

**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): July 28, 2016**

**B. DISTRICT OFFICE, FILE NAME, AND NUMBER: JD Form 1 of 3; SAC # 2016-00538; Shaw Air Force Base**

**C. PROJECT LOCATION AND BACKGROUND INFORMATION:**

State: South Carolina County/parish/borough: **Sumter** City: **Sumter**  
Center coordinates of site (lat/long in degree decimal format): Lat. **33.9738° N**, Long. **-80.471° W**.  
Universal Transverse Mercator: **NAD 83**

Name of nearest waterbody: **Long Branch**

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

Name of watershed or Hydrologic Unit Code (HUC): **Black River HUC: 03040205\_03**

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): **March 24, 2016**

**SECTION II: SUMMARY OF FINDINGS**

**A. RHA SECTION 10 DETERMINATION OF JURISDICTION.**

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

Waters subject to the ebb and flow of the tide.

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

Explain: .

**B. CWA SECTION 404 DETERMINATION OF JURISDICTION.**

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

**1. Waters of the U.S.**

**a. Indicate presence of waters of U.S. in review area (check all that apply):<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: **8,200** linear feet: **5-30** width (ft) and/or acres.

Wetlands: **56.94** acres. (Wetland 1 (1.098 ac.) + Wetland 2 (1.007 ac.) + Wetland 3 (0.003 ac.) + Wetland 4 (0.314 ac.) + Wetland 5 (0.667 ac.) + Wetland 6 (0.487 ac.) + Wetland 7 (0.023 ac.) + Wetland 8 (0.088 ac.) + Wetland 9 (4.480 ac.) + Wetland 11 (9.386 ac.) + Wetland 12 (0.338 ac.) + Wetland 13 (13.481 ac.) + Wetland 14 (25.568 ac.) = 56.94 ac. Total

**c. Limits (boundaries) of jurisdiction based on: 1987 Delineation Manual, Established by OHWM, Pick List**

Elevation of established OHWM (if known): .

**2. Non-regulated waters/wetlands (check if applicable):<sup>3</sup> [Including potentially jurisdictional features that upon assessment are NOT waters or wetlands]**

<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).

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

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

Explain: **Several features, including three upland excavated ponds and a system of upland excavated ditches, were considered to be non-jurisdictional. Non-Jurisdictional Upland Excavated Ponds 1, 2 and 3 are located within Carolina Lakes Golf Course and are incorporated as water hazard features. These man-made features total 17.670 acres. Upland excavated ditches associated with runways and taxiways that remove storm water runoff from upland airfields total approximately 1,700 linear feet.**

### 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: **Black River.**

Summarize rationale supporting determination: **Report No. 6 of the U.S. Army Corps of Engineers 1977 Navigability Study: The Corps presently classifies the Black River as a "Navigable water of the U.S." from its mouth at R.M. 0 on the Great Pee Dee River near Georgetown, South Carolina to the Seaboard Coast Line Railroad bridge at R.M. 49.6.**

##### 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: **88,147 acres** ;

Drainage area: **320 acres**

Average annual rainfall: **51 inches**

Average annual snowfall: **0-1 inches**

###### (ii) Physical Characteristics:

###### (a) Relationship with TNW:

Tributary flows directly into TNW.

Tributary flows through **3** tributaries before entering TNW.

Project waters are **30 (or more)** river miles from TNW.

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

Project waters are **1 (or less)** river miles from RPW.  
 Project waters are **30 (or more)** aerial (straight) miles from TNW.  
 Project waters are **1 (or less)** aerial (straight) miles from RPW.  
 Project waters cross or serve as state boundaries. Explain: **Project waters do not cross or serve as state boundaries.**

Identify flow route to TNW<sup>5</sup>: **The on-site pRPW, Long Branch, flows into Green Swamp (pRPW), which drains into the Pocatoligo River (pRPW) and after approximately 22 miles meets with the Black River, a TNW.**  
 Tributary stream order, if known: **The tributary is a 1st order stream..**

(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: **10** feet  
 Average depth: **6** feet  
 Average side slopes: **Vertical (1:1 or less).**

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: **Tributaries in this watershed are typically low gradient, low velocity and therefore do not experience high levels of erosion and would be considered stable.**

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

Tributary geometry: **Meandering. Based on a site visit conducted on 3/24/16 and a review of USGS topo maps and aerial photography the pRPW is situated in a naturally low lying drainage area and has natural sinuosity.**

Tributary gradient (approximate average slope): **2 %**

(c) Flow:

Tributary provides for: **Perennial flow**

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

Describe flow regime: **Based on a site visit conducted on 3/24/16, USGS topographic survey information, the National Wetlands Inventory and aerial photographs, the perennial RPW is situated in a naturally low lying area and follows a declining gradient. The pRPW can be seen in aerial photographs as a shaded linear feature. This pRPW receives run off from approximately 320 acres .**

Other information on duration and volume: **The pRPW receives flow from upstream wetlands and overland sheet flow. Based on the observation of a high water table and redox features in adjacent wetlands within the project area it is determined that this tributary is also recharged by groundwater .**

Surface flow is: **Discrete and confined.** Characteristics: **Based on a site visit conducted on 3/24/16 flow was determined to be confined within the bed and banks of the tributary..**

Subsurface flow: **Unknown.** 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):  
 Discontinuous OHWM.<sup>7</sup> Explain: .

<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.

<sup>7</sup>Ibid.

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

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

**(iii) Chemical Characteristics:**

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

Explain: **Within the tributary water would be clear with possible turbidity due to suspended solids. Downstream reaches of the pRPW are described as having an increasing trend in pH and low dissolved oxygen conditions.**

**Aquatic life is not supported, however recreation is. There is a significant increase in fecal coliform bacteria concentration. Land use in this watershed consist of approximately 24.5 % agricultural land, 26.2% forested land, 22.6% forested wetland, 24.4% urban land, , 0.8% water, e1.1% non-forested wetlands and 0.4% barren land.**

**According to the SCDHEC website there is high potential for growth in this watershed.**

Identify specific pollutants, if known: **The review area is located within the City of Sumter, a densely developed urban area. Urban areas have the potential to pollute water in many ways. Runoff from streets carries oil, rubber, heavy metals, and other contaminants from automobiles. Untreated or poorly treated sewage can be low in dissolved oxygen and high in pollutants such as fecal coliform bacteria, nitrates, phosphorus, chemicals, and other bacteria. Treated sewage can still be high in nitrates. Groundwater and surface water can be contaminated from many sources such as garbage dumps, toxic waste and chemical storage and use areas, leaking fuel storage tanks, and intentional dumping of hazardous substances. Air pollution can lead to acid rain, nitrate deposition, and ammonium deposition, which can alter water quality .**

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

Riparian corridor. Characteristics (type, average width): **Based on a review of aerial photographs the pRPW supports an approximately 300-600' wide riparian corridor. This riparian zone contributes to the overall health of the aquatic system by filtering out pollutants, providing essential habitat, slowing flood waters and preventing erosion.**

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: **According to "Connectivity of Streams and Wetlands to**

