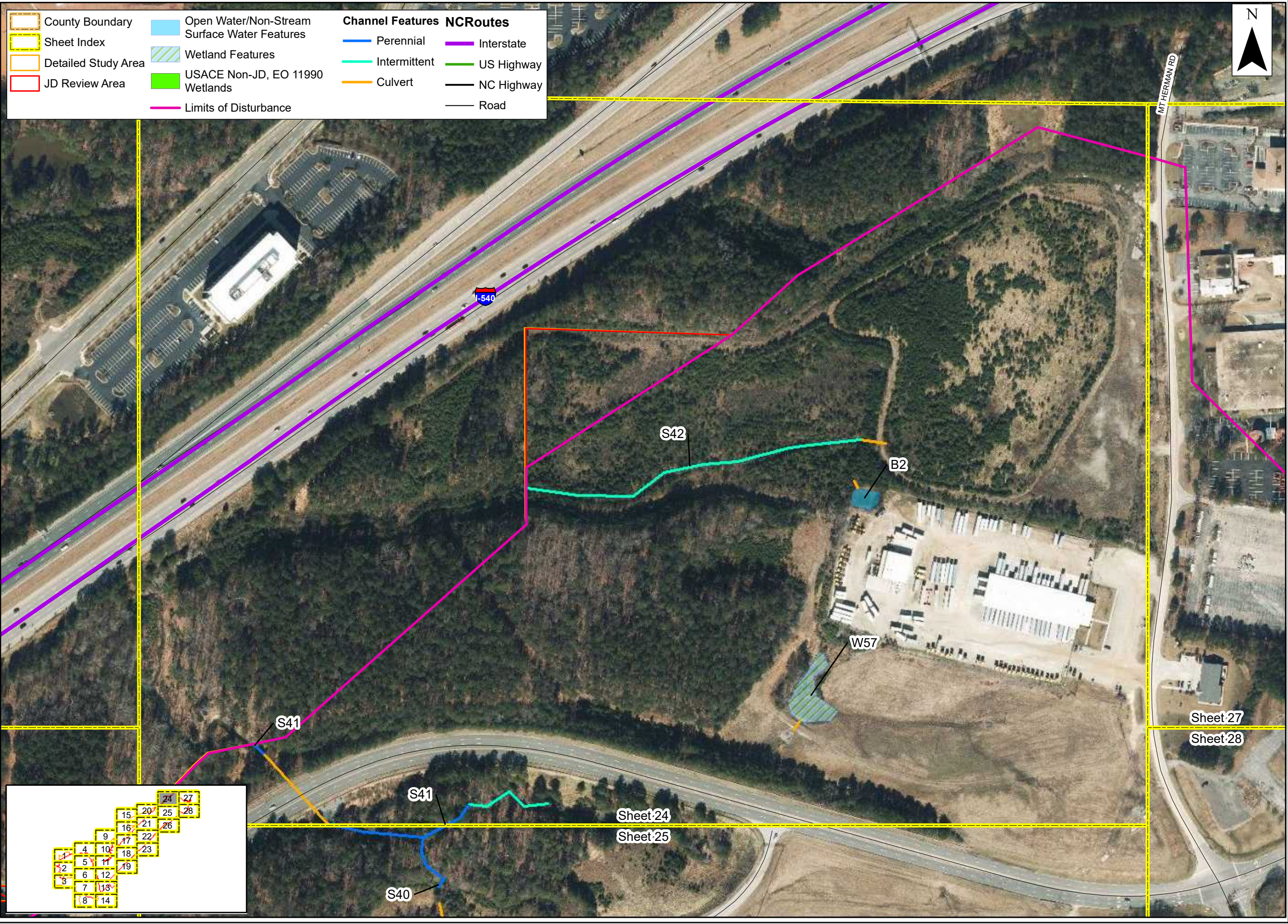
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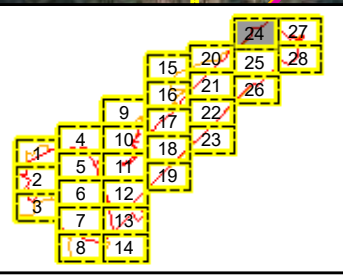
Figure

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Sheet 24



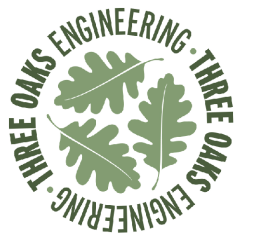
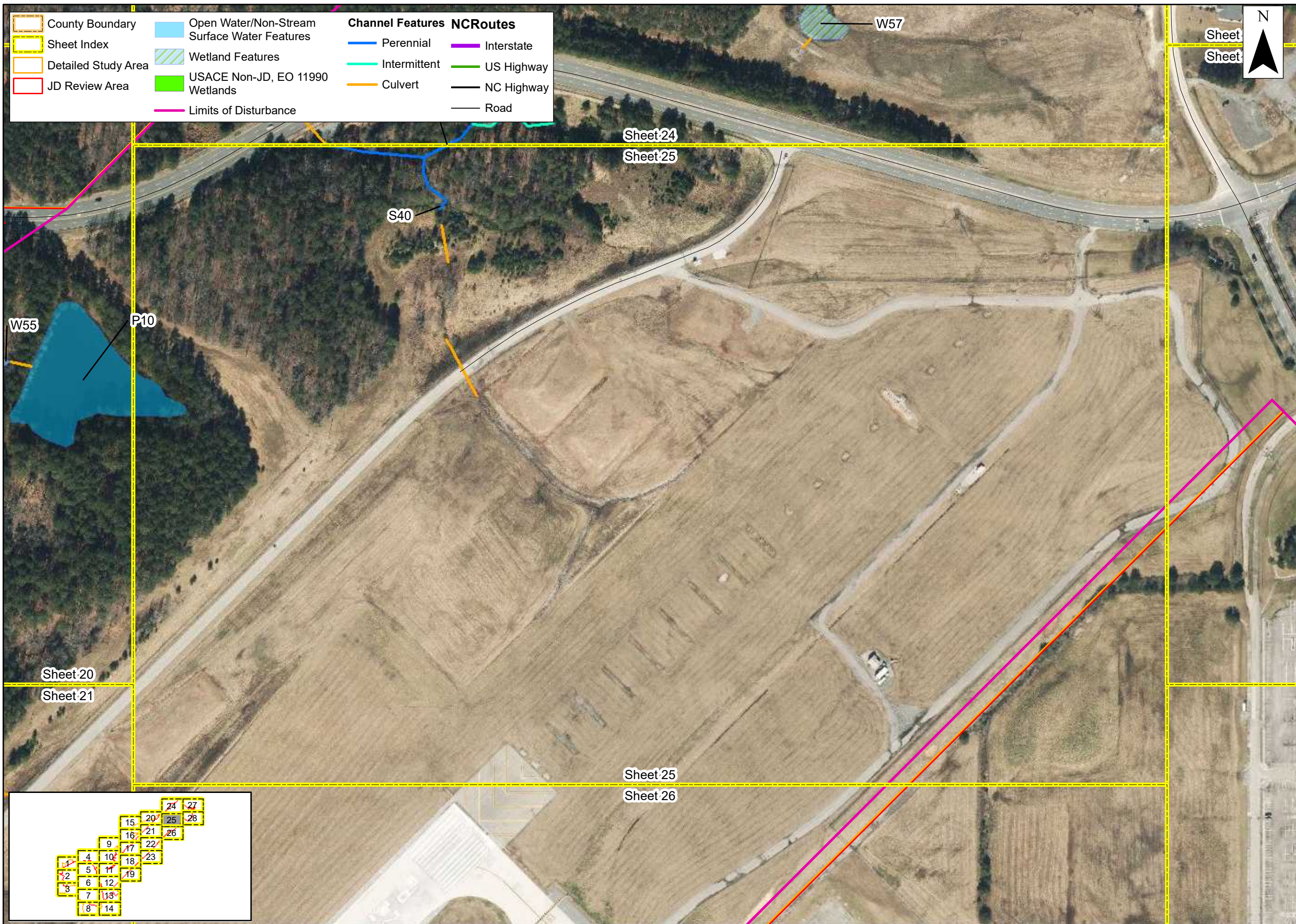
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Detailed Study Area	USACE Non-JD, EO 11990 Wetlands	Intermittent	US Highway
JD Review Area		Culvert	NC Highway
			Road
			Limits of Disturbance



Sheet 24  
Sheet 25

Sheet 27  
Sheet 28

County Boundary	Open Water/Non-Stream Surface Water Features	<b>Channel Features</b>	<b>NCRoutes</b>
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JD Review Area	Limits of Disturbance	Culvert	NC Highway
			Road



Prepared For:



**Raleigh-Durham International Airport**

**Proposed Runway 5L/23R Replacement**

**Federal Environmental Assessment**

**Limits of Disturbance**

**Wake County, North Carolina**

Date: January 2023

Scale: 0 100 200 Ft

Job No.: 19-018

Drawn By: KEMS Checked By: NDH

Sheet 20

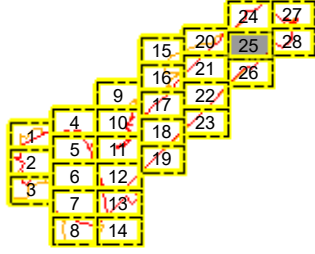
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Sheet 24

Sheet 25

Sheet 25

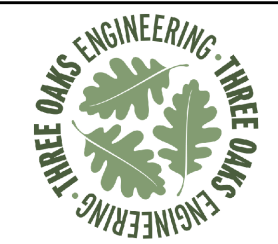
Sheet 26



Figure

**1**

Sheet 25



Prepared For:



**Raleigh-Durham  
International  
Airport**

**Proposed Runway  
5L/23R  
Replacement**

**Federal  
Environmental  
Assessment**

**Limits of  
Disturbance**

**Wake County,  
North Carolina**

Date: January 2023

Scale: 0 100 200 Ft

Job No.: 19-018

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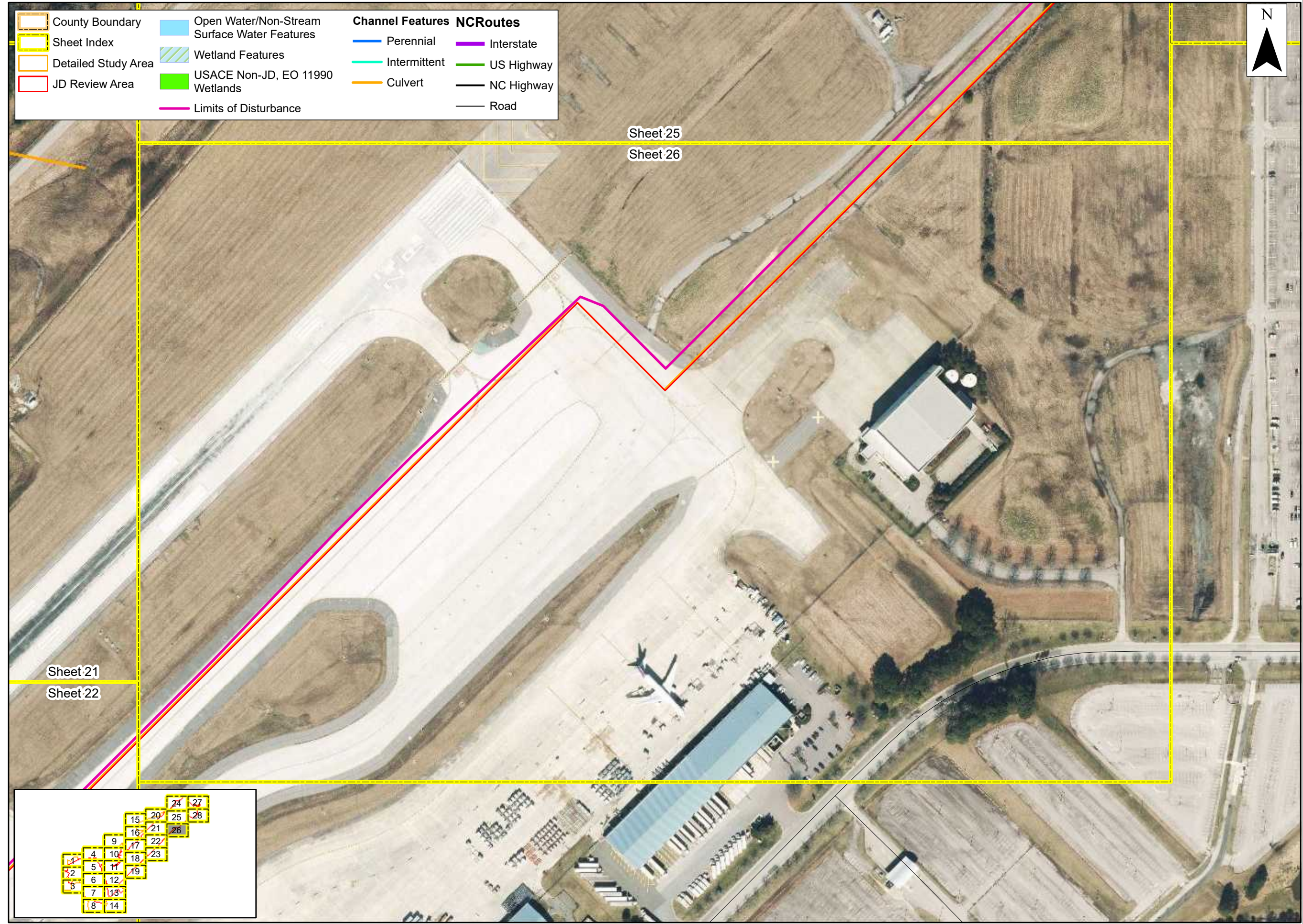
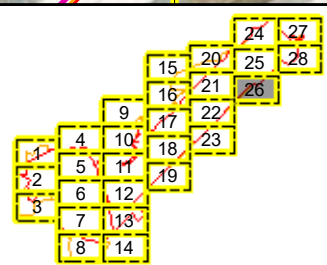
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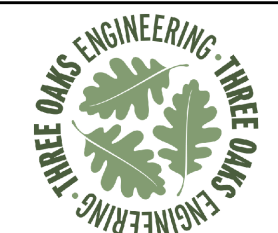
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Sheet 25  
Sheet 26

Sheet 21  
Sheet 22





Prepared For:



**Raleigh-Durham  
International  
Airport**

**Proposed Runway  
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**Wake County,  
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Date: January 2023

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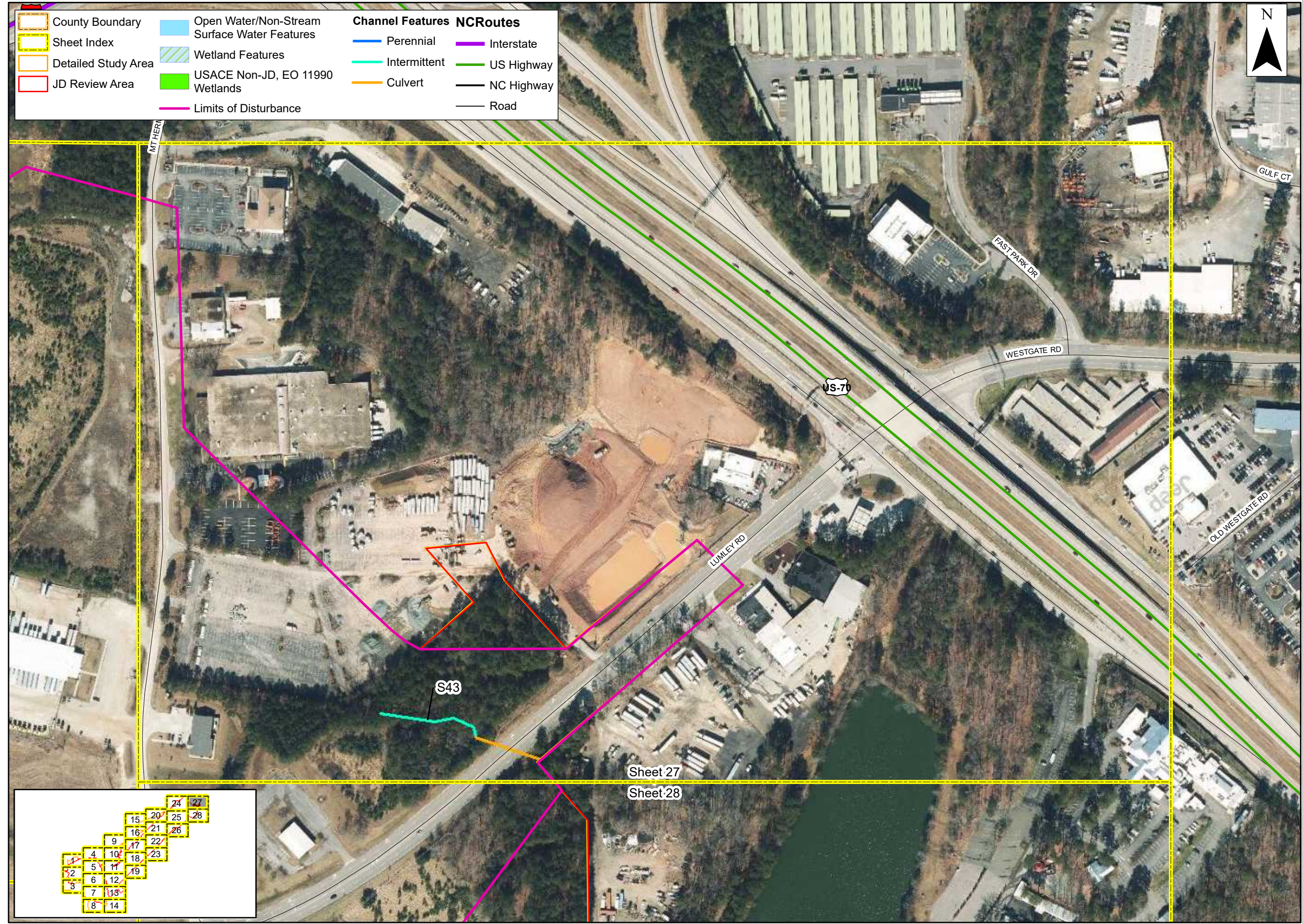
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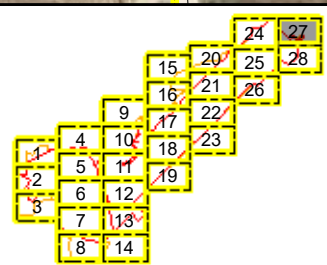
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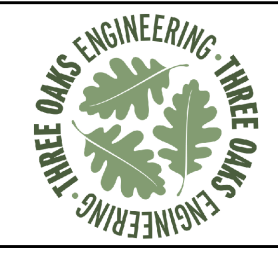
Sheet 27