**Downstream Waters: A Review and Synthesis of the Scientific Evidence" prepared by the Office of Research and Development U.S. Environmental Protection Agency, for organisms capable of significant upstream movement, headwater streams, including ephemeral and intermittent streams, can increase both the amount and quality of habitat available to those organisms. Many organisms require different habitats for different resources (e.g., food, spawning habitat, overwintering habitat), and thus move throughout the river network—both longitudinally and laterally—over their life cycles. For example, headwater streams can provide refuge habitat under adverse conditions, enabling organisms to persist and recolonize downstream areas once adverse conditions have abated. Headwater streams also provide food resources to downstream waters: as Progar and Moldenke (2002) state, "...headwater streams are the vertex for a network of trophic arteries flowing from the forest upland to the ocean." Headwater streams and small seasonal RPWs provide habitat for diverse and abundant stream invertebrates and serve as collection areas for terrestrial and riparian invertebrates that fall into them. These aquatic and terrestrial invertebrates can be transported downstream with water flow and ultimately serve as food resources for downstream organisms. Many fish feed on drifting insects, and these organisms can also settle out of the water column and become part of the local benthic invertebrate assemblage in downstream waters. Drift, however, has been shown to increase invertebrate mortality significantly, suggesting that most drifting organisms are exported downstream in the suspended detrital load.**

**The downstream drift of stream invertebrates and the contribution of terrestrial and riparian invertebrates to overall drift have been well documented.**

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: **Wetland 7 = 0.023** acres

Wetland type. Explain: **Palustrine Forested.**

Wetland quality. Explain: **Wetland 7 is partially impaired due to past development, however, in combination with other similarly situated wetlands provides pollution filtration, habitat diversity, and flood prevention.**

Project wetlands cross or serve as state boundaries. Explain: **The project wetland does not cross or serve as state boundaries.**

(b) General Flow Relationship with Non-TNW:

Flow is: **Ephemeral flow**. Explain: **Flow from wetland 7 into the pRPW (Long Branch) is via overland sheet flow during rain events. Based on a site visit conducted on 3/24/16 drainage patterns were observed between the project wetland and the on-site pRPW which is located down gradient in a low lying drainage area approximately 100' south of wetland 7.**

Surface flow is: **Overland sheetflow**

Characteristics: **Flow from wetland 7 into the pRPW (Long Branch) is via overland sheet flow during rain events. Based on a site visit conducted on 3/24/16 drainage patterns were observed between the project wetland and the on-site pRPW which is located down gradient in a low lying drainage area approximately 100' south of wetland 7.**

Subsurface flow: **Unknown**. Explain findings:

Dye (or other) test performed:

(c) Wetland Adjacency Determination with Non-TNW:

Directly abutting

Not directly abutting

Discrete wetland hydrologic connection. Explain: **Flow from wetland 7 into the pRPW (Long Branch) is via overland sheet flow during rain events. Based on a site visit conducted on 3/24/16 drainage patterns were observed between the project wetland and the on-site pRPW which is located down gradient in a low lying drainage area approximately 100' south of wetland 7.**

Ecological connection. Explain:

Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW

Project wetlands are **30 (or more)** river miles from TNW.

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

Flow is from: **Wetland to navigable waters.**

Estimate approximate location of wetland as within the **500-year or greater** floodplain.

**(ii) Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: **The wetland within the project area was partially impaired due to past development however a high water table and saturation was observed. No oily film or discoloration was observed. Land use in this watershed consist of approximately 24.5 % agricultural land, 26.2% forested land, 22.6% forested wetland, 24.4% urban land, , 0.8% water, 1.1% non-forested wetlands and 0.4% barren land. According to the SCDHEC website there is high potential for growth in this watershed.**

Identify specific pollutants, if known: **The review area is located within the City of Sumter, a densely developed urban area. Urban areas have the potential to pollute water in many ways. Runoff from streets carries oil, rubber, heavy metals, and other contaminants from automobiles. Untreated or poorly treated sewage can be low in dissolved oxygen and high in pollutants such as fecal coliform bacteria, nitrates, phosphorus, chemicals, and other bacteria. Treated sewage can still be high in nitrates. Groundwater and surface water can be contaminated from many sources such as garbage dumps, toxic waste and chemical storage and use areas, leaking fuel storage tanks, and intentional dumping of hazardous substances. Air pollution can lead to acid rain, nitrate deposition, and ammonium deposition, which can alter water .**

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

Riparian buffer. Characteristics (type, average width): **Based on a review of aerial photographs wetland 7 is part of an approximatly 300-600' wide riparian corridor. This riparian zone contributes to the overall health of the aquatic system by filtering out pollutants, providing essential habitat, slowing flood waters and preventing erosion.**

Vegetation type/percent cover. Explain: **Vegetation on site consists of predominantly Fac, Fac Wet, and Obligate species.**

Habitat for:

Federally Listed species. Explain findings: .

Fish/spawn areas. Explain findings: .

Other environmentally-sensitive species. Explain findings: .

Aquatic/wildlife diversity. Explain findings: **This wetland system enhances wildlife diversity through timber type changes and the transition between upland and aquatic systems..**

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

All wetland(s) being considered in the cumulative analysis: **5**

Approximately ( **24.078** ) 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>
Y	4.480		
Y	19		
Y	0.088		
N	0.023		
Y	0.487		

Summarize overall biological, chemical and physical functions being performed: **The similarly situated wetlands contribute vital biological, chemical, and physical functions to the downstream TNW. This wetland system enhances wildlife diversity, acts as catch basins filtering sediment and pollution from the surrounding urban development, supports the downstream food web, and provides nutrient fixation, flood attenuation, and flow maintenance functions. (Wetlands adjacent to the tributary were determined by using a combination of NWI maps and the wetlands delineated as part of this determination).**

**C. SIGNIFICANT NEXUS DETERMINATION**

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

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

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

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

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D:
2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:
3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: **The pRPW that is assessed in this form, along with all similarly situated adjacent freshwater wetlands are collectively performing functions consistent with the following: Biologically, wetlands adjacent to the pRPW include depressional wetlands. As such a variety of biological functions are being performed which include providing breeding grounds and shelter for aquatic species and foraging areas for wetland dependent species. These wetlands and the adjacent pRPW are essential in providing organic carbons in the form of their collective primary productivity to downstream waters, resulting in the nourishment of the downstream food web. Chemically, the pRPW and adjacent wetlands are providing the important collective functions of removal of excess nutrients into the downstream TNW. These pollutants, which are contributed to by runoff from surrounding uplands are prevented from being discharged downstream due to suspended sediments and other pollutants being retained within the wetlands. The low velocity of and gradient of the pRPW also contribute to the removal of pollutants because the suspended pollutants have time to settle out of the water.**

This reduces nitrogen and phosphorous loading downstream and effectively prevents oxygen depletion that can result from eutrophication. Physically, the pRPW and adjacent wetlands are collectively performing flow maintenance functions, including retaining runoff inflow and storing rain water, temporarily. Flow maintenance results in the reduction of downstream peak flows (discharge and volume), helping to maintain seasonal flow volumes and reducing the frequency of overbank events which flood adjacent properties. Increased water velocity also increases the amount of sediments and other pollutants in the TNW. Based on the collective functions described above and their importance to the biological, chemical, and physical integrity of the traditional navigable waters of the Black River, it has been determined that there is a significant nexus between the relevant reach of the tributary and all adjacent wetlands to the downstream TNW.