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Sheet 27  
Sheet 28





Prepared For:



**Raleigh-Durham  
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**Proposed Runway  
5L/23R  
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**Limits of  
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**Wake County,  
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Date: January 2023

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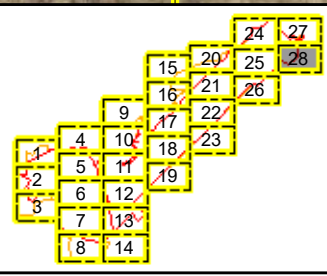
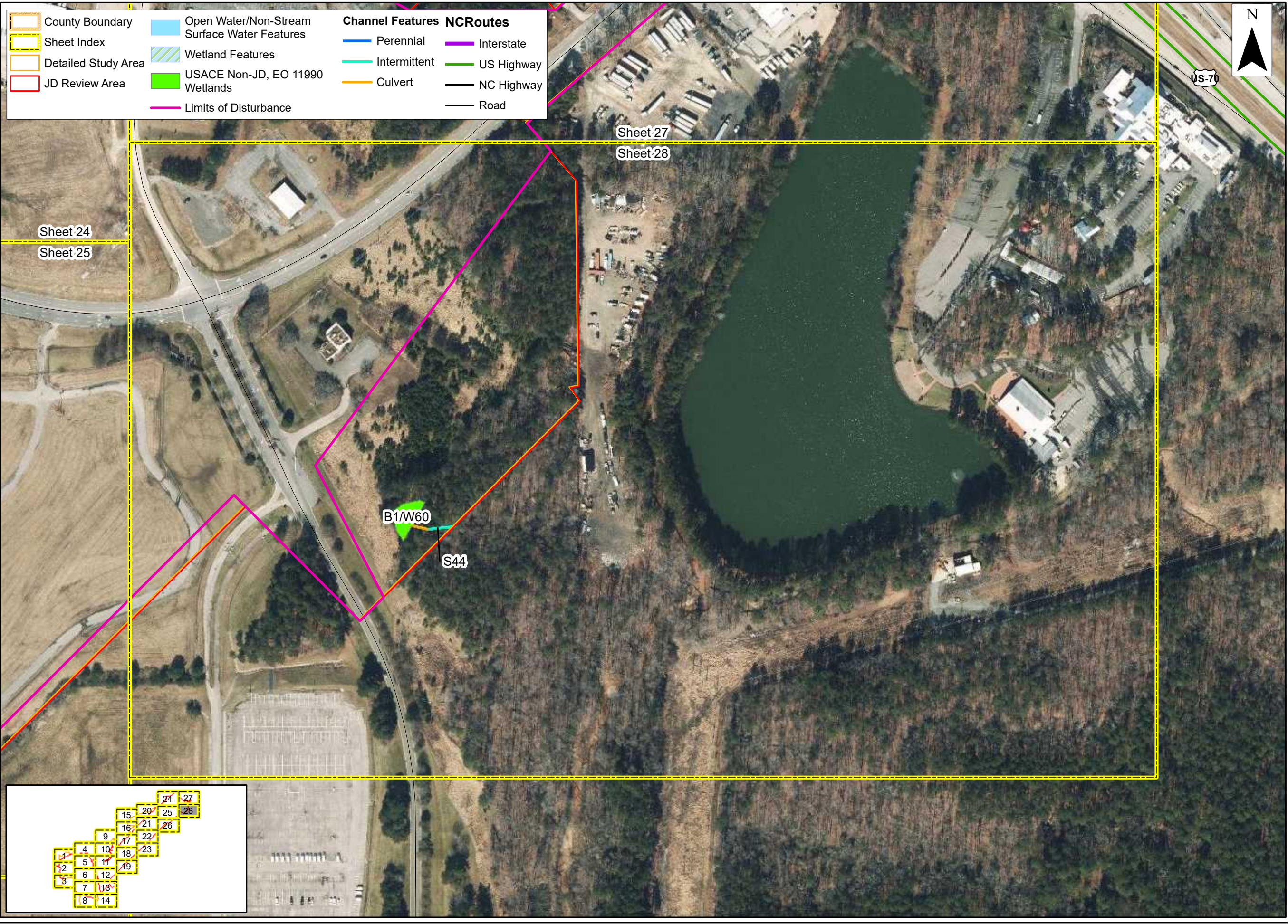
Drawn By: KEMS  
Checked By: NDH

Figure

**1**

Sheet 28

County Boundary	Open Water/Non-Stream Surface Water Features	<b>Channel Features</b>		<b>NCRoutes</b>	
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Detailed Study Area	USACE Non-JD, EO 11990 Wetlands	Intermittent	Culvert	Road	
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**U.S. ARMY CORPS OF ENGINEERS**  
**WILMINGTON DISTRICT**

Action Id. SAW-2022-01559 County: Wake U.S.G.S. Quad: NC-Southeast Durham and Cary

**NOTIFICATION OF JURISDICTIONAL DETERMINATION**

Property Owner: Raleigh-Durham Airport Authority  
Attn: William Sandifer  
Address: 1000 Trade Drive, P.O. Box 80001  
RDU Airport, North Carolina 27623

Size (acres)	<u>~1,218 acre</u>	Nearest Town	<u>Raleigh</u>
Nearest Waterway	<u>Little Brier Creek</u>	River Basin	<u>Neuse</u>
USGS HUC	<u>03020201</u>	Coordinates	Latitude: <u>35.887973</u> Longitude: <u>-78.789154</u>

Location description: The project site is located northwest of the existing Raleigh-Durham International Airport facility, southeast of I-540, between I-40 and US-70. The preliminary jurisdictional determination evaluation area is shown as the red outlined "PJD Review Area" depicted on the attached "Figure 3" exhibits. The approved jurisdictional determination evaluation area is shown as the orange outlined "AJD Review Areas" depicted on the attached "Figure 3" exhibits.

**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 November 2022. 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 wetlandson 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.
- 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

**SAW-2022-01559**

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 and are accurately depicted on the plat signed by the Corps Regulatory Official identified below on DATE. 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 **George Lyle Phillips III at (919) 588-9200 or [George.L.Phillips@usace.army.mil](mailto:George.L.Phillips@usace.army.mil)**.

**C. Basis For Determination: See the preliminary jurisdictional determination form dated 11/22/2022 and the approved jurisdictional determination form dated 11/22/2022.**

**D. Remarks: N/A**

**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)**

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: Mr. Philip A. Shannin  
Administrative Appeal Review Officer  
60 Forsyth Street SW, Floor M9  
Atlanta, Georgia 30303-8803  
**AND**  
**PHILIP.A.SHANNIN@USACE.ARMY.MIL**

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 **1/21/2023**.

**\*\*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: George Lyle Phillips III

Date of Preliminary JD: **11/22/2022**  
Date of Approved JD: **11/22/2022**

Expiration Date of Preliminary JD: **Not applicable**  
Expiration Date of Approved JD: **11/21/2027**



**SAW-2022-01559**

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](http://corpsmapu.usace.army.mil/cm_apex/f?p=136:4:0)

Copy furnished:

**NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND  
REQUEST FOR APPEAL**

Applicant: <u>Raleigh-Durham Airport Authority, Attn: William Sandifer</u>		File Number: <u>SAW-2022-01559</u>	Date: <u>11/22/2022</u>
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 checked="" type="checkbox"/>	PRELIMINARY JURISDICTIONAL DETERMINATION	E	

SECTION I - 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.aspx> or the Corps regulations at 33 CFR Part 331.

**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: George Lyle Phillips III  
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. PHILIP A. SHANNIN  
ADMINISTRATIVE APPEAL REVIEW OFFICER  
CESAD-PDS-O  
60 FORSYTH STREET SOUTHWEST, FLOOR M9  
ATLANTA, GEORGIA 30303-8803**

PHONE: (404) 562-5136; FAX (404) 562-5138  
EMAIL: [PHILIP.A.SHANNIN@USACE.ARMY.MIL](mailto:PHILIP.A.SHANNIN@USACE.ARMY.MIL)

**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.

_____	Date:	Telephone number:
Signature of appellant or agent.		

*For appeals on Initial Proffered Permits send this form to:*

**District Engineer, Wilmington Regulatory Division, Attn: George Lyle Phillips III, 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. Philip Shannin, Administrative Appeal Officer, CESAD-PDO, 60 Forsyth Street, Room 10M15, Atlanta, Georgia 30303-8801  
Phone: (404) 562-5137**

**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):** 11/22/2022

**B. DISTRICT OFFICE, FILE NAME, AND NUMBER:** Wilmington District, Raleigh-Durham International Airport, SAW-2022-01559

**C. PROJECT LOCATION AND BACKGROUND INFORMATION:** The project site is located northwest of the existing Raleigh-Durham International Airport facility, southeast of I-540, between I-40 and US-70. The preliminary jurisdictional determination evaluation area is shown as the red outlined "PJD Review Area" depicted on the attached "Figure 3" exhibits. The approved jurisdictional determination evaluation area is shown as the orange outlined "AJD Review Areas" depicted on the attached "Figure 3" exhibits.

State: NC County/parish/borough: Wake City: Raleigh

Center coordinates of site (lat/long in degree decimal format): Lat. 35.887973 , Long. -78.789154

Universal Transverse Mercator: NAD 83

Name of nearest waterbody: Little Brier Creek

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

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 25 and 26, 2022

**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 not "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):<sup>1</sup>**

TNWs, including territorial seas

Wetlands adjacent to TNWs

Relatively permanent waters<sup>2</sup> (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, wide, and/or acres.

Wetlands: acres.

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

<sup>2</sup> 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).

**c. Limits (boundaries) of jurisdiction based on: Not applicable.**

Elevation of established OHWM (if known):

**2. Non-regulated waters/wetlands (check if applicable):<sup>3</sup>**

- Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain:  
Based on the Corps site visit on August 25 and 26, 2022, the features labeled “P1”, “P2”, “P11”, “P9” and “B2” within the orange outlined “AJD Review Areas” have an ordinary high water mark. However, based on the Corps site visit, these features were constructed entirely in uplands. There are no features with ordinary high water marks or hydric soils above “P1”, “P2”, “P11”, “P9” and “B2” which drain into “P1”, “P2”, “P11”, “P9” and “B2”. Further, there are no features with ordinary high water marks or hydric soils below “P1”, “P2”, “P11”, “P9” and “B2”. As such, per Federal Register pg. 41218, Vol 51, No. 219, 11/13/1986, the features labeled “P1”, “P2”, “P11”, “P9” and “B2” were constructed in uplands are not considered waters of the U.S.

**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 waterbody<sup>4</sup> 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: **Choose an item.**

Drainage area: **Choose an item.**

Average annual rainfall: inches

Average annual snowfall: inches

**(ii) Physical Characteristics:**

**(a) Relationship with TNW:**

- Tributary flows directly into TNW.

<sup>3</sup> Supporting documentation is presented in Section III.F.

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

Tributary flows through **Choose an item.** tributaries before entering TNW.

Project waters are **Choose an item.** river miles from TNW.

Project waters are **Choose an item.** river miles from RPW.

Project waters are **Choose an item.** aerial (straight) miles from TNW.

Project waters are **Choose an item.** aerial (straight) miles from RPW.

Project waters cross or serve as state boundaries. Explain:

Identify flow route to TNW<sup>5</sup>:

Tributary stream order, if known:

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

**Tributary is:**

Natural

Artificial (man-made). Explain:

Manipulated (man-altered). Explain:

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

Average width: feet

Average depth: feet

Average side slopes: **Choose an item..**

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:

Presence of run/riffle/pool complexes. Explain:

Tributary geometry: **Choose an item.**

Tributary gradient (approximate average slope): %

(c) Flow:

Tributary provides for: **Choose an item.**

Estimate average number of flow events in review area/year: **Choose an item.**

Describe flow regime:

Other information on duration and volume:

Surface flow is: **Choose an item..** Characteristics:

Subsurface flow: **Choose an item..** Explain findings:

Dye (or other) test performed:

Tributary has (check all that apply):

Bed and banks

OHWM<sup>6</sup>(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):

<sup>5</sup>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.

<sup>6</sup>A 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.

Discontinuous OHWM.<sup>7</sup> 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:
- oil or scum line along shore objects
  - fine shell or debris deposits (foreshore)
  - physical markings/characteristics
  - tidal gauges
  - other (list):
- Mean High Water Mark indicated by:
- survey to available datum;
  - physical markings;
  - vegetation lines/changes in vegetation types.

**(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:

**(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: acres

Wetland type. Explain:

Wetland quality. Explain:

Project wetlands cross or serve as state boundaries. Explain:

(b) General Flow Relationship with Non-TNW:

Flow is: **Choose an item.** Explain:

Surface flow is: **Choose an item.**

Characteristics:

Subsurface flow: **Choose an item.** 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 **Choose an item.** river miles from TNW.

Project waters are **Choose an item.** aerial (straight) miles from TNW.

Flow is from: **Choose an item.**

Estimate approximate location of wetland as within the **Choose an item.** floodplain.

**(ii) Chemical Characteristics:**

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<sup>7</sup>Ibid.

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: **Choose an item.**  
Approximately acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

<u>Directly abuts? (Y/N)</u>	<u>Size (in acres)</u>	<u>Directly abuts? (Y/N)</u>	<u>Size (in acres)</u>
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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 food webs?
- 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, wide, 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 wide.
- Other non-wetland waters: acres.  
Identify type(s) of waters:

**3. Non-RPWs<sup>8</sup> 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, wide.
- 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: 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.<sup>9</sup>**

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).

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<sup>8</sup>See Footnote # 3.

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

**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):<sup>10</sup>**

- 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:

**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, wide.
- 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): Based on the Corps site visit on August 25 and 26, 2022, the features labeled “P1”, “P2”, “P11”, “P9” and “B2” within the orange outlined “AJD Review Areas” have an ordinary high water mark. However, based on the Corps site visit, these features were constructed entirely in uplands. There are no features with ordinary high water marks or hydric soils above “P1”, “P2”, “P11”, “P9” and “B2” which drain into “P1”, “P2”, “P11”, “P9” and “B2”. Further, there are no features with ordinary high water marks or hydric soils below “P1”, “P2”, “P11”, “P9” and “B2”. As such, per Federal Register pg. 41218, Vol 51, No. 219, 11/13/1986, the features labeled “P1”, “P2”, “P11”, “P9” and “B2” were constructed in uplands are not considered waters of the U.S.

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, wide.
- 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, wide.
- 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: **Three Oaks Engineering, Inc. / Attn: James Mason**

<sup>10</sup>Prior 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.