Documentation for the Record only: Significant nexus findings for seasonal RPWs and/or wetlands abutting seasonal RPWs:

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

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

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

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

Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: **Multiple site visits revealed flowing water. Stream geomorphic indicators of perennial flow included a channel within bed and banks which had a firm sandy bottom clear of vegetation and debris. Hydrologic indicators observed within the channel include even distribution of substrate and debris being continually washed downstream. Aerial photos depict a well-defined channel with uninterrupted flow into Green Swamp, which drains into the Pocatigo River and eventually the Black River (a TNW), the USGS topographic maps depict a named solid blue line feature (Long Branch) which is the symbol for perennial flow, Sumter County soil surveys depicts a 100% hydric soils. Sumter County LiDAR depicts low elevations and a defined channel. Additionally this feature was originally determined to be a perennial RPW in Approved Jurisdictional Determination SAC 2006-01584-4JB, issued on May 29, 2009. Based on the previously mentioned evidence, this perennial RPW was determined to have flow at least 90% of the year under normal conditions.**

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: **Addressed on Form 2 of 3.**

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

- Tributary waters: **8,200** linear feet **5-30** width (ft).
  - 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 width (ft).
  - Other non-wetland waters: acres.
- Identify type(s) of waters: .

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

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

Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **Aerial photographs, Sumter county soils survey information and USGS topographic survey information depict the wetlands within the project area as contiguous and abutting the on-site pRPW. The pRPW is represented on the USGS topographic map by a named solid blue line (Long Branch) situated in a naturally low lying drainage area. NWIs depict the wetlands on-site as contiguous and abutting Long Branch. Sumter County soil survey information depicts the wetlands on site as being part of a contiguous hydric soil unit that abuts Long Branch. Additionally, a site visit conducted on March 24, 2016 revealed that there are no observable natural or manmade barriers to obstruct the direct hydrological, chemical and biological connection between the wetlands within the project area and the on-site pRPW. Finally, these features were originally determined to be abutting a perennial RPW in Approved Jurisdictional Determination SAC 2006-01584-4JB, issued on May 29, 2009. (Wetland 10 abuts both Long Branch and Spann Branch, a perennial RPW. Spann**

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



**Branch is addressed in Form 3 of 3. This form addresses those wetlands that only abutt Long Branch. Wetland 10 is addressed on Form 3 of 3 with Spann Branch (pRPW) because it appears to drain primarily into this reach).**

- 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: **56.94** 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. **Addressed in Form 2 of 3.**

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).

**Explain: Addressed on Form 2 of 3**

**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 \_\_\_\_\_ width (ft).  
 Other non-wetland waters: \_\_\_\_\_ acres.  
Identify type(s) of waters:  
 Wetlands: \_\_\_\_\_ acres.

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

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

Other: (explain, if not covered above): **Several features, including three upland excavated ponds and a system of upland excavated ditches, were considered to be non-jurisdictional. Non-Jurisdictional Upland Excavated Ponds 1, 2 and 3 are located within Carolina Lakes Golf Course and are incorporated as water hazard features. These man-made features total 17.670 acres. Upland excavated ditches associated with runways and taxiways that remove storm water runoff from upland airfields total approximately 1,700 linear feet.**

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

<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.

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

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

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

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

#### **SECTION IV: DATA SOURCES.**

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

Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: **The project area is depicted on sheets 1-12 of 12 of the sketch titled " SAC 2016-00538 / Shaw Air Force Base / Delineation of Approximately 3,343 acres / Sumter County, SC," and dated May 2016.**

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: **Report No. 6 of the U.S. Army Corps of Engineers 1977 Navigability 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: **Sumter West Quad; Shaw AFB is situated in the Atlantic Coastal Plain physiographic region of South Carolina. Elevations at Shaw AFB range from 200 feet above mean sea level (MSL) to 350 feet above MSL (Figure 2-3). The general topographic gradient of the installation is from west to southeast with elevation differences of roughly 150 feet. USGS topographic maps depict the project area as a combination of forested and developed uplands. Three named solid blue line features situated within naturally low lying drainage area depicted within the project boundary (Long Branch, Spann Branch, and Mush Swamp). A solid blue line feature is the symbol for a tributary with perennial flow. Based on a site visit conducted on 3/24/16 Long Branch and Spann Branch were determined to be perennial RPWs. Mush Swamp was determined to be a seasonal RPW. .**

USDA Natural Resources Conservation Service Soil Survey. Citation: **Sumter County Soil Survey Sheets 54-55; According to the Soil Survey of Sumter County (Ogg 2013), fifteen soil mapping units are contained within Shaw AFB (Figure 2-2). The most common soil types are Alaga loamy coarse sand (AgB), Faceville-Lucy complex (FcB), and Troup-Lucy complex (TpB). Johnston mucky sandy loam (JnA) and Rains sandy loam (RaA) are the only hydric soil types mapped on the installation comprising approximately 3.5 percent of the total area of Shaw AFB.**

**AgB (0-6% slope) has low available water capacity, very high hydraulic conductivity, and is excessively drained. This unit is located on summits, shoulders, and backslopes of sandsheets at elevations between 98 and 220 feet. There is no flooding hazard and very low runoff. The parent material of this soil is eolian sands. FcB (2-6% slope) is found in summits, shoulders, and backslopes on marine terraces at elevations between 180 and 259 feet. The hydraulic conductivity of the complex is moderately high and the unit is well drained. There is no flooding hazard and low runoff from FcB. The parent material of Faceville is clayey fluviomarine deposits and the parent material of Lucy is loamy fluviomarine deposits.**

**JnA (0-2% slope) is found in swamps on floodplains at elevations between 102 and 148 feet. This soil is very poorly drained and has moderately high hydraulic conductivity and moderate available water capacity. The flooding hazard for JnA is frequent and there is very high runoff. The parent material is a loamy alluvium.**

**RaA (0-2% slope) is located in depressions in Carolina Bays at elevations ranging between 108 and 210 feet. This unit has moderate available water capacity, moderately high hydraulic conductivity, and is poorly drained. There is no flooding hazard and the chance of runoff is low. This soil is formed from loamy fluviomarine deposits.**

**TpB (0-6% slope) is found in marine terraces on summits and shoulders at elevations between 118 and 410 feet. The complex has low available water capacity, moderately high hydraulic conductivity, and is somewhat excessively drained to well drained. There is no flooding hazard and low to very low runoff. The parent material of this complex is sandy and loamy fluviomarine deposits. .**

- National wetlands inventory map(s). Cite name: **U42, U41, U12, U11, PUBHx, PFO1C, PEM1Fh, PSS1C/3C, and PFO1B;**  
**The project area is comprised of a combinatin of uplands and palustrine wetlands, including saturated and/or seasonally flooded palustrine forest, emergent wetlands, and scrub shrub.**
- State/Local wetland inventory map(s):
- FEMA/FIRM maps:
- 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
- Photographs:  Aerial (Name & Date): **Sumter County Aerial Index 99:11205:64, 99:11205:62 and SCDNR 2006.**  
or  Other (Name & Date): **Site photos submitted by the agent taken on 3/24/2015 and site photos taken by the Corps during a site visit conducted on 3/24/16.**
- Previous determination(s). File no. and date of response letter: **Approved Jurisdictional Determination SAC 2006-01584-4JB, issued on May 29, 2009..**
- Applicable/supporting case law:
- Applicable/supporting scientific literature:
- Other information (please specify): **Sumter County LiDAR with Hillshade Overlay.**  
**Shaw AFB Storm Water System Figure 2-4 submitted by the agent dated April 2016**

**B. ADDITIONAL COMMENTS TO SUPPORT JD:** This form addresses a 3,343 acre tract that contains 8, 200 linear feet of pRPW (Long Branch) and of 56.94 acres of jurisdictional freshwater wetlands either adjacent to or abutting Long Branch. The site also contains approximately 500 linear feet of pRPW (Spann Branch) and 3.145 acres of abutting wetlands (addressed on Basis Form 3 of 3) and 3,000 linear feet of a sRPW (Mush Swamp) and 2.216 acres of adjacent wetlands/impoundments of WOUS (addressed on Basis Form 2 of 3).