- 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: **Jurisdictional Features Map Over USGS Topographic (Sheet 1 – Sheet 26) / Southeast Durham and Cary USGS Quad Maps / 1" = 200'**
- USDA Natural Resources Conservation Service Soil Survey. Citation: **USDA-NRCS Soils Map (Sheet 1 – Sheet 26)/ Wake County Soil Survey Sheets 18, 26 and 27 / 1" = 200'**
- 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): **Jurisdictional Features Map over Orthoimagery (Sheet 1 – Sheet 26)**  
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): **Jurisdictional Features Map over LiDAR (Sheet 1 – Sheet 6)**

B. ADDITIONAL COMMENTS TO SUPPORT JD:

**PRELIMINARY JURISDICTIONAL DETERMINATION (PJD) FORM**

**BACKGROUND INFORMATION**

- A. REPORT COMPLETION DATE FOR PJD:** 11/22/2022
- B. NAME AND ADDRESS OF PERSON REQUESTING PJD:** Raleigh-Durham Airport Authority, William Sandifer, 1000 Trade Drive, P.O. Box 80001, RDU Airport, North Carolina 27623
- C. DISTRICT OFFICE, FILE NAME, AND NUMBER:** Wilmington District, Raleigh-Durham International Airport, SAW-2022-01559
- D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:** The project site is located northwest of the existing Raleigh-Durham International Airport facility, southeast of I-540, between I-40 and US-70. The preliminary jurisdictional determination evaluation area is shown as the red outlined "PJD Review Area" depicted on the attached "Figure 3" exhibits. The approved jurisdictional determination evaluation area is shown as the orange outlined "AJD Review Areas" depicted on the attached "Figure 3" exhibits.

**(USE THE TABLE BELOW TO DOCUMENT MULTIPLE AQUATIC RESOURCES AND/OR AQUATIC RESOURCES AT DIFFERENT SITES)**

State: NC County: Wake City: Raleigh  
 Center coordinates of site (lat/long in degree decimal format): Latitude: 35.887973 Longitude: -78.789154

Universal Transverse  
 Mercator: NAD 83

Name of nearest waterbody: Little Brier  
 Creek

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

- Office (Desk) Determination. Date:
- Field Determination. Date(s): August 25 and 26, 2022

**TABLE OF AQUATIC RESOURCES IN REVIEW AREA WHICH "MAY BE" SUBJECT TO REGULATORY JURISDICTION**

Site Number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resources in review area (acreage and linear feet, if applicable)	Type of aquatic resources (i.e., wetland vs. non-wetland waters)	Geographic authority to which the aquatic resource "may be" subject (i.e., Section 404 or Section 10/404)
S1	35.880402	-78.819422	1967	Non-wetland waters	Section 404
S2-I	35.881422	-78.817365	191	Non-wetland waters	Section 404
S2-P	35.881346	-78.817685	29	Non-wetland waters	Section 404
S3	35.880601	-78.820048	160	Non-wetland waters	Section 404

S4	35.880390	-78.820462	226	Non-wetland waters	Section 404
S6	35.874702	-78.820067	28	Non-wetland waters	Section 404
S9-I	35.878698	-78.812663	984	Non-wetland waters	Section 404
S9-P	35.877474	-78.811383	455	Non-wetland waters	Section 404
S12	35.875862	-78.812684	966	Non-wetland waters	Section 404
S13	35.873364	-78.812543	391	Non-wetland waters	Section 404
S14	35.871561	-78.811693	173	Non-wetland waters	Section 404
S15	35.870336	-78.812079	40	Non-wetland waters	Section 404
S20	35.876999	-78.805407	324	Non-wetland waters	Section 404
S21	35.878793	-78.802000	609	Non-wetland waters	Section 404
S22	35.878629	-78.801619	110	Non-wetland waters	Section 404
S23	35.880954	-78.799945	378	Non-wetland waters	Section 404
S24	35.883829	-78.800387	163	Non-wetland waters	Section 404
S25-I	35.882641	-78.794585	431	Non-wetland waters	Section 404
S25-P	35.884483	-78.796711	461	Non-wetland waters	Section 404
S26-I	35.884582	-78.791410	249	Non-wetland waters	Section 404
S26-P	35.885196	-78.795444	1700	Non-wetland waters	Section 404
S30	35.888468	-78.791941	438	Non-wetland waters	Section 404
S33	35.891235	-78.789670	167	Non-wetland waters	Section 404
S34	35.891582	-78.787793	1089	Non-wetland waters	Section 404
S35	35.891734	-78.785821	187	Non-wetland waters	Section 404
S37	35.891385	-78.783644	416	Non-wetland waters	Section 404
S39-I	35.893530	-78.783537	874	Non-wetland waters	Section 404

S39-P	35.892738	-78.786800	659	Non-wetland waters	Section 404
S40	35.898169	-78.778397	160	Non-wetland waters	Section 404
S41-I	35.898698	-78.777710	229	Non-wetland waters	Section 404
S41-P	35.898398	-78.778631	432	Non-wetland waters	Section 404
S42	35.900973	-78.776137	881	Non-wetland waters	Section 404
S43	35.899548	-78.769747	267	Non-wetland waters	Section 404
S44	35.896483	-78.769594	67	Non-wetland waters	Section 404
S45	35.876982	-78.802411	84	Non-wetland waters	Section 404
S46	35.892116	-78.784625	14	Non-wetland waters	Section 404
W2	35.881350	-78.817836	0.01	Wetland waters	Section 404
W3	35.880967	-78.880967	0.01	Wetland waters	Section 404
W5	35.879225	-78.821942	0.01	Wetland waters	Section 404
W8	35.874857	-78.819975	0.04	Wetland waters	Section 404
W11	35.881209	-78.814498	0.07	Wetland waters	Section 404
W12	35.880712	-78.813917	0.11	Wetland waters	Section 404
W13	35.879687	-78.813391	0.17	Wetland waters	Section 404
W14	5.878338	-78.809524	2.25	Wetland waters	Section 404
W15	35.877178	-78.810663	0.05	Wetland waters	Section 404
W16	35.876819	-78.815260	0.07	Wetland waters	Section 404
W17	35.876937	-78.810639	0.01	Wetland waters	Section 404
W18	35.876776	-78.810508	0.02	Wetland waters	Section 404
W19	35.876545	-78.810387	0.07	Wetland waters	Section 404
W20	35.876259	-78.810399	0.02	Wetland waters	Section 404

W21	35.875644	-78.809918	0.15	Wetland waters	Section 404
W22	35.874881	-78.810695	0.08	Wetland waters	Section 404
W23	35.874599	-78.809984	0.03	Wetland waters	Section 404
W24	35.873482	-78.809985	0.04	Wetland waters	Section 404
W25	35.873007	-78.810553	0.17	Wetland waters	Section 404
W26	35.873919	-78.813376	0.23	Wetland waters	Section 404
W27	35.873142	-78.812145	0.31	Wetland waters	Section 404
W28	35.873011	-78.811445	0.23	Wetland waters	Section 404
W30	35.871468	-78.811446	0.01	Wetland waters	Section 404
W31	35.870368	-78.811802	0.05	Wetland waters	Section 404
W35	35.882852	-78.806959	0.54	Wetland waters	Section 404
W36	35.877562	-78.804721	0.2	Wetland waters	Section 404
W37	35.877130	-78.805219	0.01	Wetland waters	Section 404
W38	35.878496	-78.801429	0.02	Wetland waters	Section 404
W39	35.878948	-78.802226	0.19	Wetland waters	Section 404
W40	35.879570	-78.803029	0.31	Wetland waters	Section 404
W41	35.880926	-78.799323	0.2	Wetland waters	Section 404
W42	35.884666	-78.793979	0.12	Wetland waters	Section 404
W43	35.884954	-78.796264	0.98	Wetland waters	Section 404
W44	35.885157	-78.798067	2.53	Wetland waters	Section 404
W49	35.890003	-78.787458	0.03	Wetland waters	Section 404
W55	35.896980	-78.782151	0.07	Wetland waters	Section 404
W57	35.899362	-78.775110	0.26	Wetland waters	Section 404

W59	35.882772	-78.795344	0.11	Wetland waters	Section 404
Brier Creek Reservoir	35.872327	-78.808666	133.3	Non-wetland waters	Section 404
Little Brier Creek Reservoir	35.880468	-78.805613	0.01	Non-wetland waters	Section 404
P5	35.879142	-78.802567	0.29	Non-wetland waters	Section 404
P10	35.897144	-78.781511	1.7	Non-wetland waters	Section 404



1. The Corps of Engineers believes that there may be jurisdictional aquatic resources in the review area, and the requestor of this PJD is hereby advised of his or her option to request and obtain an approved JD (AJD) for that review area based on an informed decision after having discussed the various types of JDs and their characteristics and circumstances when they may be appropriate.
2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre- construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an AJD for the activity, the permit applicant is hereby made aware that: (1) the permit applicant has elected to seek a permit authorization based on a PJD, which does not make an official determination of jurisdictional aquatic resources; (2) the applicant has the option to request an AJD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an AJD could possibly result in less compensatory mitigation being required or different special conditions; (3) the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) undertaking any activity in reliance upon the subject permit authorization without requesting an AJD constitutes the applicant's acceptance of the use of the PJD; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a PJD constitutes agreement that all aquatic resources in the review area affected in any way by that activity will be treated as jurisdictional, and waives any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an AJD or a PJD, the JD will be processed as soon as practicable. Further, an AJD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331. If, during an administrative appeal, it becomes appropriate to make an official determination whether geographic jurisdiction exists over aquatic resources in the review area, or to provide an official delineation of jurisdictional aquatic resources in the review area, the Corps will provide an AJD to accomplish that result, as soon as is practicable. This PJD finds that there "*may be*" waters of the U.S. and/or that there "*may be*" navigable waters of the U.S. on the subject review area, and identifies all aquatic features in the review area that could be affected by the proposed activity, based on the following information:

**SUPPORTING DATA. Data reviewed for PJD (check all that apply)**


Checked items should be included in subject file. Appropriately reference sources below where indicated for all checked items:

- Maps, plans, plots or plat submitted by or on behalf of the PJD requestor:  
Map: Vicinity Map, Topo Map, Aerial Map, LiDAR Map, Soils Map, Buffer Map, Historic Aerial Maps, Construction Plan Maps
- Data sheets prepared/submitted by or on behalf of the PJD requestor.
  - Office concurs with data sheets/delineation report.
  - Office does not concur with data sheets/delineation report. Rationale: \_\_\_\_\_
- Data sheets prepared by the Corps: \_\_\_\_\_
- Corps navigable waters' study: \_\_\_\_\_
- U.S. Geological Survey Hydrologic Atlas: \_\_\_\_\_
  - USGS NHD data. 1:24,000 1954 Durham South
  - USGS 8 and 12 digit HUC maps. 1:24,000 1987 Southeast Durham
- U.S. Geological Survey map(s). Cite scale & quad name: 1:24,000 1987 Southeast Durham
- Natural Resources Conservation Service Soil Survey. Citation: 1970 Wake County Soil Survey
- 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): NCOneMap Orthoimagery (Latest and Historic)  
or  Other (Name & Date): \_\_\_\_\_
- Previous determination(s). File no. and date of response letter: \_\_\_\_\_
- Other information (please specify): Jurisdictional Features Map over LiDAR (Sheet 1 - Sheet 6)

**IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.**

*George Lyle Phillips III*

Signature and date of  
Regulatory staff member 11/22/2022  
completing PJD

  
Signature and date of EXECUTIVE J.P. FCO  
person requesting PJD RDOAA  
(REQUIRED, unless obtaining 11/16/2022  
the signature is impracticable)<sup>1</sup>

<sup>1</sup> Districts may establish timeframes for requestor to return signed PJD forms. If the requestor does not respond within the established time frame, the district may presume concurrence and no additional follow up is necessary prior to finalizing an action.



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**Raleigh-Durham International Airport  
Proposed Runway 5L/23R Replacement  
Jurisdictional Determination  
Sheet Index Map**

Wake County,  
North Carolina

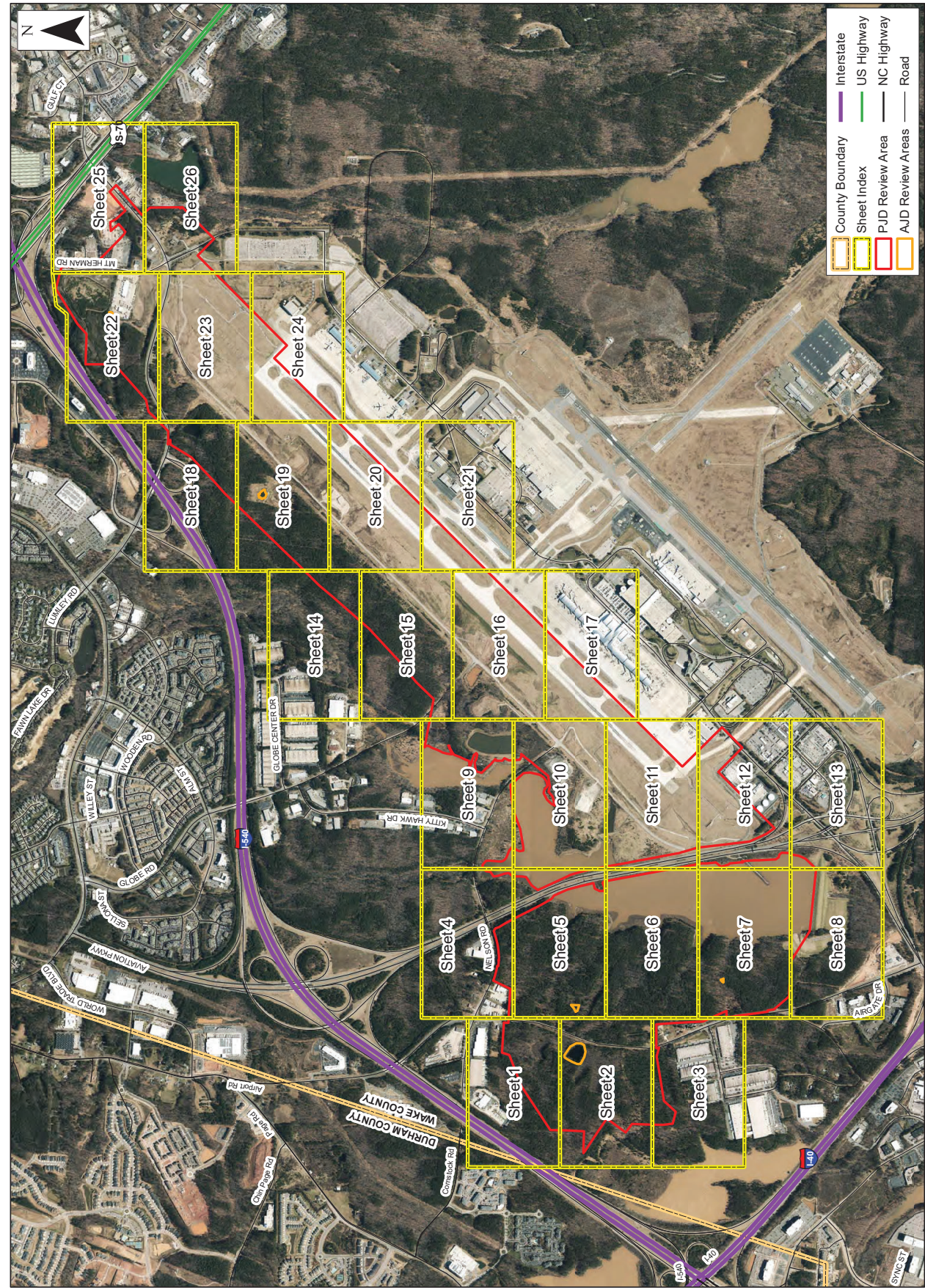
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Job No.: 19-018

Drawn By: KEMS  
Checked By: NDH

Figure  
**3**





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**Raleigh-Durham  
International  
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**Proposed Runway  
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**Jurisdictional  
Features Map  
over**

**Orthoimagery  
Wake County,  
North Carolina**

Date: November 2022

Scale: 0 100 200 FT

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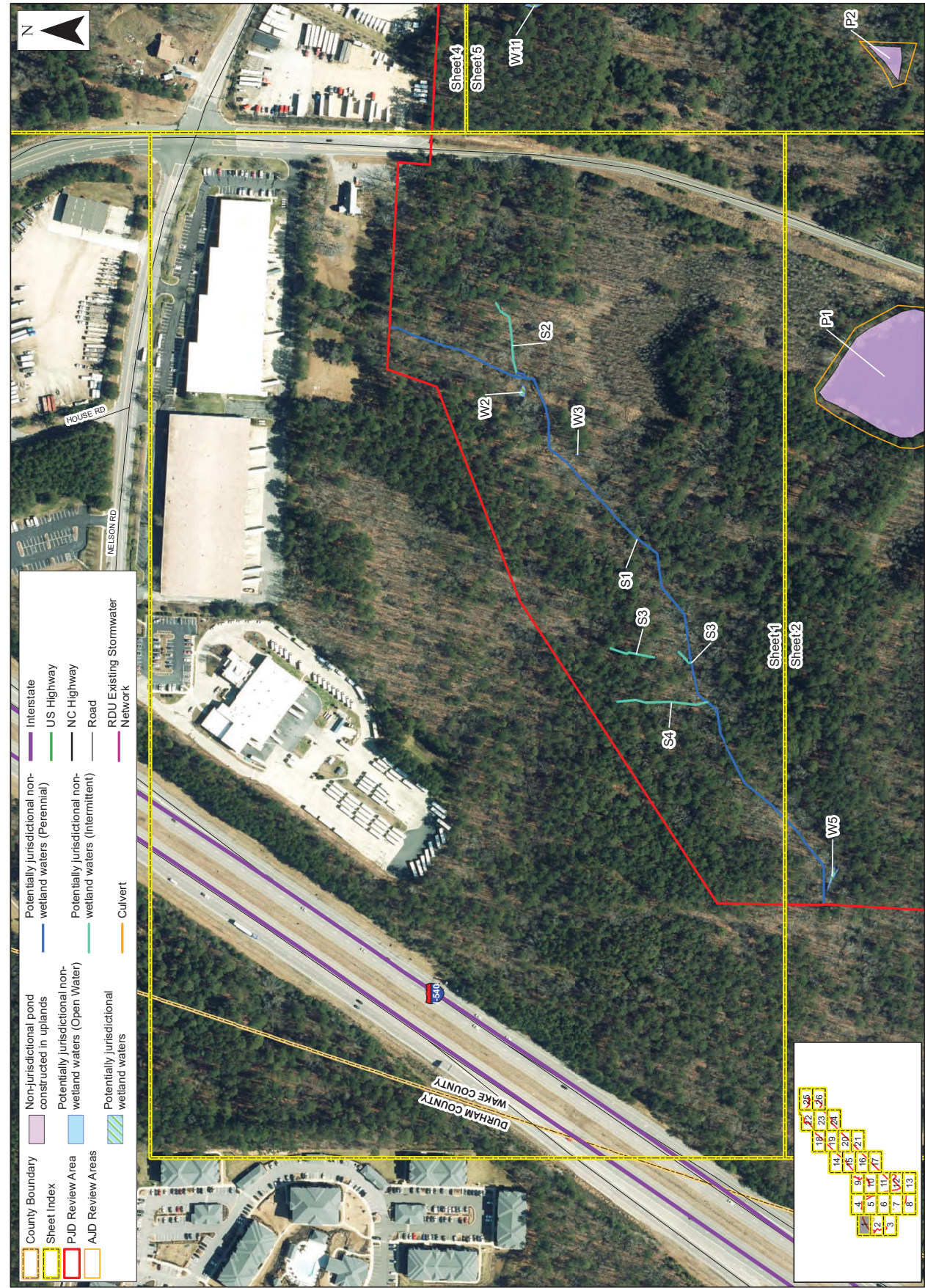
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Figure

**3**

Sheet 1





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Features Map  
over  
Orthoimagery**  
Wake County,  
North Carolina

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Scale: 0 100 200 FT

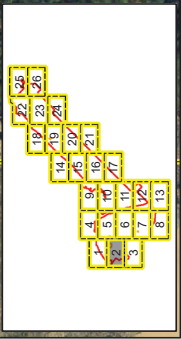
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Sheet 2





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Sheet 3





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Wake County,  
North Carolina

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Scale: 0 100 200 FT

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Figure

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Sheet 4



	County Boundary		Interstate
	Sheet Index		Potentially jurisdictional non-wetland waters (Perennial)
	PJD Review Area		Potentially jurisdictional non-wetland waters (Intermittent)
	AJD Review Areas		Culvert
			Potentially jurisdictional non-wetland waters (Open Water)
			Potentially jurisdictional wetland waters
			Road
			RDU Existing Stormwater Network



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Proposed Runway Replacement 5L/23R

Jurisdictional Determination Post-JD Site Visit

Jurisdictional Features Map over Orthoimagery Wake County, North Carolina

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Scale: 0 100 200 FT

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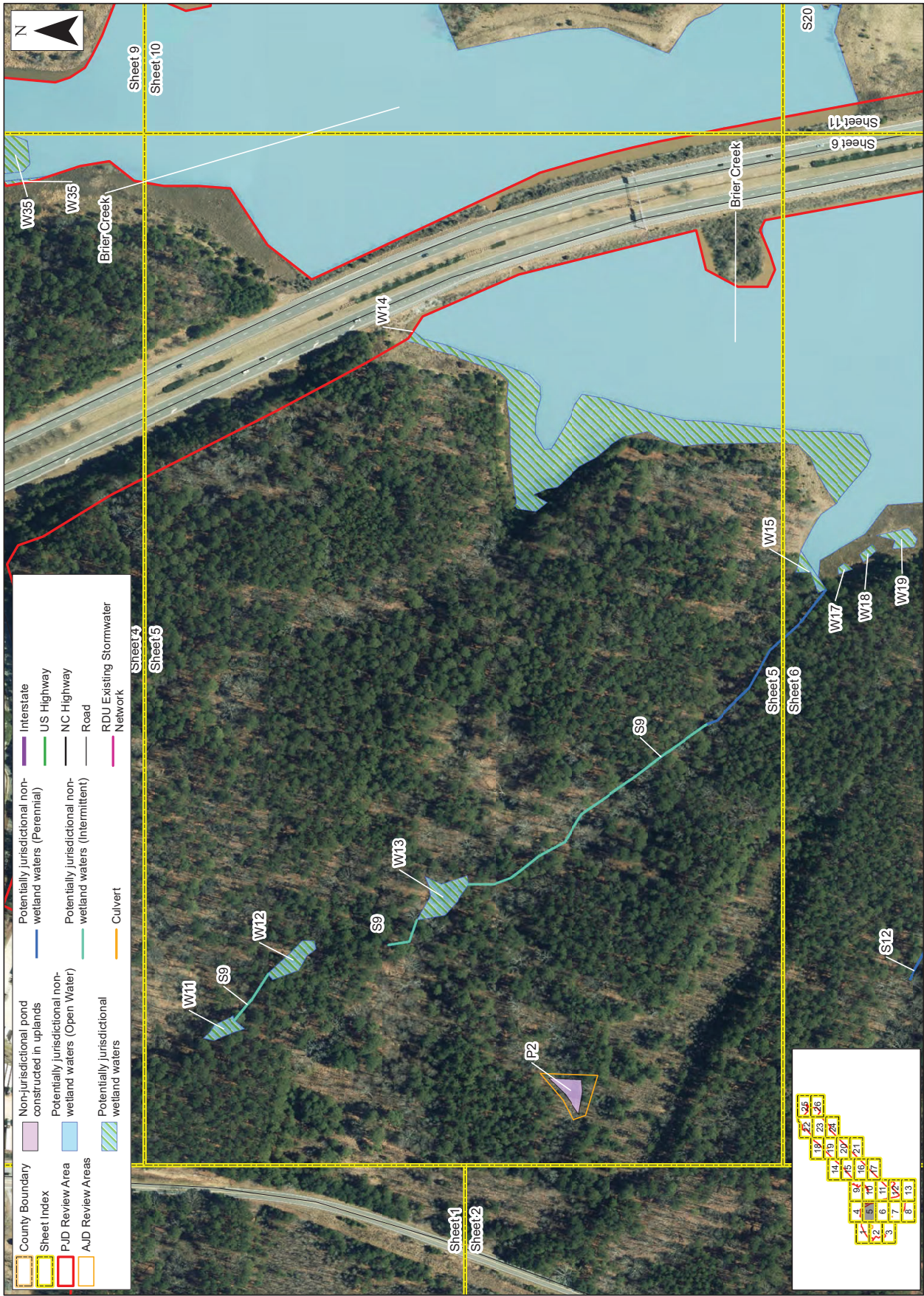
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Figure

3

Sheet 5







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**Raleigh-Durham International Airport**  
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**Jurisdictional Determination**  
**Post-JD Site Visit**  
**Jurisdictional Features Map over Orthomagey**  
 Wake County, North Carolina

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Scale: 0 100 200 FT

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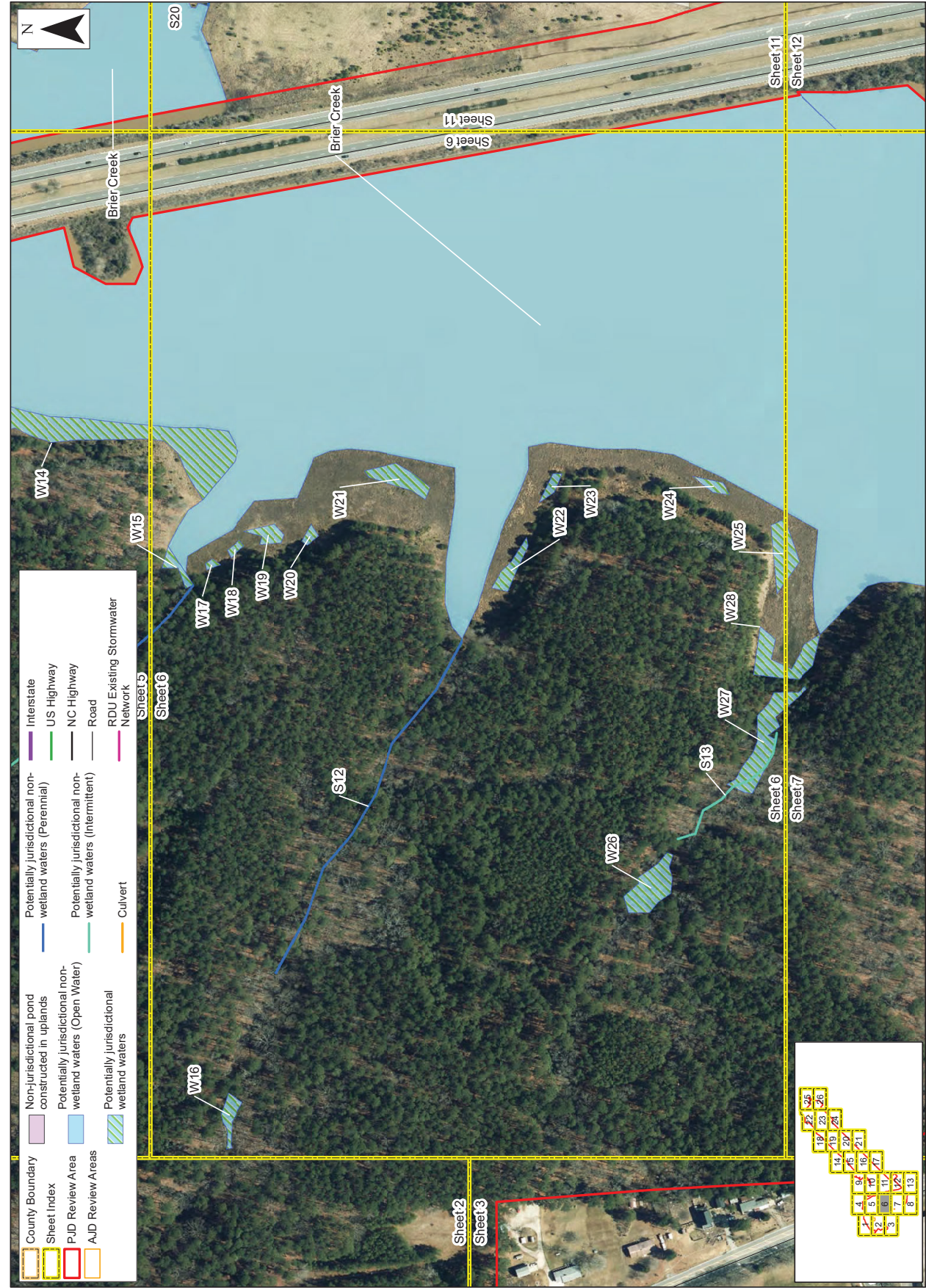
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Figure

**3**

Sheet 6





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**Raleigh-Durham  
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**Proposed Runway  
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over**

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North Carolina**

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Scale: 0 100 200 FT

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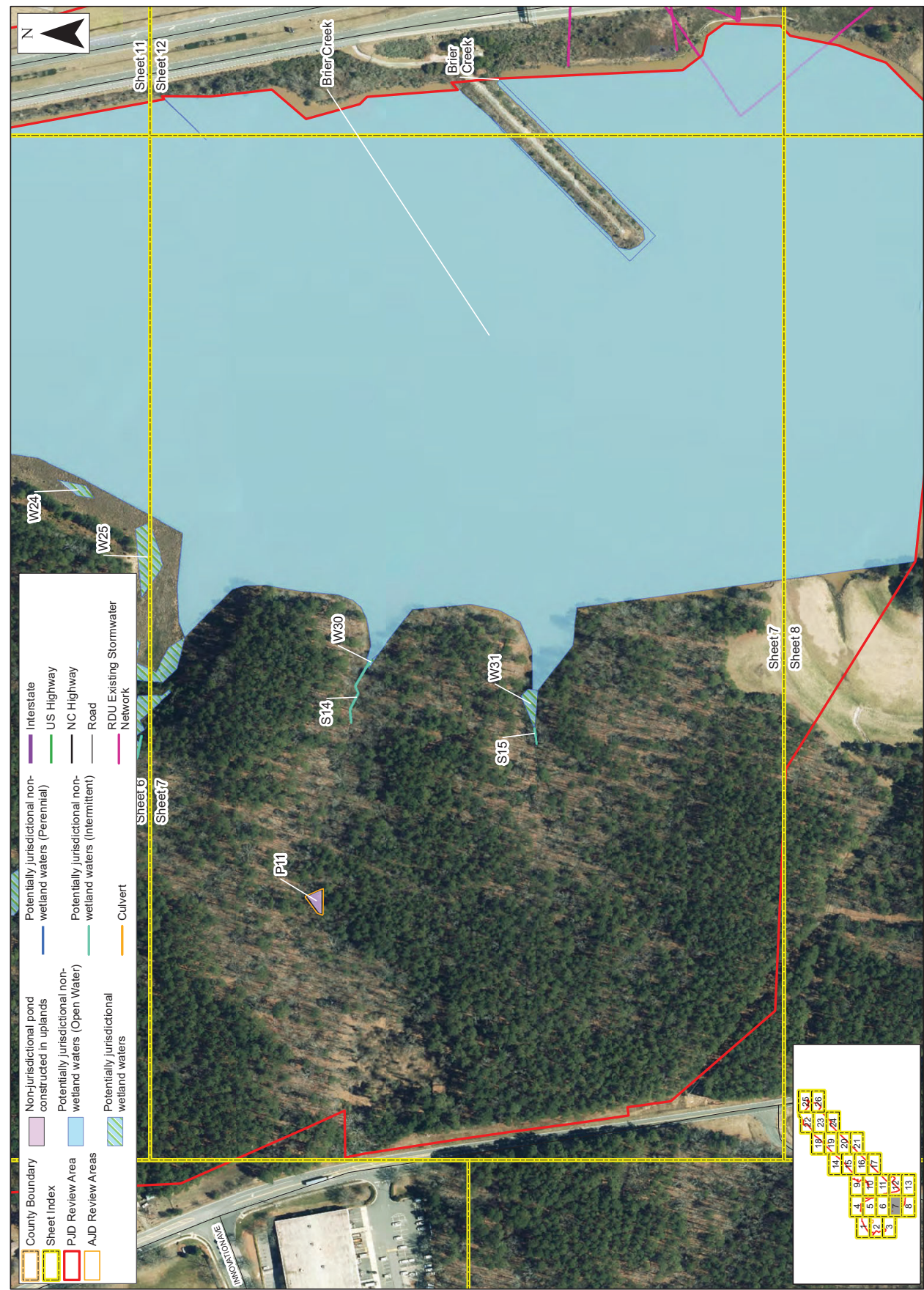
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Checked By: NDH

Figure

**3**

Sheet 7



- |                  |  |            |  |
|------------------|--|------------|--|
| County Boundary  | Non-jurisdictional pond constructed in uplands             | Interstate | Potentially jurisdictional non-wetland waters (Perennial)    |
| Sheet Index      | Potentially jurisdictional non-wetland waters (Open Water) | US Highway | Potentially jurisdictional non-wetland waters (Intermittent) |
| PJD Review Area  | Potentially jurisdictional wetland waters                  | NC Highway | Culvert  |
| AJD Review Areas | Potentially jurisdictional wetland waters                  | Road       | RDU Existing Stormwater Network                              |