The perennial RPW was determined to have perennial flow based on a review of the USGS topographic maps, aerial photographs, and information obtained during a site visit conducted on March 24, 2016. The topographic information within Sumter West quad depicts the RPW as a blue line feature that flows down gradient into Green Swamp. Aerial photographs depict the RPW as a shaded linear feature. Observations of a high water table and redox features within the upper 6-16 inches of soils in adjacent wetlands, observed during a site visit, suggest that this RPW is recharged by ground water as well as run off. Long Branch flows into Green Swamp (pRPW), which drains into the Pocotaligo River (pRPW) and after approximately 22 miles meets with the Black River, a TNW.

Several features, including three upland excavated ponds and a system of upland excavated ditches, were considered to be non-jurisdictional. These features were determined to have been excavated out of uplands and to drain only uplands.

Wetland boundaries were verified during the site visit conducted on March 24, 2016, based on the criteria set forth by the 1987 Wetland Delineation Manual. These wetlands were either directly abutting Long Branch or determined to be jurisdictional based on a hydrological connection, provided by overland sheet flow into the pRPW located down gradient. During the above reference site visit wetlands were found to be saturated and a high water table was observed. Wetlands within the project area are currently part of a wetland system that provides pollution filtration, essential habitat, and flood prevention. Wetland 7 addressed in this form is determined to have a significant nexus to the downstream TNW in Section IIIC above.

Drainage areas and/or hydrologic connections were determined using a combination of observations on-site, USGS topo maps, and a Shaw AFB storm water drainage map..

**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): July 28, 2016**

**B. DISTRICT OFFICE, FILE NAME, AND NUMBER: JD Form 2 of 3; SAC # 2016-00538; Shaw Air Force Base**

**C. PROJECT LOCATION AND BACKGROUND INFORMATION:**

State: South Carolina County/parish/borough: **Sumter** City: **Sumter**  
Center coordinates of site (lat/long in degree decimal format): Lat. **33.9738° N**, Long. **-80.471° W**.  
Universal Transverse Mercator: **NAD 83**

Name of nearest waterbody: **Mush Swamp**

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

Name of watershed or Hydrologic Unit Code (HUC): **Black River HUC: 03040205\_03**

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): **March 24, 2016**

**SECTION II: SUMMARY OF FINDINGS**

**A. RHA SECTION 10 DETERMINATION OF JURISDICTION.**

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

Waters subject to the ebb and flow of the tide.

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

Explain: .

**B. CWA SECTION 404 DETERMINATION OF JURISDICTION.**

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

**1. Waters of the U.S.**

**a. Indicate presence of waters of U.S. in review area (check all that apply):<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: RPW **3,000** linear feet: **3-20** width (ft) and Impoundment **1.064** acres.

Wetlands: Wetland 15 = **1.152** acres.

**c. Limits (boundaries) of jurisdiction based on: 1987 Delineation Manual, Established by OHWM, Pick List**

Elevation of established OHWM (if known): .

**2. Non-regulated waters/wetlands (check if applicable):<sup>3</sup> [Including potentially jurisdictional features that upon assessment are NOT waters or wetlands]**

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

Explain: **Addressed on Basis Form 1 of 3.**

<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).

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

SECTION III: CWA ANALYSIS

**A. TNWs AND WETLANDS ADJACENT TO TNWs**

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

**1. TNW**

Identify TNW: **Black River.**

Summarize rationale supporting determination: **Report No. 6 of the U.S. Army Corps of Engineers 1977 Navigability Study: The Corps presently classifies the Black River as a "Navigable water of the U.S." from its mouth at R.M. 0 on the Great Pee Dee River near Georgetown, South Carolina to the Seaboard Coast Line Railroad bridge at R.M. 49.6.**

**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: **88,147 acres** ;  
Drainage area: **1,900 acres**  
Average annual rainfall: **51** inches  
Average annual snowfall: **0-1** inches

**(ii) Physical Characteristics:**

**(a) Relationship with TNW:**

- Tributary flows directly into TNW.
- Tributary flows through **3** tributaries before entering TNW.

Project waters are **30 (or more)** river miles from TNW.

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

Project waters are **30 (or more)** aerial (straight) miles from TNW.

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

Project waters cross or serve as state boundaries. Explain: **Project waters do not cross or serve as state boundaries.**

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

Identify flow route to TNW<sup>5</sup>: **The on-site sRPW, Mush Swamp, flows into Green Swamp (pRPW), which drains into the Pocatoligo River (pRPW) and after approximately 22 miles meets with the Black River, a TNW.**  
Tributary stream order, if known: **The tributary is a 1st order stream.**

(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: **10** feet  
Average depth: **6** feet  
Average side slopes: **Vertical (1:1 or less).**

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: **Tributaries in this watershed are typically low gradient, low velocity and therefore do not experience high levels of erosion and would be considered stable.**

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

Tributary geometry: **Meandering. Based on a site visit conducted on 3/24/16 and a review of USGS topo maps and aerial photography the pRPW is situated in a naturally low lying drainage area and has natural sinuosity.**

Tributary gradient (approximate average slope): **2 %**

(c) Flow:

Tributary provides for: **Seasonal flow**

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

Describe flow regime: **Channel flow for at least 3 months a year during seasonal high water table and after precipitation events. .**

Other information on duration and volume: **The sRPW recieves overland sheet flow, based on evidence such as drainage patterns and washed over vegetation, observed during a site visit conducted on 3/24/2016 and was detrmind to be recharged by groundwater during seasonal high water table.**

Surface flow is: **Discrete and confined.** Characteristics: **Flow was determined to be confined within the bed and banks of the onsite tributary based on evidence of OHWM observed during a site visit conducted on 3/24/16.**

Subsurface flow: **Unknown.** 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):

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

<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.

<sup>7</sup>Ibid.

other (list):

**(iii) Chemical Characteristics:**

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

Explain: **Within the tributary water would be clear with possible turbidity due to suspended solids. Downstream reaches of the sRPW are described as having an increasing trend in pH and low dissolved oxygen conditions.**

**Aquatic life is not supported, however recreation is. There is a significant increase in fecal coliform bacteria concentration. Land use in this watershed consist of approximately 24.5 % agricultural land, 26.2% forested land, 22.6% forested wetland, 24.4% urban land, , 0.8% water, e1.1% non-forested wetlands and 0.4% barren land.**

**According to the SCDHEC website there is high potential for growth in this watershed.**

Identify specific pollutants, if known: **The review are is located within the City of Sumter, a densely developed urban area. The drainage area conatains approximalty 1,900 acres of developed uplands including an air field and residential development. Urban areas have the potential to pollute water in many ways. Runoff from streets carries oil, rubber, heavy metals, and other contaminants from automobiles. Untreated or poorly treated sewage can be low in dissolved oxygen and high in pollutants such as fecal coliform bacteria, nitrates, phosphorus, chemicals, and other bacteria. Treated sewage can still be high in nitrates. Groundwater and surface water can be contaminated from many sources such as garbage dumps, toxic waste and chemical storage and use areas, leaking fuel storage tanks, and intentional dumping of hazardous substances. Air pollution can lead to acid rain, nitrate deposition, and ammonium deposition, which can alter water quality .**