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over  
Orthoimagery**

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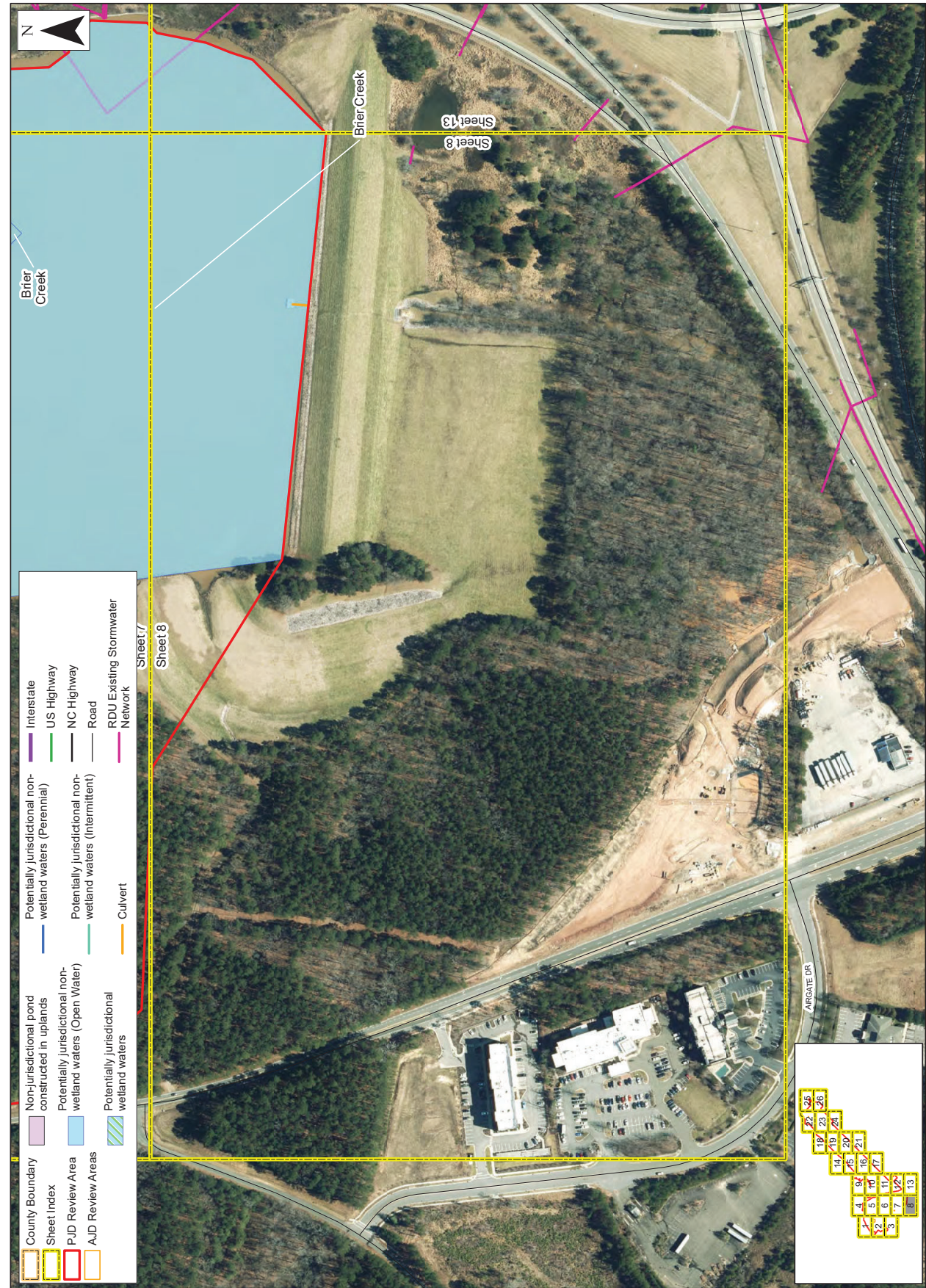
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**3**

Sheet 8





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**Raleigh-Durham International Airport**  
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**Jurisdictional Determination Post-JD Site Visit**  
**Jurisdictional Features Map over Orthomagey**  
 Wake County, North Carolina

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Scale: 0 100 200 FT

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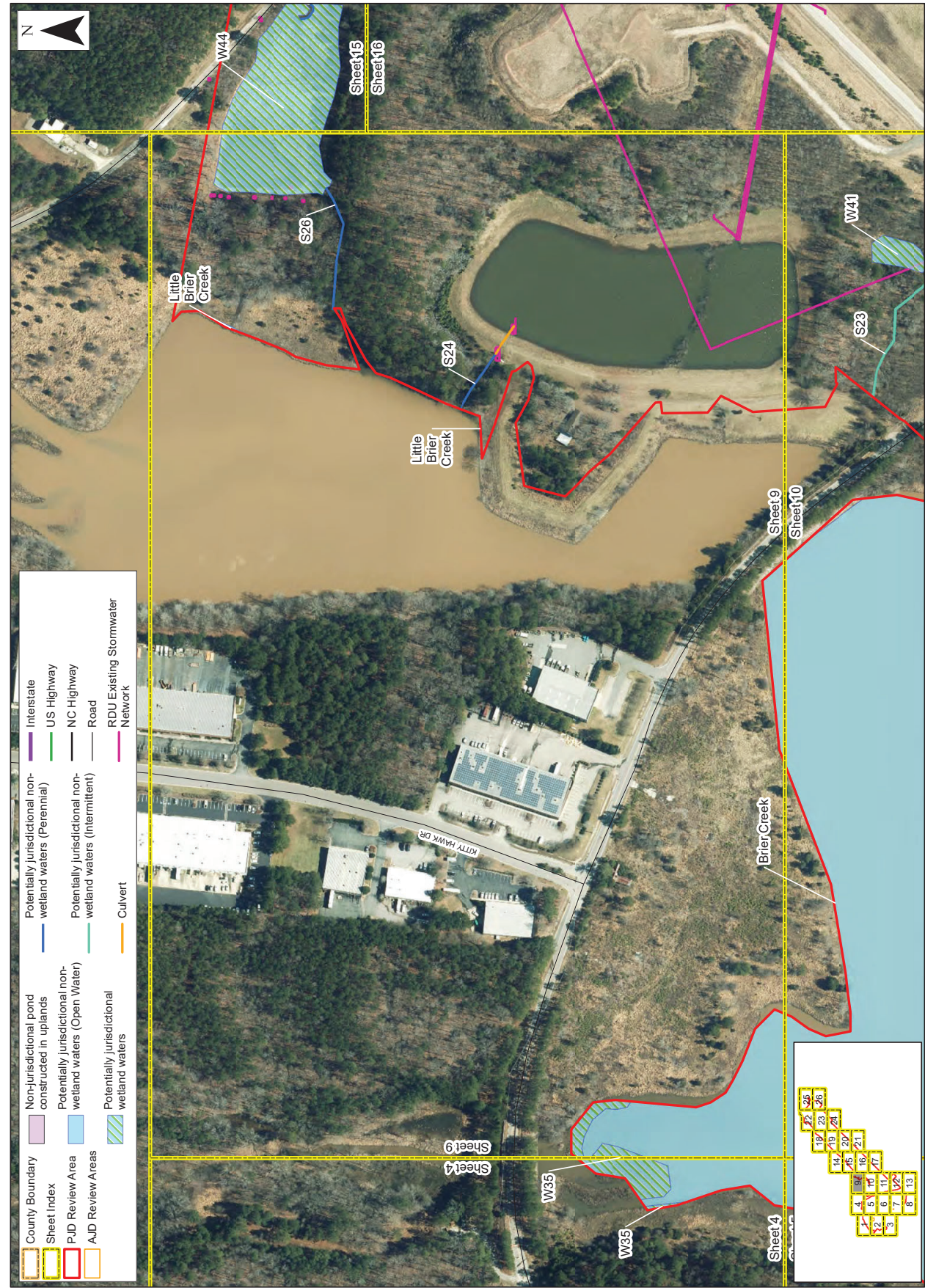
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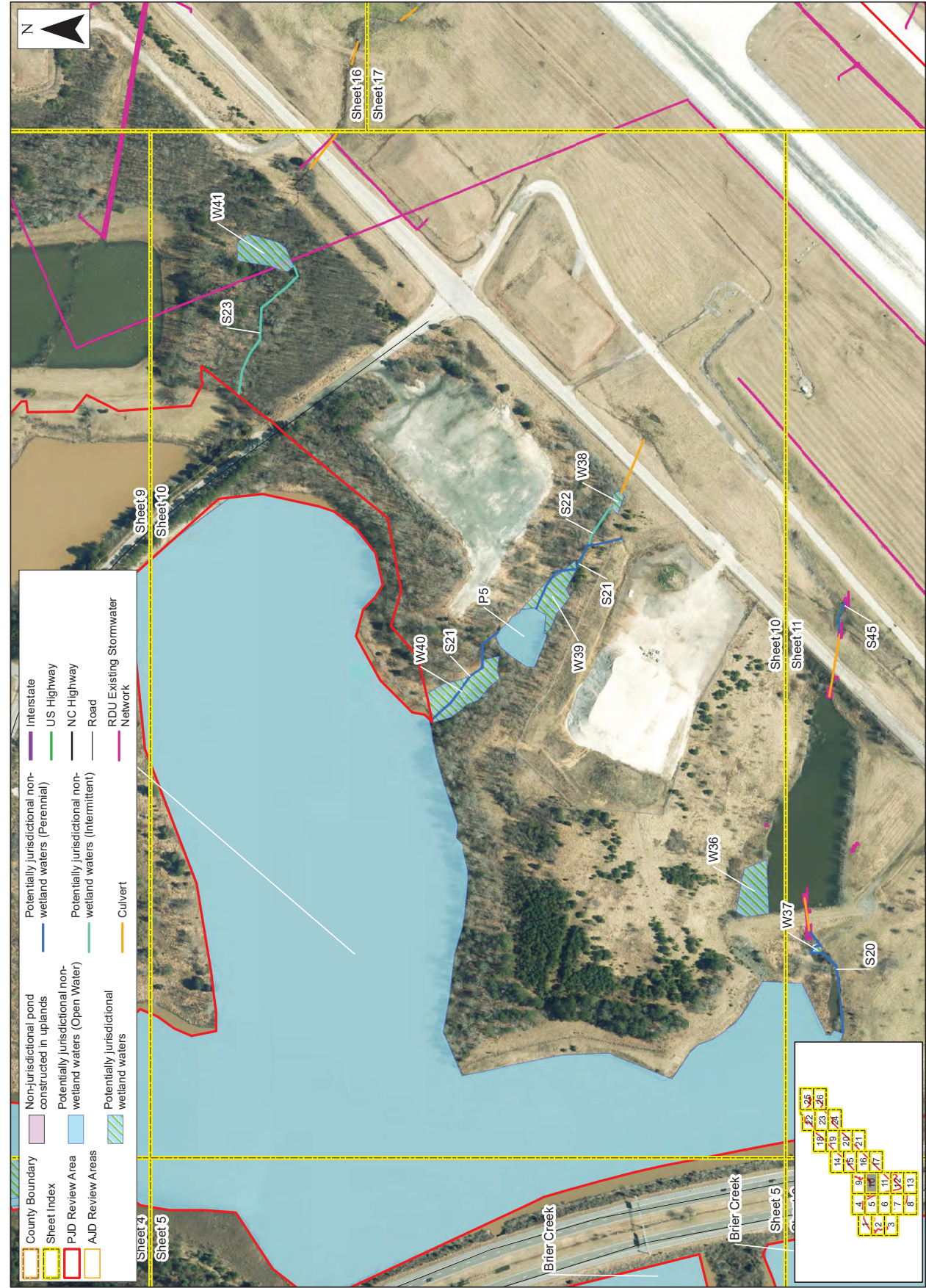
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Figure

**3**

Sheet 10



- County Boundary
- Sheet Index
- PJD Review Area
- AJD Review Areas
- Non-jurisdictional pond constructed in uplands
- Potentially jurisdictional non-wetland waters (Open Water)
- Potentially jurisdictional wetland waters
- Potentially jurisdictional non-wetland waters (Perennial)
- Potentially jurisdictional non-wetland waters (Intermittent)
- Culvert
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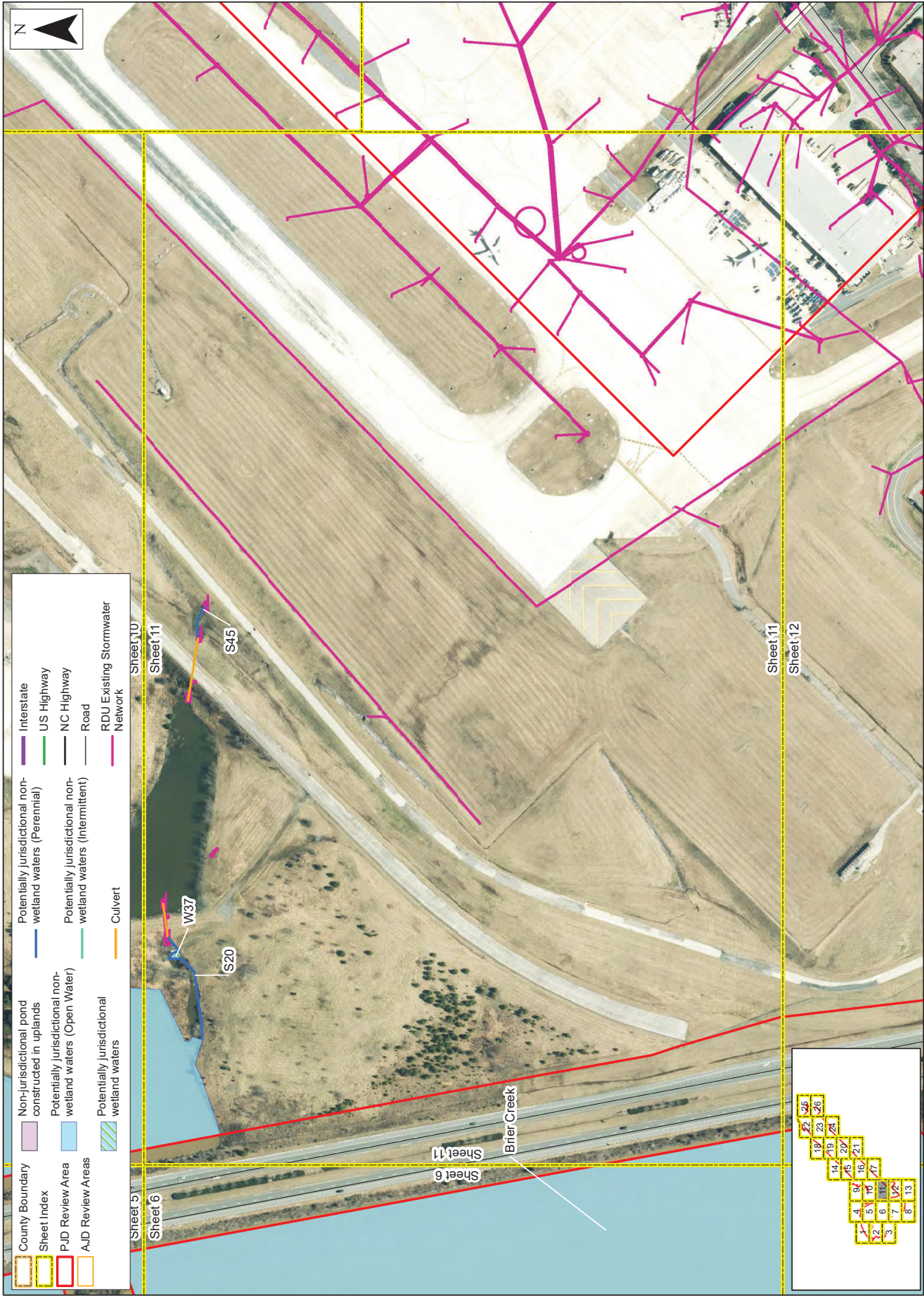
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Figure

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Sheet 11



- County Boundary
- Sheet Index
- PJD Review Area
- AJD Review Areas
- Non-jurisdictional pond constructed in uplands
- Potentially jurisdictional non-wetland waters (Open Water)
- Potentially jurisdictional wetland waters
- Potentially jurisdictional non-wetland waters (Perennial)
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over  
Orthoimagery**

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Scale: 0 100 200 FT

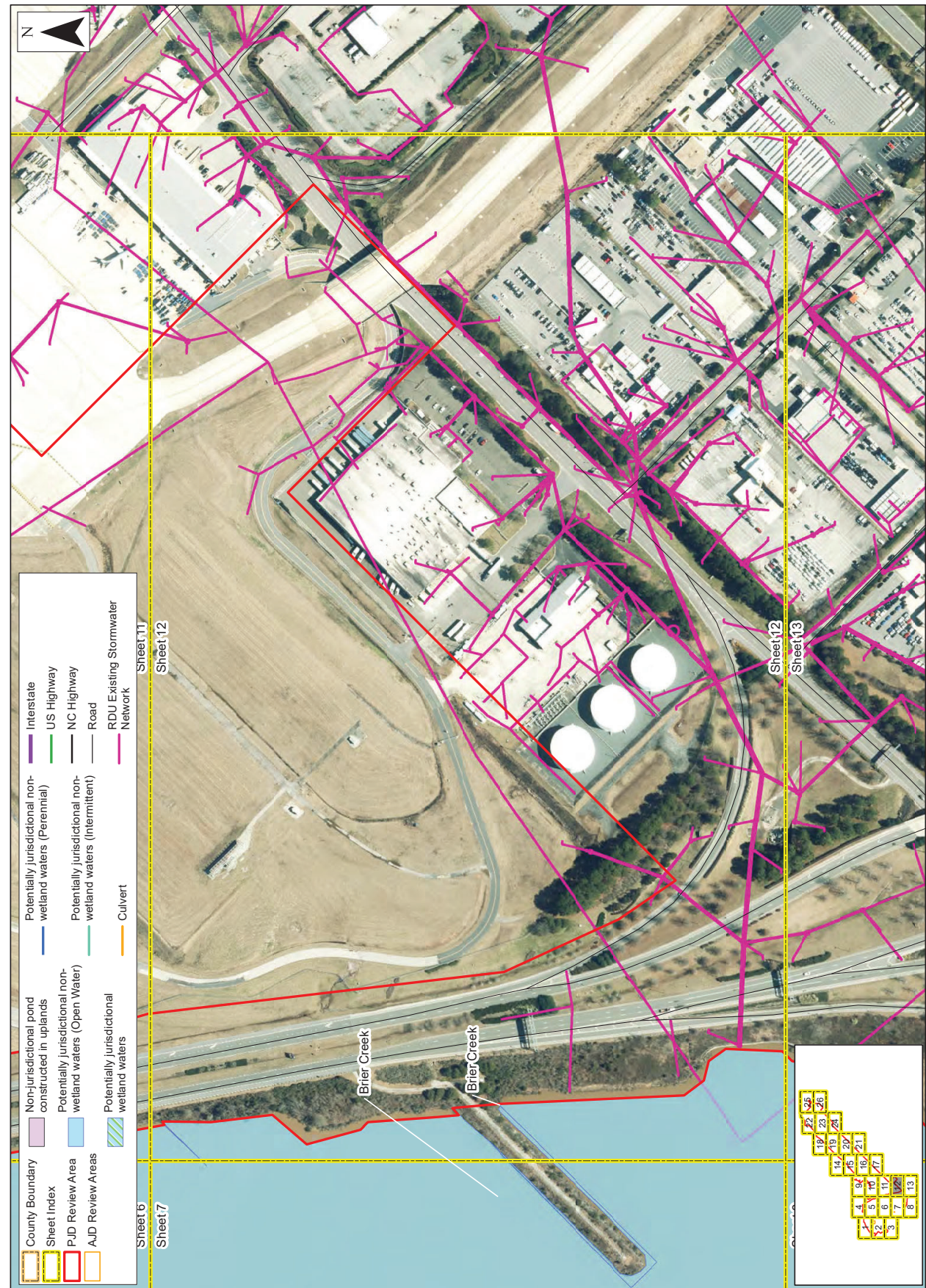
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Sheet 12





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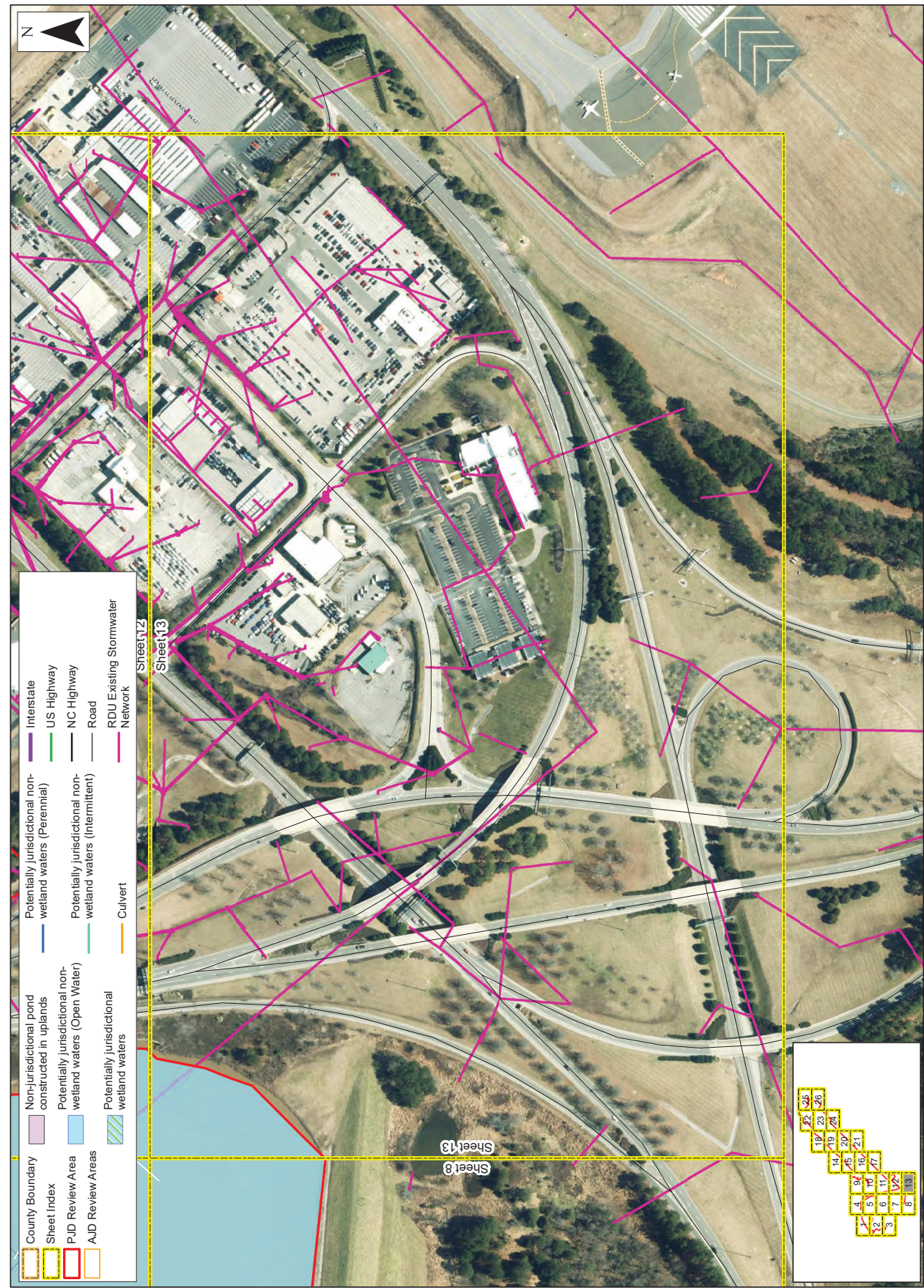
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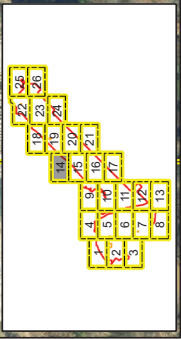
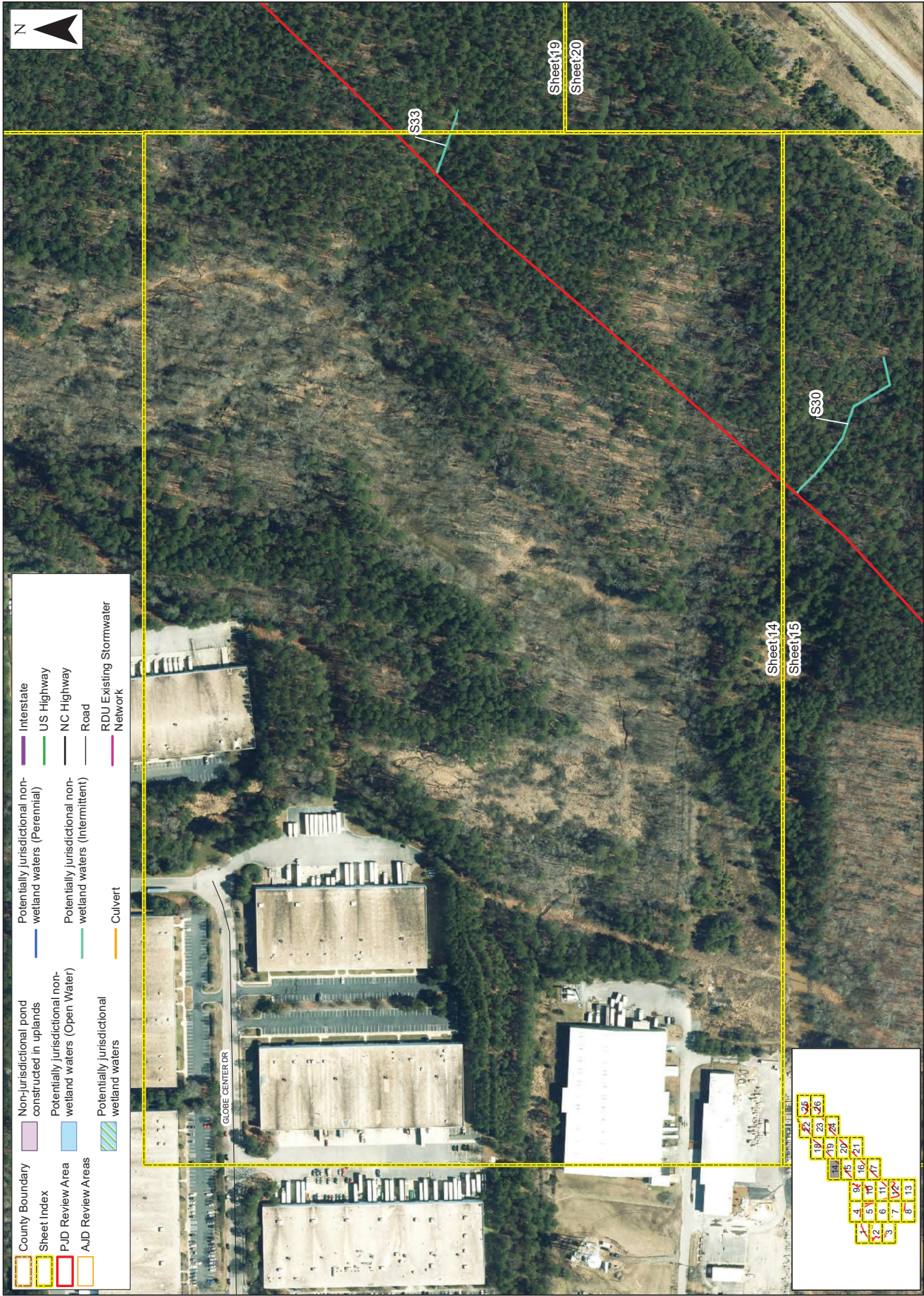
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Figure  
**3**

Sheet 14



- |                  |  |                                 |
|------------------|--|---------------------------------|
| County Boundary  | Potentially jurisdictional non-wetland waters (Perennial)    | Interstate                      |
| Sheet Index      | Potentially jurisdictional non-wetland waters (Intermittent) | US Highway                      |
| PJD Review Area  | Potentially jurisdictional wetland waters                    | NC Highway                      |
| AJD Review Areas | Culvert  | Road                            |
|                  | Non-jurisdictional pond constructed in uplands               | RDU Existing Stormwater Network |
|                  | Potentially jurisdictional non-wetland waters                |                                 |







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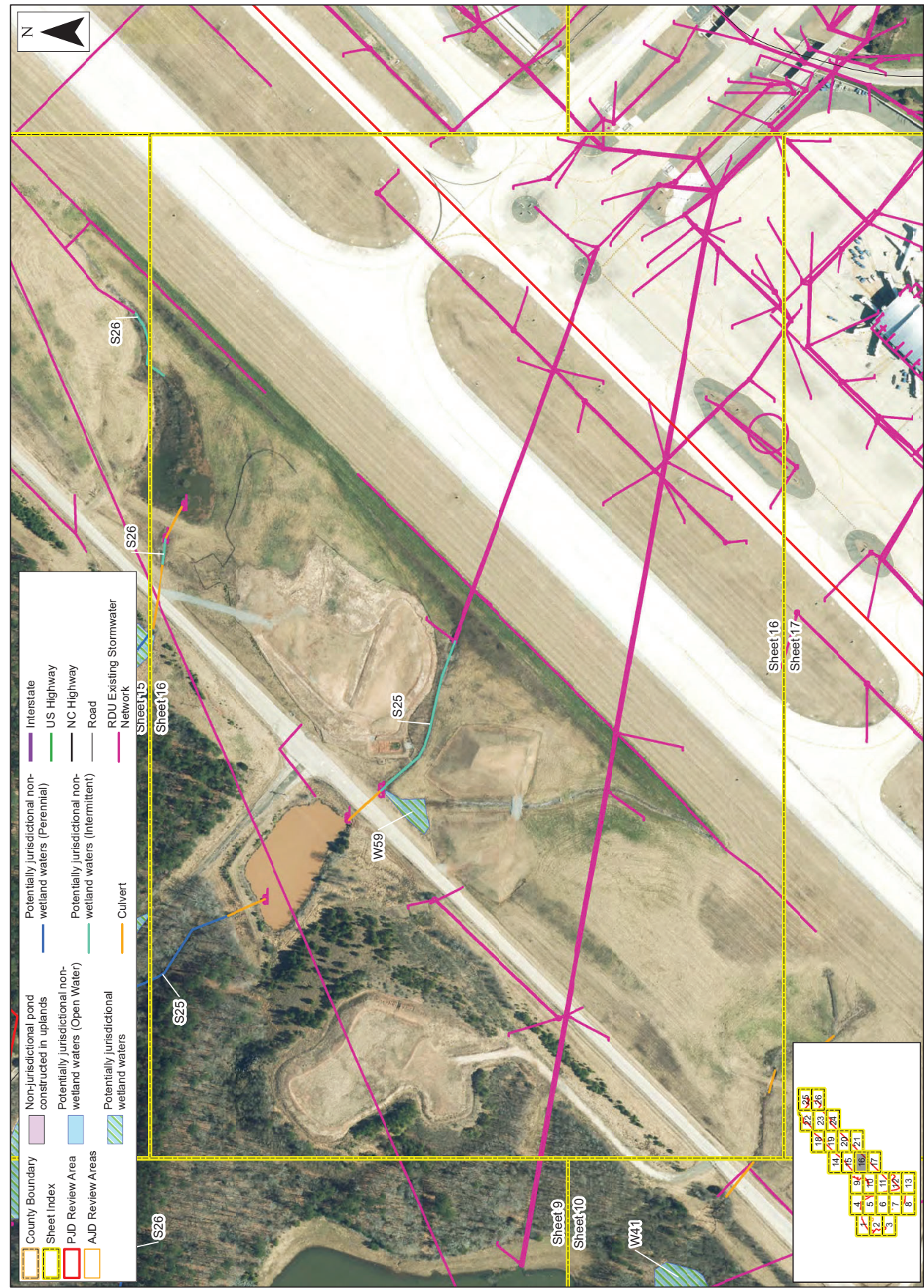
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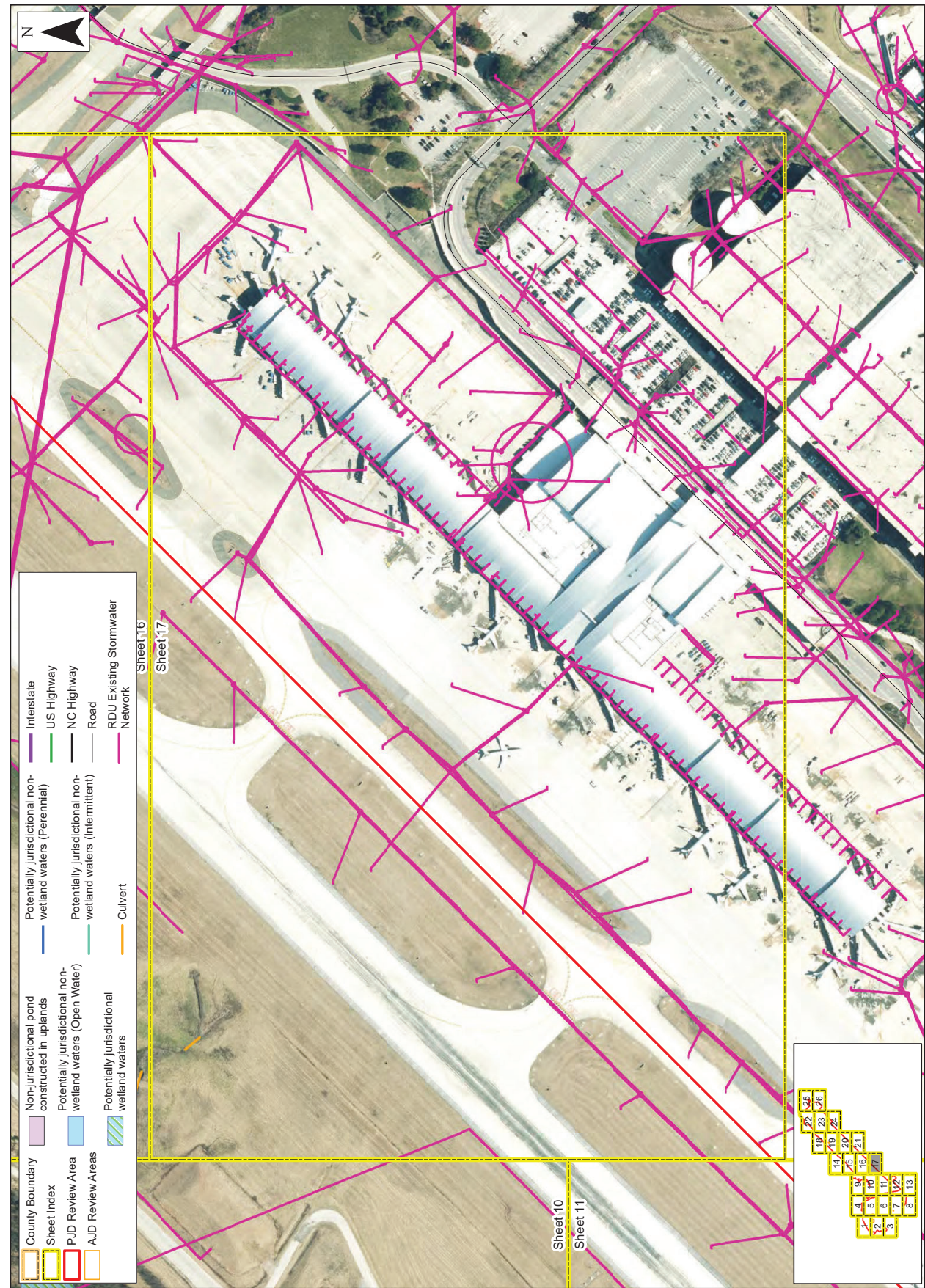
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Raleigh-Durham International Airport