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

Riparian corridor. Characteristics (type, average width): **Based on a review of aerial photographs the sRPW supports an approximately 300-600' wide riparian corridor. This riparian zone contributes to the overall health of the aquatic system by filtering out pollutants, providing essential habitat, slowing flood waters and preventing erosion.**

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: **According to "Connectivity of Streams and Wetlands to**

**Downstream Waters: A Review and Synthesis of the Scientific Evidence" prepared by the Office of Research and Development U.S. Environmental Protection Agency, for organisms capable of significant upstream movement, headwater streams, including ephemeral and intermittent streams, can increase both the amount and quality of habitat available to those organisms. Many organisms require different habitats for different resources (e.g., food, spawning habitat, overwintering habitat), and thus move throughout the river network—both longitudinally and laterally—over their life cycles. For example, headwater streams can provide refuge habitat under adverse conditions, enabling organisms to persist and recolonize downstream areas once adverse conditions have abated. Headwater streams also provide food resources to downstream waters: as Progar and Moldenke (2002) state, "...headwater streams are the vertex for a network of trophic arteries flowing from the forest upland to the ocean." Headwater streams and small seasonal RPWs provide habitat for diverse and abundant stream invertebrates and serve as collection areas for terrestrial and riparian invertebrates that fall into them. These aquatic and terrestrial invertebrates can be transported downstream with water flow and ultimately serve as food resources for downstream organisms. Many fish feed on drifting insects, and these organisms can also settle out of the water column and become part of the local benthic invertebrate assemblage in downstream waters. Drift, however, has been shown to increase invertebrate mortality significantly, suggesting that most drifting organisms are exported downstream in the suspended detrital load.**

**The downstream drift of stream invertebrates and the contribution of terrestrial and riparian invertebrates to overall drift have been well documented..**

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: **Wetland 15 = 1.152 acres**

Wetland type. Explain: **Palustrine Forested.**

Wetland quality. Explain: **Wetland 15 is partially impaired due to being partially impounded, however, the remaining wetland provides pollution filtration, habitat diversity, and flood prevention.**

Project wetlands cross or serve as state boundaries. Explain: **The project wetland does not cross or serve as state boundaries.**

(b) General Flow Relationship with Non-TNW:

Flow is: **Intermittent flow**. Explain: **Flow from wetland 15 into the sRPW (Mush Swamp) is through a storm water drainage system that includes upland excavated drainage ditches as well as an underground network of pipes that ultimately drain into Mush Swamp south of U.S. Highway 378.**

Surface flow is: **Discrete and confined**

Characteristics: **Flow from wetland 15 into the sRPW (Mush Swamp) is through a storm water drainage system that includes upland excavated drainage ditches as well as an underground network of pipes that ultimately drain into Mush Swamp south of U.S. Highway 378.**

Subsurface flow: **Yes**. Explain findings: **Flow from wetland 15 into the sRPW (Mush Swamp) is via underground storm water drainage.**

Dye (or other) test performed:

(c) Wetland Adjacency Determination with Non-TNW:

Directly abutting

Not directly abutting

Discrete wetland hydrologic connection. Explain: **Flow from wetland 15 into the sRPW (Mush Swamp) is via storm water drainage.**

Ecological connection. Explain:

Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW

Project wetlands are **30 (or more)** river miles from TNW.

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

Flow is from: **Wetland to navigable waters.**

Estimate approximate location of wetland as within the **500-year or greater** floodplain.



(ii) **Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: **The wetland within the project area is partially impaired due to past development and being partially impounded, however a high water table and saturation was observed. No oily film or discoloration was observed. Land use in this watershed consist of approximately 24.5 % agricultural land, 26.2% forested land, 22.6% forested wetland, 24.4% urban land, , 0.8% water, 1.1% non-forested wetlands and 0.4% barren land. According to the SCDHEC website there is high potential for growth in this watershed.**

Identify specific pollutants, if known: **The review are is located within the City of Sumter, a densely developed urban area. Urban areas have the potential to pollute water in many ways. Runoff from streets carries oil, rubber, heavy metals, and other contaminants from automobiles. Untreated or poorly treated sewage can be low in dissolved oxygen and high in pollutants such as fecal coliform bacteria, nitrates, phosphorus, chemicals, and other bacteria. Treated sewage can still be high in nitrates. Groundwater and surface water can be contaminated from many sources such as garbage dumps, toxic waste and chemical storage and use areas, leaking fuel storage tanks, and intentional dumping of hazardous substances. Air pollution can lead to acid rain, nitrate deposition, and ammonium deposition, which can alter water .**

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

- Riparian buffer. Characteristics (type, average width): .
- Vegetation type/percent cover. Explain: **Vegetation within the wetland consists of predominantly Fac, Fac Wet, and**

**Obligate species.**

- Habitat for:
  - Federally Listed species. Explain findings: .
  - Fish/spawn areas. Explain findings: .
  - Other environmentally-sensitive species. Explain findings: .
  - Aquatic/wildlife diversity. Explain findings: **This wetland system enhances wildlife diversity through timber type**

**changes and the transition between upland and aquatic systems..**

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

All wetland(s) being considered in the cumulative analysis: **1**

Approximately ( **1.152** ) 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>
N	1.152		

Summarize overall biological, chemical and physical functions being performed: **The wetland contributes vital biological, chemical, and physical functions to the downstream TNW. This wetland enhances wildlife diversity, acts as catch basins filtering sediment and pollution from the surrounding urban development, supports the downstream food web, and provides nutrient fixation, flood attenuation, and flow maintenacne functions. This is the only wetland within the 1,900 acre drainage area therefore, the physical, chemical, and biological functions that it is providing are essential to the quality of downstream waters. (Wetlands adjacent to the tributary were determined by using a combination of NWI maps and the wetlands delineated as part of this determination).**

### C. SIGNIFICANT NEXUS DETERMINATION

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

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

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

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

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D:
2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:
3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: **The wetland (wetland 15) that is assessed in this form is performing functions consistent with the following: Biologically, wetlands adjacent to the sRPW include depressional wetlands. As such a variety of biological functions are being performed which include providing breeding grounds and shelter for aquatic species and foraging areas for wetland dependent species. These wetlands and the adjacent sRPW are essential in providing organic carbons in the form of their collective primary productivity to downstream waters, resulting in the nourishment of the downstream food web. Chemically, the sRPW and adjacent wetlands are providing the important collective functions of removal of excess nutrients into the downstream TNW. These pollutants, which are contributed to by runoff from surrounding uplands are prevented from being discharged downstream due to suspended sediments and other pollutants being retained within the wetlands. The low velocity of and gradient of the sRPW also contribute to the removal of pollutants because the suspended**

pollutants have time to settle out of the water. This reduces nitrogen and phosphorous loading downstream and effectively prevents oxygen depletion that can result from eutrophication. Physically, the sRPW and adjacent wetlands are collectively performing flow maintenance functions, including retaining runoff inflow and storing rain water, temporarily. Flow maintenance results in the reduction of downstream peak flows (discharge and volume), helping to maintain seasonal flow volumes and reducing the frequency of overbank events which flood adjacent properties. Increased water velocity also increases the amount of sediments and other pollutants in the TNW. Based on the collective functions described above and their importance to the biological, chemical, and physical integrity of the traditional navigable waters of the Black River, it has been determined that there is a significant nexus between the relevant reach of the tributary and all adjacent wetlands to the downstream TNW.