Proposed Runway 5L/23R Replacement

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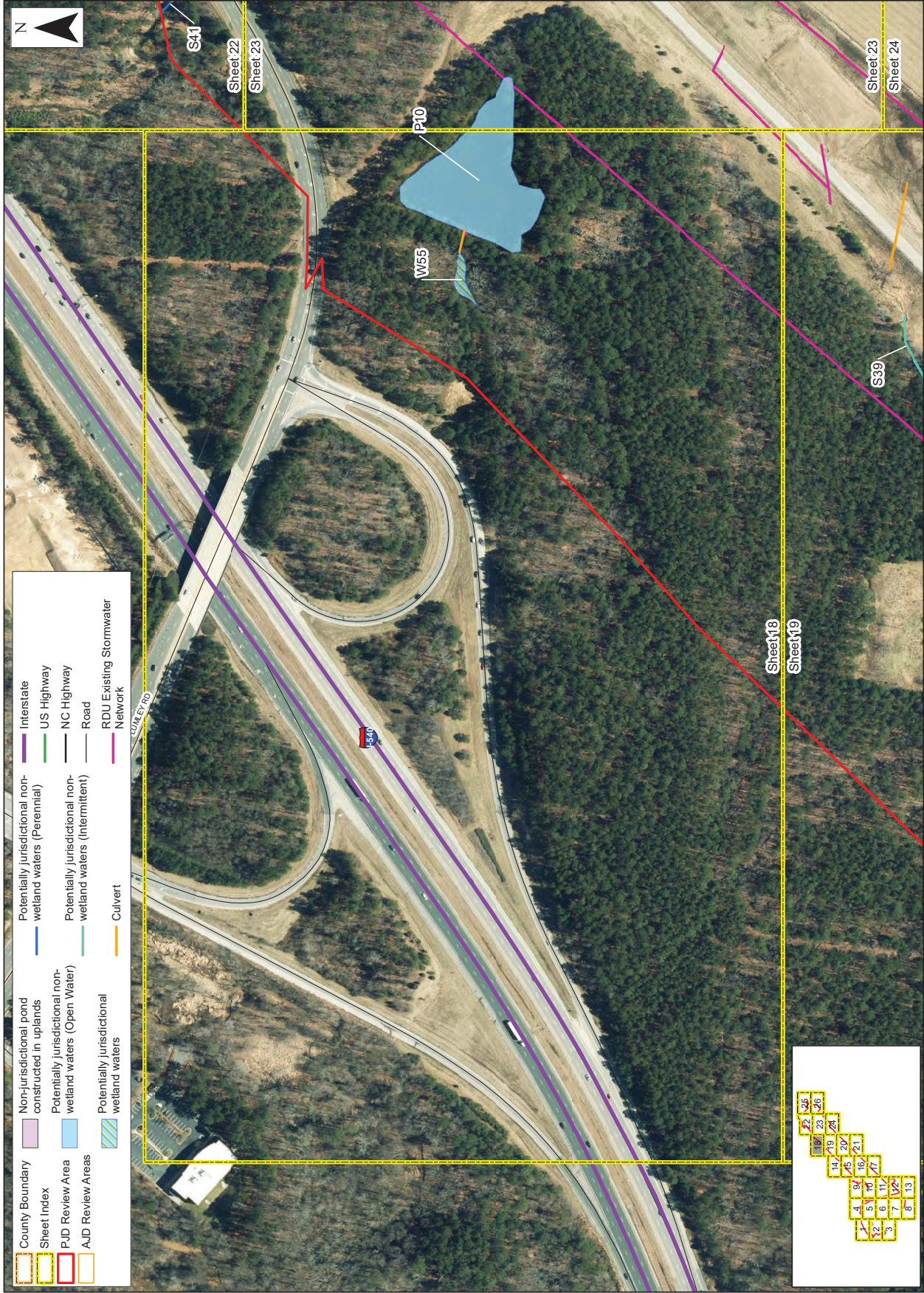
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Checked By: NDH

Figure

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Sheet 18



- |  |  |  |  |
|--|--|--|--|
|  | County Boundary  |  | Interstate   |
|  | Sheet Index  |  | Potentially jurisdictional non-wetland waters (Perennial)    |
|  | PJD Review Area  |  | Potentially jurisdictional non-wetland waters (Intermittent) |
|  | AJD Review Areas   |  | RDU Existing Stormwater Network                              |
|  | Potentially jurisdictional wetland waters                  |  | Culvert  |
|  | Non-jurisdictional pond constructed in uplands             |  |  |
|  | Potentially jurisdictional non-wetland waters (Open Water) |  |  |



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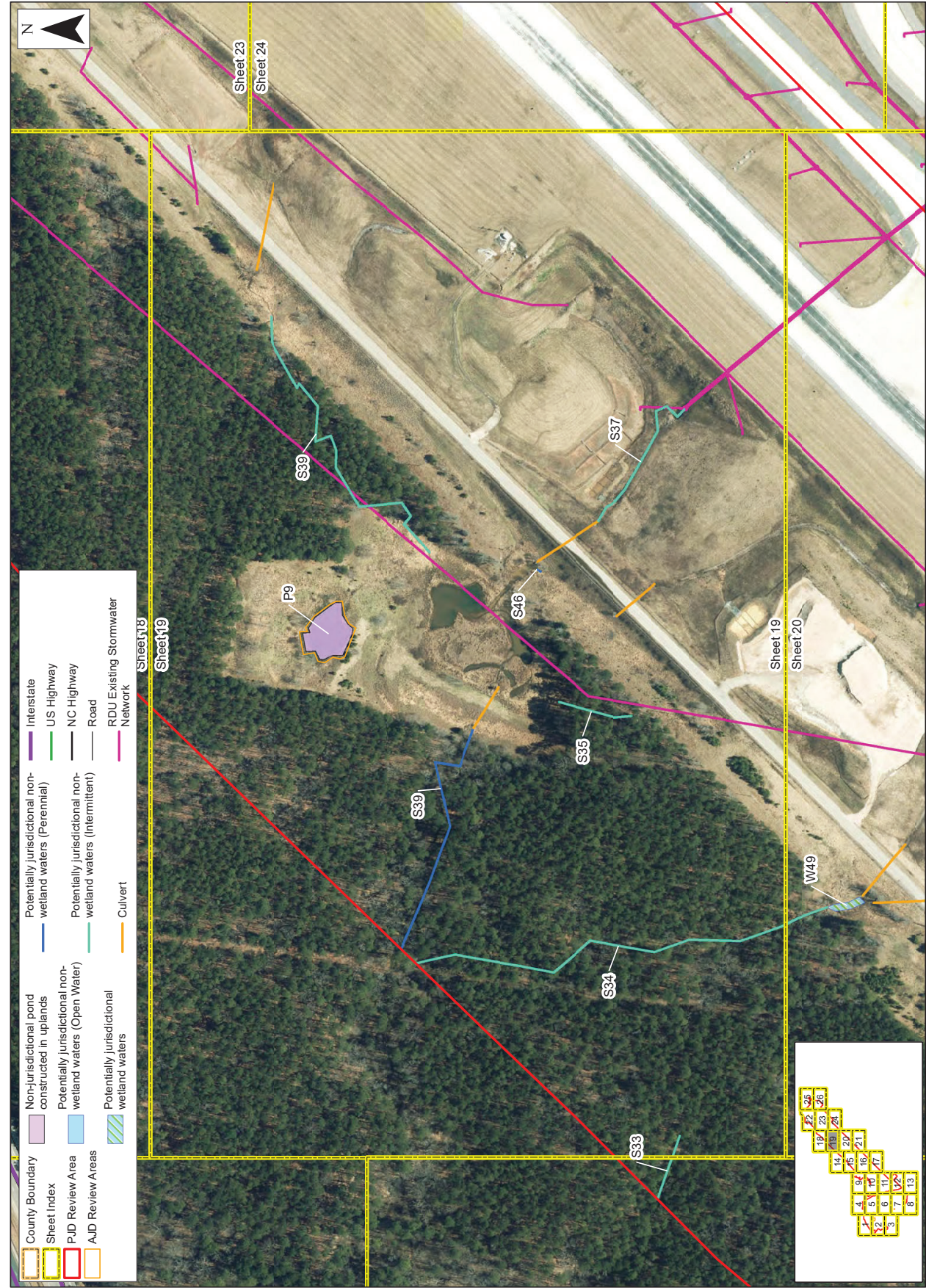
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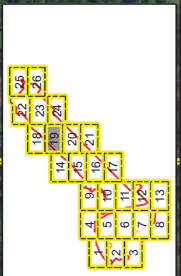
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**3**

Sheet 19



- County Boundary
- Sheet Index
- PJD Review Area
- AJD Review Areas
- Non-jurisdictional pond constructed in uplands
- Potentially jurisdictional non-wetland waters (Open Water)
- Potentially jurisdictional wetland waters
- Potentially jurisdictional non-wetland waters (Perennial)
- Potentially jurisdictional non-wetland waters (Intermittent)
- Culvert
- Interstate
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- Road
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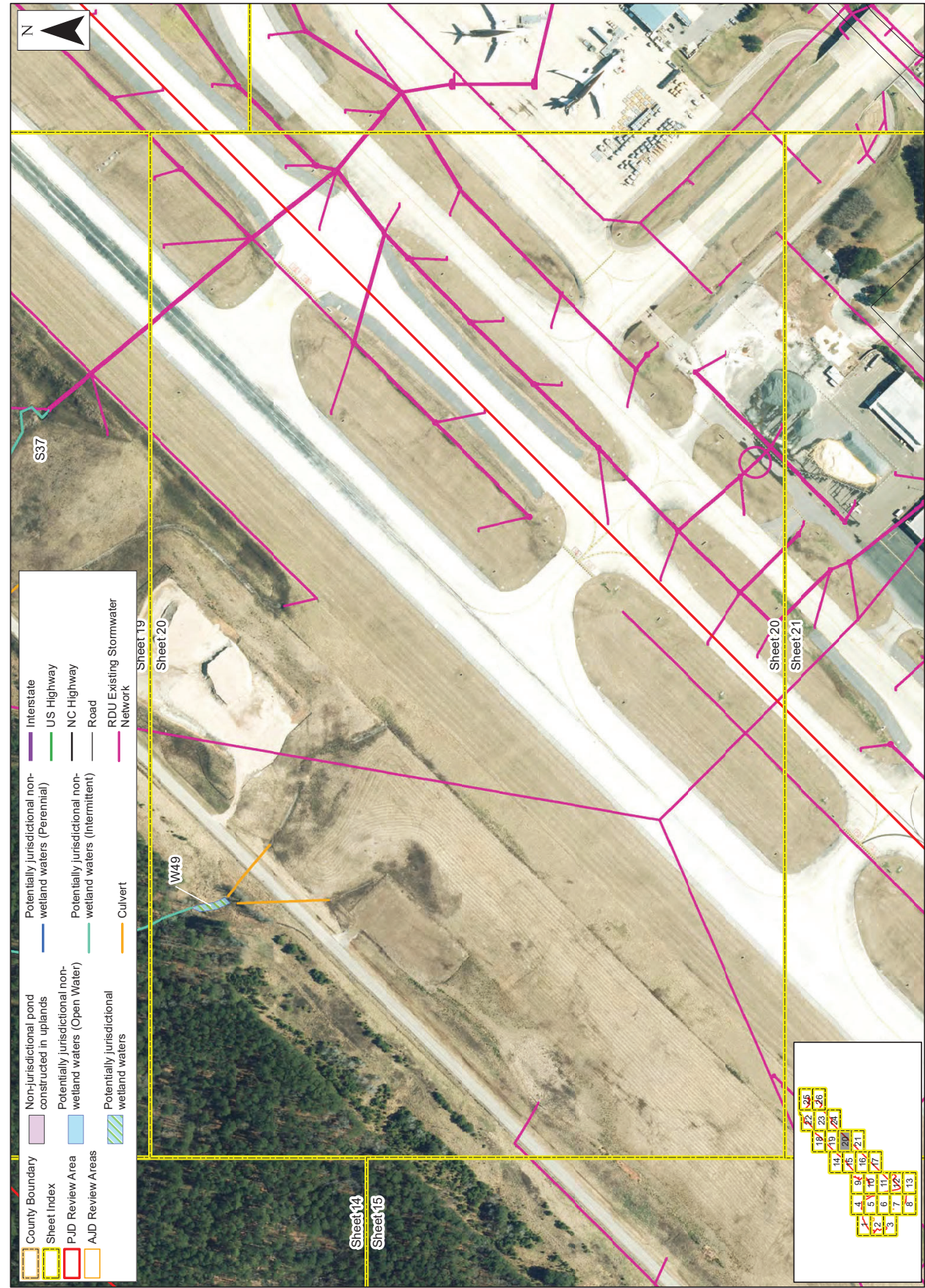
Job No.: 19-018

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Checked By: NDH

Figure

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Sheet 20



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| County Boundary  | Non-jurisdictional pond constructed in uplands               | Interstate                      |
| Sheet Index      | Potentially jurisdictional non-wetland waters (Open Water)   | US Highway                      |
| PJD Review Area  | Potentially jurisdictional non-wetland waters (Intermittent) | NC Highway                      |
| AJD Review Areas | Potentially jurisdictional wetland waters                    | Road                            |
|                  | Potentially jurisdictional wetland waters (Perennial)        | RDU Existing Stormwater Network |
|                  | Potentially jurisdictional non-wetland waters (Intermittent) | Culvert                         |





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Scale: 0 100 200 FT

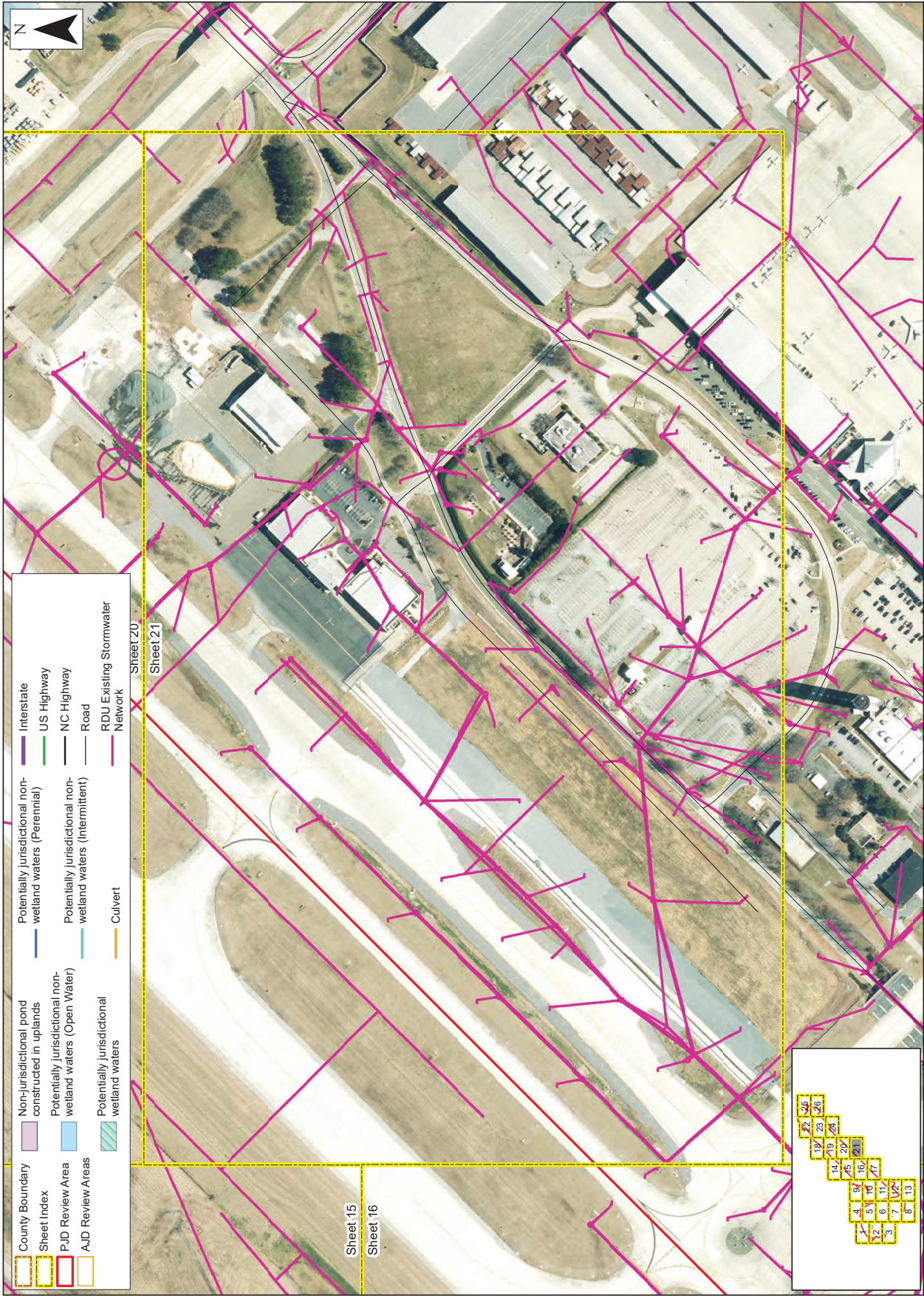
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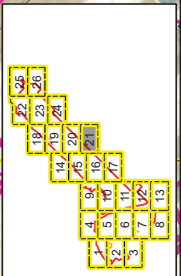
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**3**

Sheet 21



- County Boundary
- Sheet Index
- PJD Review Area
- AJD Review Areas
- Non-jurisdictional pond constructed in uplands
- Potentially jurisdictional non-wetland waters (Open Water)
- Potentially jurisdictional wetland waters
- Potentially jurisdictional non-wetland waters (Perennial)
- Potentially jurisdictional non-wetland waters (Intermittent)
- Interstate
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- Culvert
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North Carolina

Date: November 2022

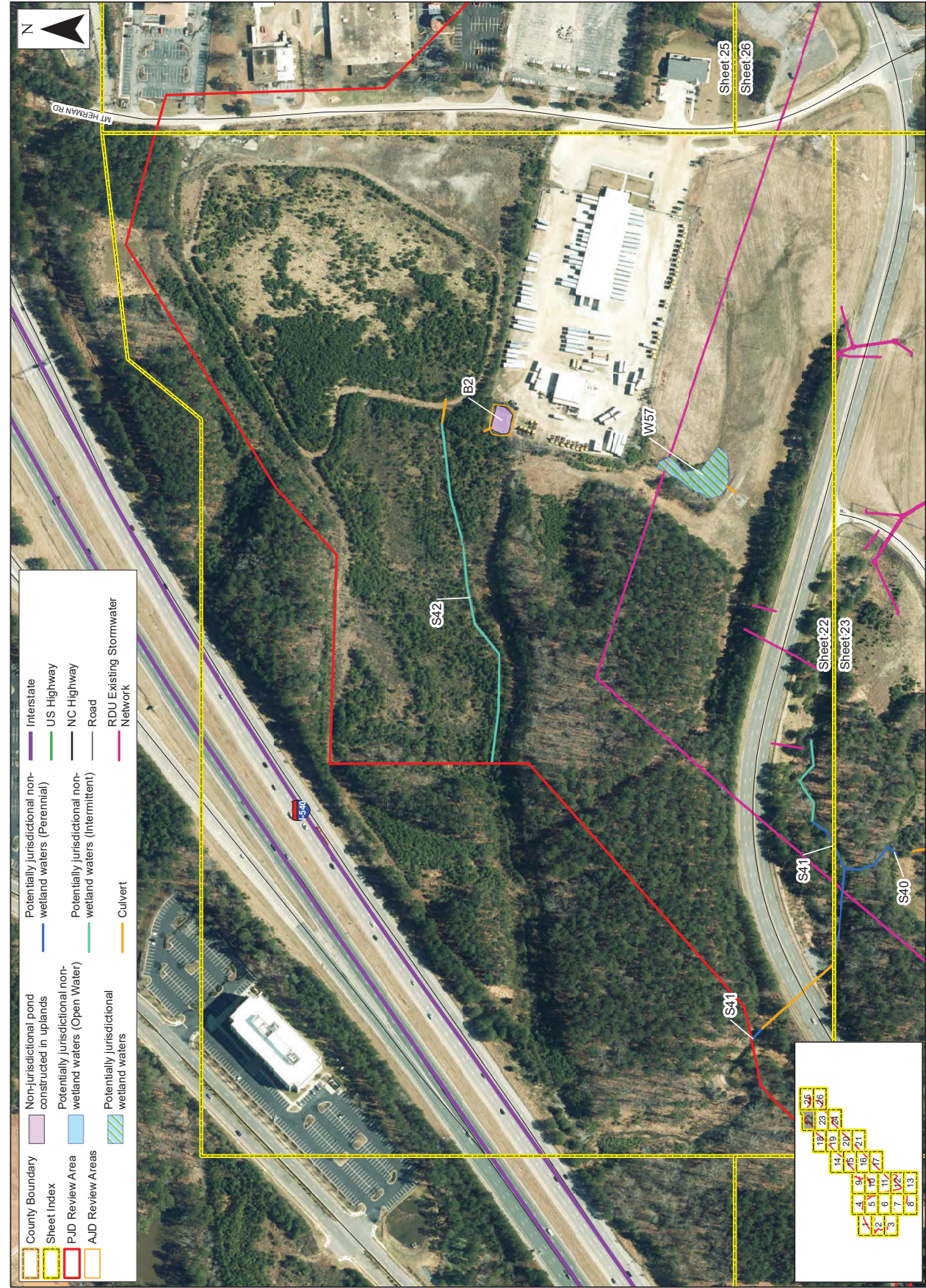
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Job No.: 19-018

Drawn By: KEMS  
Checked By: NDH

Figure  
**3**

Sheet 22



- County Boundary
- Sheet Index
- PJD Review Area
- AJD Review Areas
- Non-jurisdictional pond constructed in uplands
- Potentially jurisdictional non-wetland waters (Open Water)
- Potentially jurisdictional wetland waters
- Potentially jurisdictional non-wetland waters (Perennial)
- Potentially jurisdictional non-wetland waters (Intermittent)
- Culvert
- Interstate
- US Highway
- NC Highway
- Road
- RDU Existing Stormwater Network



Prepared For:



**Raleigh-Durham  
International  
Airport**

**Proposed Runway  
5L/23R  
Replacement**

**Jurisdictional  
Determination  
Post-JD Site Visit**

**Jurisdictional  
Features Map  
over**

**Orthoimagery  
Wake County,  
North Carolina**

Date: November 2022

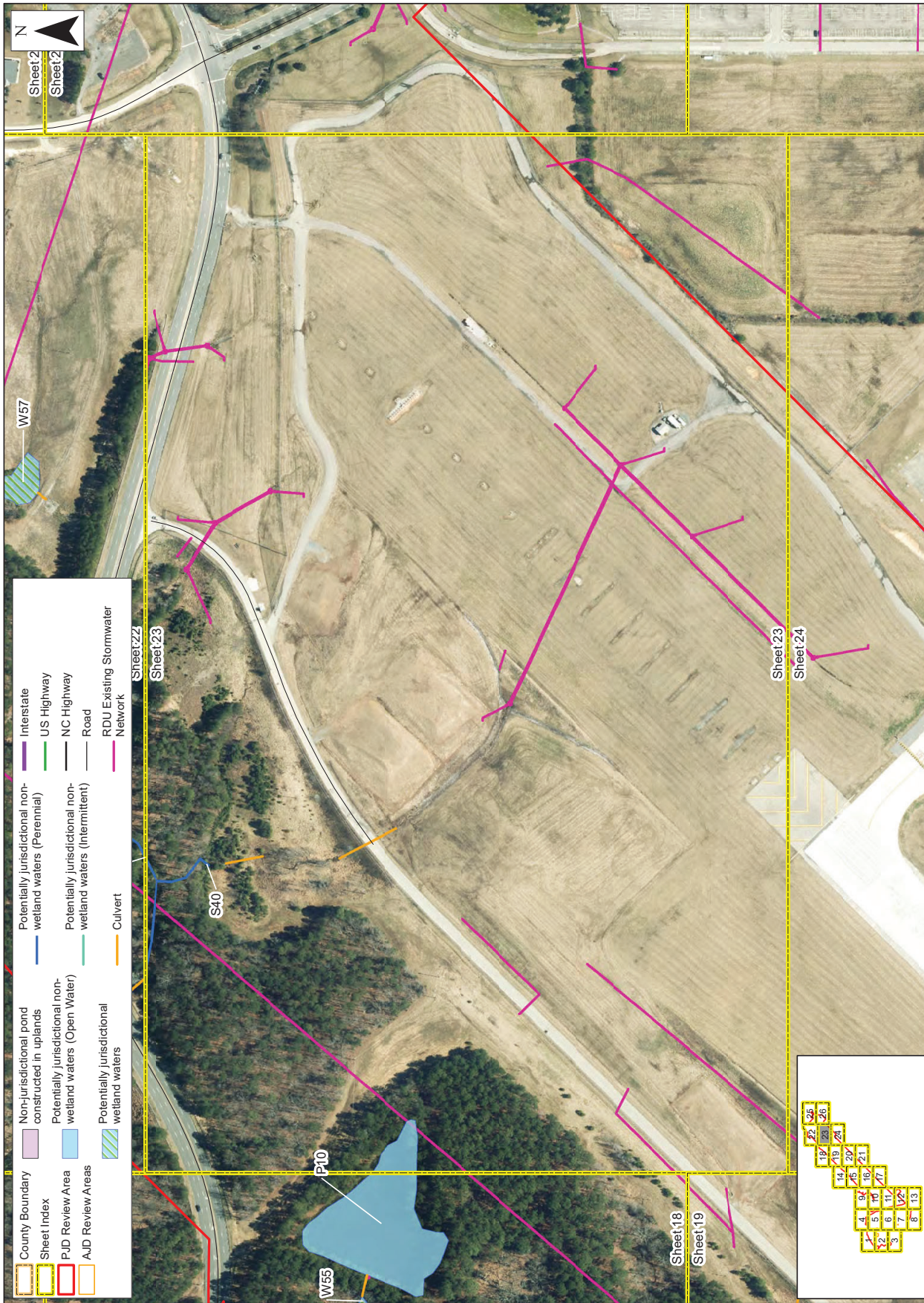
Scale: 0 100 200 FT

Job No.: 19-018

Drawn By: KEMS  
Checked By: NDH

Figure  
**3**

Sheet 23







Prepared For:



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Orthimagery**

Wake County,  
North Carolina

Date: November 2022

Scale: 0 100 200 FT

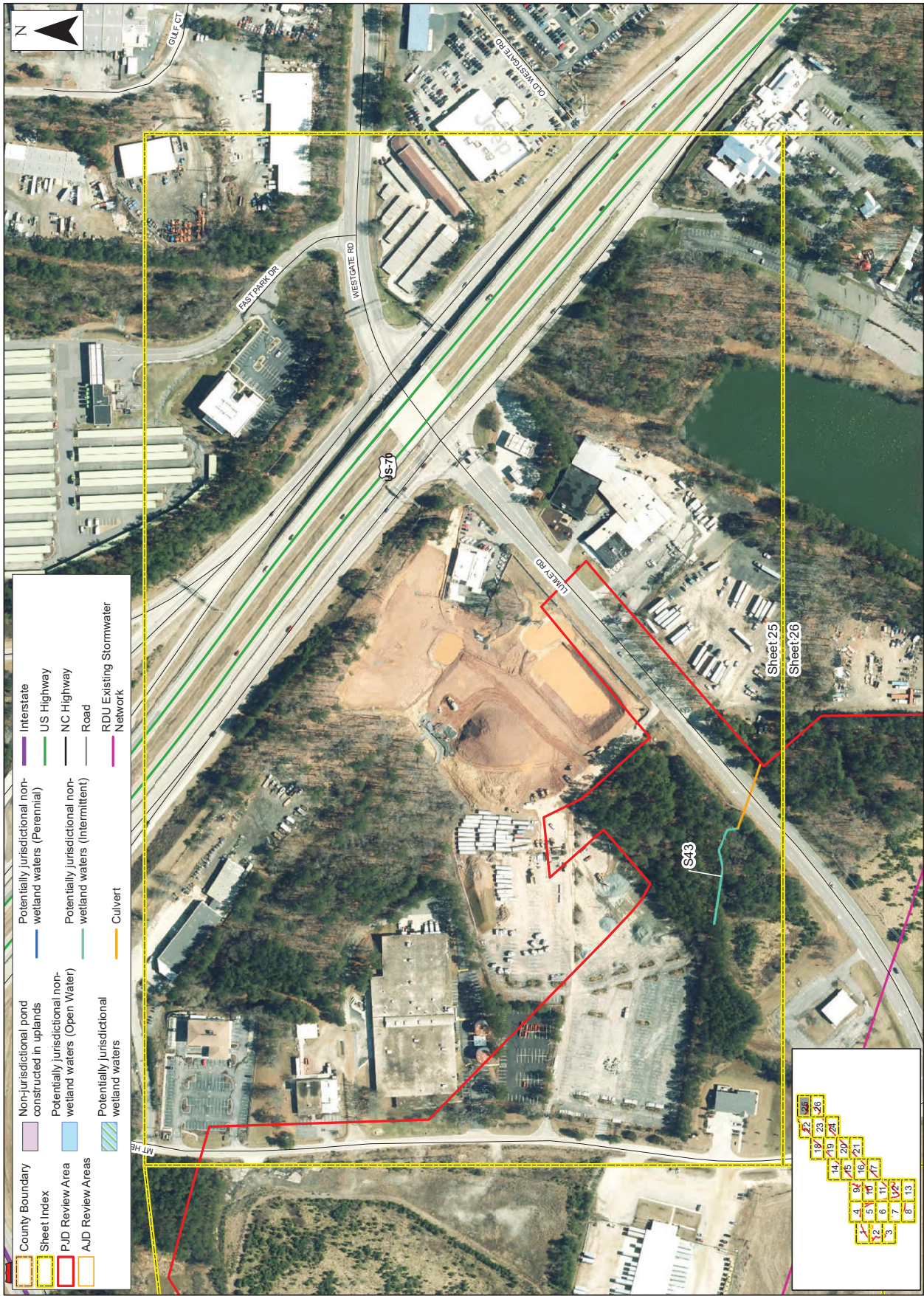
Job No.: 19-018

Drawn By: KEMS

Checked By: NDH

Figure  
**3**

Sheet 25



- County Boundary
- Sheet Index
- PJD Review Area
- AJD Review Areas
- Non-jurisdictional pond constructed in uplands
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- Culvert







**North Carolina Department of Public Safety**  
**Emergency Management**

Roy Cooper, Governor  
Eddie Buffaloe, Jr. Secretary

William C. Ray, Director

November 15, 2022

Michael Landguth  
P.O. Box 80001  
RDU Airport, NC 27623

Subject: No-Rise Certification for the RDU Runway 5L-23R Project, RDU Airport, North Carolina

Dear Mr. Landguth:

The North Carolina Department of Public Safety Division of Emergency Management Risk Management National Flood Insurance Program (NCNFIP) staff has reviewed the No-Rise Certification package for the proposed RDU Runway 5L-23R Project located at RDU Airport. The No-Rise Certification was prepared by Alexander R. Vinson, PE, dated August 25, 2022. It was received in this office on November 2, 2022.

Based on the information provided, the NCNFIP finds no objection to the conclusion of no increase in base flood elevation or floodway elevation as contained in the certification.

A Floodplain Development Permit will be required prior to construction.

If you have any questions or concerns with the items herein, please contact me at (919) 825-2317, by email at [jintao.wen@ncdps.gov](mailto:jintao.wen@ncdps.gov) or at the address shown on the footer of this document.

Sincerely,

Jintao Wen, Ph.D., P.E.  
NC NFIP Engineer  
NC Emergency Management

**MAILING ADDRESS:**  
4218 Mail Service Center  
Raleigh NC 27699-4218  
[flood.nc.gov](http://flood.nc.gov)



**OFFICE LOCATION:**  
4105 Reedy Creek Road  
Raleigh, NC 27607  
Telephone: (919) 715-5711  
Fax: (919) 715-0408

November 15, 2022

Page 2

cc: Matthew Stillwagon, NC NFIP Central Branch Planner, NC Emergency Management  
Steve Garrett, CFM, NC NFIP Coordinator, NC Emergency Management  
File

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