**Documentation for the Record only: Significant nexus findings for seasonal RPWs and/or wetlands abutting seasonal RPWs:** The sRPW that is assessed in this form is performing functions consistent with the following: A variety of biological functions are being performed which include providing breeding grounds and shelter for aquatic species and foraging areas for wetland dependent species. The sRPW is essential in providing organic carbons in the form of primary productivity to downstream waters, resulting in the nourishment of the downstream food web. Chemically, the sRPW is providing the important function of removal of excess nutrients and sediments into the downstream TNW. These pollutants, which are contributed to by runoff from surrounding uplands are prevented from being discharged downstream due to suspended sediments and other pollutants being retained within the sRPW. The low velocity of and gradient of the sRPW contributes to the removal of pollutants because the suspended pollutants have time to settle out of the water. This reduces nitrogen and phosphorous loading downstream and effectively prevents oxygen depletion that can result from eutrophication. Physically, the sRPW is performing flow maintenance functions, including retaining runoff inflow and storing rain water, temporarily. Flow maintenance results in the reduction of downstream peak flows (discharge and volume), helping to maintain seasonal flow volumes and reducing the frequency of overbank events which flood adjacent properties. Increased water velocity also increases the amount of sediments and other pollutants in the TNW. Based on the functions described above and their importance to the biological, chemical, and physical integrity of the traditional navigable waters of the Black River, it has been determined that there is a significant nexus between the relevant reach of the tributary and the downstream TNW.

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

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

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

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

- Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: **Addressed on Basis Form 1 of 3 and 3 of 3.**
- 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: **The RPW addressed in this document was determined to be a seasonal RPW based on a site visit conducted on 3/24/16. The sRPW had an obvious bed and bank and continuous OHWM. Sediment sorting, point bar deposition and cut banks were observed throughout the reach and the channel was washed clear of leaf litter and debris. The feature is situated in a naturally low lying drainage area and receives drainage from approximately 1,900 acres of developed uplands..**

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

- Tributary waters: **3,000** linear feet **3-20** width (ft).
  - 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 width (ft).
  - Other non-wetland waters: acres.
- Identify type(s) of waters: .

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

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

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

directly abutting an RPW: **Addressed on Basis Form 1 of 3 and 3 of 3.**

- 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: **1.152** 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).

**Explain: The impoundment was excavated out of wetlands and determined to have a significant nexus to the downstream TNW (Black River) in Section IIIC above (1.064 acres)**

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

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

- If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.  
 Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.  
 Prior to the Jan 2001 Supreme Court decision in “SWANCC,” the review area would have been regulated based solely on the “Migratory Bird Rule” (MBR).  
 Waters do not meet the “Significant Nexus” standard, where such a finding is required for jurisdiction. Explain:  
 Other: (explain, if not covered above): **Addressed on Basis Form 1 of 3.**

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

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

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

<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.**

- Lakes/ponds:                acres.
- Other non-wetland waters:                acres. List type of aquatic resource:                .
- Wetlands:                acres.

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

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

**SECTION IV: DATA SOURCES.**

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

Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: **The project area is depicted on sheets 1-12 of 12 of the sketch titled “SAC 2016-00538 / Shaw Air Force Base / Delineation of Approximately 3,343 acres / Sumter County, SC,” and dated May 2016.**

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: **Report No. 6 of the U.S. Army Corps of Engineers 1977 Navigability 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: **Sumter West Quad; Shaw AFB is situated in the Atlantic Coastal Plain physiographic region of South Carolina. Elevations at Shaw AFB range from 200 feet above mean sea level (MSL) to 350 feet above MSL (Figure 2-3). The general topographic gradient of the installation is from west to southeast with elevation differences of roughly 150 feet. USGS topographic maps depict the project area as a combination of forested and developed uplands. Three named solid blue line features situated within naturally low lying drainage area depicted within the project boundary (Long Branch, Spann Branch, and Mush Swamp) A solid blue line feature is the symbol for a tributary with perennial flow. Based on a site visit conducted on 3/24/16 Long Branch and Spann Branch were determined to be perennial RPWs. Mush Swamp was determined to be a seasonal RPW. .**

USDA Natural Resources Conservation Service Soil Survey. Citation: **Sumter County Soil Survey Sheets 54-55; According to the Soil Survey of Sumter County (Ogg 2013), fifteen soil mapping units are contained within Shaw AFB (Figure 2-2). The most common soil types are Alaga loamy coarse sand (AgB), Faceville-Lucy complex (FcB), and Troup-Lucy complex (TpB). Johnston mucky sandy loam (JnA) and Rains sandy loam (RaA) are the only hydric soil types mapped on the installation comprising approximately 3.5 percent of the total area of Shaw AFB.**

**AgB (0-6% slope) has low available water capacity, very high hydraulic conductivity, and is excessively drained. This unit is located on summits, shoulders, and backslopes of sandsheets at elevations between 98 and 220 feet. There is no flooding hazard and very low runoff. The parent material of this soil is eolian sands. FcB (2-6% slope) is found in summits, shoulders, and backslopes on marine terraces at elevations between 180 and 259 feet. The hydraulic conductivity of the complex is moderately high and the unit is well drained. There is no flooding hazard and low runoff from FcB. The parent material of Faceville is clayey fluviomarine deposits and the parent material of Lucy is loamy fluviomarine deposits.**

**JnA (0-2% slope) is found in swamps on floodplains at elevations between 102 and 148 feet. This soil is very poorly drained and has moderately high hydraulic conductivity and moderate available water capacity. The flooding hazard for JnA is frequent and there is very high runoff. The parent material is a loamy alluvium.**

**RaA (0-2% slope) is located in depressions in Carolina Bays at elevations ranging between 108 and 210 feet. This unit has moderate available water capacity, moderately high hydraulic conductivity, and is poorly drained. There is no flooding hazard and the chance of runoff is low. This soil is formed from loamy fluviomarine deposits.**

**TpB (0-6% slope) is found in marine terraces on summits and shoulders at elevations between 118 and 410 feet. The complex has low available water capacity, moderately high hydraulic conductivity, and is somewhat excessively drained to well drained. There is no flooding hazard and low to very low runoff. The parent material of this complex is sandy and loamy fluviomarine deposits. .**

National wetlands inventory map(s). Cite name: **U42, U41, U12, U11, PUBHx, PFO1C, PEM1Fh, PSS1C/3C, and PFO1B; The project area is comprised of a combination of uplands and palustrine wetlands, including saturated and/or seasonally flooded palustrine forest, emergent wetlands, and scrub shrub.**

- State/Local wetland inventory map(s):                .
- FEMA/FIRM maps:                .

- 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)
- Photographs:  Aerial (Name & Date): **Sumter County Aerial Index 99:11205:64, 99:11205:62 and SCDNR 2006.**  
or  Other (Name & Date): **Site photos submitted by the agent taken on 3/24/2015 and site photos taken by the Corps during a site visit conducted on 3/24/16.**
- Previous determination(s). File no. and date of response letter: **Approved Jurisdictional Determination SAC 2006-01584-4JB, issued on May 29, 2009..**
- Applicable/supporting case law:
- Applicable/supporting scientific literature: **Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence - A comprehensive report prepared by the Office of Research and Development US EPA- This report contains all of the relevent citations for the supporting scientific literure contained in this document..**
- Other information (please specify): **Sumter County LiDAR with Hillshade Overlay.  
Shaw AFB Strom Water System Figure 2-4 submitted by the agent dated April 2016**

**B. ADDITIONAL COMMENTS TO SUPPORT JD:** This form addresses a 3,343 acre tract that contains 3,000 linear feet of sRPW (Mush Swamp), 1.152 acres of jurisdictional freshwater wetlands and 1.064 acres of impounded WOUS determined to be adjacent to Mush Swamp. The site also contains approximately 500 linear feet of pRPW (Spann Branch) and 3.145 acres of abutting wetlands (addressed on Basis Form 3 of 3) and 8, 200 linear feet of pRPW (Long Branch) and 56.94 acres of adjacent and/or abutting wetlands (addressed on Basis Form 1 of 3).

The RPW addressed in this document was determined to be a seasonal RPW based on a site visit conducted on 3/24/16. The sRPW had an obvious bed and bank and continuous OHWM. Sediment sorting, point bar deposition and cut banks were observed throughout the reach and the channel was washed clear of leaf litter and debris. The feature is situated in a naturally low lying drainage area and receives drainage from approximately 1,900 acres of developed uplands. The topographic information within Sumter West quad depicts the RPW as a blue line feature that flows down gradient into Green Swamp. Aerial photographs depict the RPW as a shaded linear feature. Mush Swamp flows into Green Swamp (pRPW), which drains into the Pocatigo River (pRPW) and after approximately 22 miles meets with the Black River, a TNW.

Wetland boundaries were verified during the site visit conducted on March 24, 2016, based on the criteria set forth by the 1987 Wetland Delineation Manual. These wetlands were determined to be jurisdictional based on a hydrological connection, provided by storm water drainage into Mush Swamp a sRPW. During the above reference site visit wetlands were found to be saturated and a high water table was observed. Wetlands within the project area are currently part of wetland system that provides pollution filtration, essential habitat, and flood prevention. Wetland 15, addressed in this form is determined to have a significant nexus to the downstream TNW in Section IIIC above.

Drainage areas and/or hydrologic connections were determined using a combination of observations on-site, USGS topo maps, and a Shaw AFB storm water drainage map..

**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): July 28, 2016**

**B. DISTRICT OFFICE, FILE NAME, AND NUMBER: JD Form 3 of 3; SAC # 2016-00538; Shaw Air Force Base**

**C. PROJECT LOCATION AND BACKGROUND INFORMATION:**

State: South Carolina County/parish/borough: **Sumter** City: **Sumter**  
Center coordinates of site (lat/long in degree decimal format): Lat. **33.9738° N**, Long. **-80.471° W**.  
Universal Transverse Mercator: **NAD 83**

Name of nearest waterbody: **Spann Branch**

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

Name of watershed or Hydrologic Unit Code (HUC): **Black River HUC: 03040205\_03**

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): **March 24, 2016**

**SECTION II: SUMMARY OF FINDINGS**

**A. RHA SECTION 10 DETERMINATION OF JURISDICTION.**

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

Waters subject to the ebb and flow of the tide.

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

Explain: .

**B. CWA SECTION 404 DETERMINATION OF JURISDICTION.**

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

**1. Waters of the U.S.**

**a. Indicate presence of waters of U.S. in review area (check all that apply):<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: **500** linear feet: **3-5** width (ft) and/or acres.

Wetlands: Wetland 10 = **3.145** acres.

**c. Limits (boundaries) of jurisdiction based on: 1987 Delineation Manual, Established by OHWM, Pick List**

Elevation of established OHWM (if known): .

**2. Non-regulated waters/wetlands (check if applicable):<sup>3</sup> [Including potentially jurisdictional features that upon assessment are NOT waters or wetlands]**

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

Explain: **Addressed on From 1 of 3.**

<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).

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

SECTION III: CWA ANALYSIS

**A. TNWs AND WETLANDS ADJACENT TO TNWs**

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

**1. TNW**

Identify TNW: **Black River.**

Summarize rationale supporting determination: **Report No. 6 of the U.S. Army Corps of Engineers 1977 Navigability Study: The Corps presently classifies the Black River as a "Navigable water of the U.S." from its mouth at R.M. 0 on the Great Pee Dee River near Georgetown, South Carolina to the Seaboard Coast Line Railroad bridge at R.M. 49.6.**

**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: **Pick List** ;  
Drainage area: **Pick List**  
Average annual rainfall: inches  
Average annual snowfall: inches

**(ii) Physical Characteristics:**

**(a) Relationship with TNW:**

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

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

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



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: **Pick List.**

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: **Pick List.**

Tributary gradient (approximate average slope): %

(c) Flow:

Tributary provides for: **Pick List**

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

Describe flow regime:

Other information on duration and volume:

Surface flow is: **Pick List.** Characteristics:

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

(iii) **Chemical Characteristics:**

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

Explain:

Identify specific pollutants, if known:

<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.

<sup>7</sup>Ibid.

(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: **Pick List**. Explain: .

Surface flow is: **Pick List**

Characteristics: .

Subsurface flow: **Unknown**. Explain findings: .

- Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

- Directly abutting
- Not directly abutting
  - Discrete wetland hydrologic connection. Explain: F.
  - Ecological connection. Explain: .
  - Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List**.

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) **Chemical Characteristics:**

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

Identify specific pollutants, if known: .

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

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

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

All wetland(s) being considered in the cumulative analysis: **Pick List**

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>

Summarize overall biological, chemical and physical functions being performed: \_\_\_\_\_

**C. SIGNIFICANT NEXUS DETERMINATION**

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

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

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

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

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

**Documentation for the Record only: Significant nexus findings for seasonal RPWs and/or wetlands abutting seasonal RPWs:**  
\_\_\_\_\_

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

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:  
 TNWs: \_\_\_\_\_ linear feet \_\_\_\_\_ width (ft), Or, \_\_\_\_\_ acres.  
 Wetlands adjacent to TNWs: \_\_\_\_\_ acres.
2. **RPWs that flow directly or indirectly into TNWs.**  
 Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: **Multiple site visits revealed flowing water. Stream geomorphic indicators of perennial flow**

included a channel within bed and banks which had a firm sandy bottom clear of vegetation and debris. Hydrologic indicators observed within the channel include even distribution of substrate and debris being continually washed down stream. Aerial photos depict a well-defined channel with uninterrupted flow into Long Branch, which drains into Green Swamp, then the Poptaligo River and eventually the Black River (a TNW), the USGS topographic maps depict a named solid blue line feature (Spann Branch) which is the symbol for perennial flow, Sumter County soil surveys depicts 100% hydric soils. Sumter County LiDAR depicts low elevations and a defined channel. Additionally this feature was originally determined to be a perennial RPW in Approved Jurisdictional Determination SAC 2006-01584-4JB, issued on May 29, 2009. Based on the previously mentioned evidence, this perennial RPW was determined to have flow at least 90% of the year under normal conditions. .

- 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: **Addressed on Form 2 of 3.**

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

Tributary waters: **500** linear feet **3-5** width (ft).

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            width (ft).

Other non-wetland waters:            acres.

Identify type(s) of waters:            .

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

- Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
  - Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **Aerial photographs, Sumter county soils survey information and USGS topographic survey information depict the wetlands within the project area as contiguous and abutting the on-site pRPW. The pRPW is represented on the USGS topographic map by a named solid blue line (Spann Branch) situated in a naturally low lying drainage area. NWIs depict the wetlands on-site as contiguous and abutting Spann Branch. Sumter County soil survey information depicts the wetlands on site as being part of a contiguous hydric soil unit that abuts Spann Branch. Additionally, a site visit conducted on March 24, 2016 revealed that there are no observable natural or manmade barriers to obstruct the direct hydrological, chemical and biological connection between the wetlands within the project area and the on-site pRPW. Finally, these features were originally determined to be abutting a perennial RPW in Approved Jurisdictional Determination SAC 2006-01584-4JB, issued on May 29, 2009. (Wetland 10 abuts both Long Branch and Spann Branch, a perennial RPW. Long Branch is addressed in Form 1 of 3).**

- 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: **3.145** 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. **Addressed in Basis Form 1 of 3 and 2 of 3.**

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.

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

**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).

**Explain: Addressed on Form 2 of 3**

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

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

- If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
  - Prior to the Jan 2001 Supreme Court decision in “SWANCC,” the review area would have been regulated based solely on the “Migratory Bird Rule” (MBR).
- Waters do not meet the “Significant Nexus” standard, where such a finding is required for jurisdiction. Explain: .
  - Other: (explain, if not covered above): **Addressed on Basis Form 1 of 3.**

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

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

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

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

**SECTION IV: DATA SOURCES.**

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

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: **The project area is depicted on sheets 1-12 of 12 of the sketch titled “SAC 2016-00538 / Shaw Air Force Base / Delineation of Approximately 3,343 acres / Sumter County, SC,” and dated May 2016.**
- 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: .

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

<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.

- Corps navigable waters' study: **Report No. 6 of the U.S. Army Corps of Engineers 1977 Navigability 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: **Sumter West Quad; Shaw AFB is situated in the Atlantic Coastal Plain physiographic region of South Carolina. Elevations at Shaw AFB range from 200 feet above mean sea level (MSL) to 350 feet above MSL (Figure 2-3). The general topographic gradient of the installation is from west to southeast with elevation differences of roughly 150 feet. USGS topographic maps depict the project area as a combination of forested and developed uplands. Three named solid blue line features situated within naturally low lying drainage area depicted within the project boundary (Long Branch, Spann Branch, and Mush Swamp) A solid blue line feature is the symbol for a tributary with perennial flow. Based on a site visit conducted on 3/24/16 Long Branch and Spann Branch were determined to be perennial RPWs. Mush Swamp was determined to be a seasonal RPW. .**
- USDA Natural Resources Conservation Service Soil Survey. Citation: **Sumter County Soil Survey Sheets 54-55; According to the Soil Survey of Sumter County (Ogg 2013), fifteen soil mapping units are contained within Shaw AFB (Figure 2-2). The most common soil types are Alaga loamy coarse sand (AgB), Faceville-Lucy complex (FcB), and Troup-Lucy complex (TpB). Johnston mucky sandy loam (JnA) and Rains sandy loam (RaA) are the only hydric soil types mapped on the installation comprising approximately 3.5 percent of the total area of Shaw AFB. AgB (0-6% slope) has low available water capacity, very high hydraulic conductivity, and is excessively drained. This unit is located on summits, shoulders, and backslopes of sandsheets at elevations between 98 and 220 feet. There is no flooding hazard and very low runoff. The parent material of this soil is eolian sands. FcB (2-6% slope) is found in summits, shoulders, and backslopes on marine terraces at elevations between 180 and 259 feet. The hydraulic conductivity of the complex is moderately high and the unit is well drained. There is no flooding hazard and low runoff from FcB. The parent material of Faceville is clayey fluviomarine deposits and the parent material of Lucy is loamy fluviomarine deposits. JnA (0-2% slope) is found in swamps on floodplains at elevations between 102 and 148 feet. This soil is very poorly drained and has moderately high hydraulic conductivity and moderate available water capacity. The flooding hazard for JnA is frequent and there is very high runoff. The parent material is a loamy alluvium. RaA (0-2% slope) is located in depressions in Carolina Bays at elevations ranging between 108 and 210 feet. This unit has moderate available water capacity, moderately high hydraulic conductivity, and is poorly drained. There is no flooding hazard and the chance of runoff is low. This soil is formed from loamy fluviomarine deposits. TpB (0-6% slope) is found in marine terraces on summits and shoulders at elevations between 118 and 410 feet. The complex has low available water capacity, moderately high hydraulic conductivity, and is somewhat excessively drained to well drained. There is no flooding hazard and low to very low runoff. The parent material of this complex is sandy and loamy fluviomarine deposits. .**
- National wetlands inventory map(s). Cite name: **U42, U41, U12, U11, PUBHx, PFO1C, PEM1Fh, PSS1C/3C, and PFO1B; The project area is comprised of a combination of uplands and palustrine wetlands, including saturated and/or seasonally flooded palustrine forest, emergent wetlands, and scrub shrub.**
- State/Local wetland inventory map(s):
- FEMA/FIRM maps:
- 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)
- Photographs:  Aerial (Name & Date): **Sumter County Aerial Index 99:11205:64, 99:11205:62 and SCDNR 2006.**  
or  Other (Name & Date): **Site photos submitted by the agent taken on 3/24/2015 and site photos taken by the Corps during a site visit conducted on 3/24/16.**
- Previous determination(s). File no. and date of response letter: **Approved Jurisdictional Determination SAC 2006-01584-4JB, issued on May 29, 2009..**
- Applicable/supporting case law:
- Applicable/supporting scientific literature:
- Other information (please specify): **Sumter County LiDAR with Hillshade Overlay. Shaw AFB Storm Water System Figure 2-4 submitted by the agent dated April 2016**

**B. ADDITIONAL COMMENTS TO SUPPORT JD:** This form addresses a 3,343 acre tract that contains 500 linear feet of pRPW (Spann Branch) and of 3.145 acres of jurisdictional freshwater wetlands abutting Spann Branch. The site also contains approximately 8,200 linear feet of pRPW (Long Branch) and 59.64 acres of both adjacent or abutting wetlands (addressed on Basis Form 1 of 3) and 3,000 linear feet of a sRPW (Mush Swamp) and 2.216 acres of adjacent wetlands/impoundments of WOUS (addressed on Basis Form 2 of 3).

The perennial RPW was determined to have perennial flow based on a review of the USGS topographic maps, aerial photographs, and information obtained during a site visit conducted on March 24, 2016. The topographic information within Sumter West quad depicts the RPW as a blue line feature that flows down gradient into Long Branch and then Green Swamp. Aerial photographs depict the RPW as a shaded linear feature. Observations of a high water table and redox features within the upper 6-16 inches of soils in adjacent wetlands, observed during a site visit, suggest that this RPW is recharged by ground water as well as run off. Spann

**Branch flows into Long Branch (pRPW), which drains into Green Swamp, which drains into the Pocotaligo River (pRPW) and after approximately 22 miles meets with the Black River, a TNW.**

**Wetland boundaries were verified during the site visit conducted on March 24, 2016, based on the criteria set forth by the 1987 Wetland Delineation Manual. These wetlands were directly abutting Spann Branch. During the above reference site visit wetlands were found to be saturated and a high water table was observed. Wetlands within the project area are currently part of a wetland system that provides pollution filtration, essential habitat, and flood prevention.**

**Drainage areas and/or hydrologic connections were determined using a combination of observations on-site, USGS topo maps, and a Shaw AFB storm water drainage map.**