

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): 21 December 2017

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Galveston District, SWG-2017-00781, Houston Airport System, WET H, Stream 2

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: Texas County/Parish: Harris City: Houston
Center coordinates of site (lat/long in degree decimal format, NAD-83): Lat. 29.990573° N, Long. -95.305573° W;
Universal Transverse Mercator: UTM: 15N, 3319978.4 N., 277581.6 E., NAD: 83
Name of nearest water body: Garners Bayou
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Greens Bayou
Name of watershed or Hydrologic Unit Code (HUC): Buffalo-San Jacinto-12040104

- 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: 11 December 2017
 Field Determination. Date(s): 14 December 2017

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

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

- Waters subject to the ebb and flow of the tide.
 Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

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

1. Waters of the U.S.

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

- TNWs, including territorial seas
 Wetlands adjacent to TNWs
 Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs
 Non-RPWs that flow directly or indirectly into TNWs
 Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
 Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
 Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
 Impoundments of jurisdictional waters
 Isolated (interstate or intrastate) waters, including isolated wetlands

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

Non-wetland waters: **89.84** linear feet: width (ft) and/or **0.02** acres
Wetlands: **0.03** acres

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

Elevation of established OHWM (if known):

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

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

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

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

³ Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

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

- 1. **TNW**
Identify TNW:

Summarize rationale supporting determination:

- 2. **Wetland adjacent to TNW**
Summarize rationale supporting conclusion that wetland is “adjacent”:

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

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

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are “relatively permanent waters” (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, fill out Section III.D.2 and 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 water body⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the water body 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:

⁴ 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 TNW⁵:
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: **Pick List**. Explain findings:

Dye (or other) test performed:

Tributary has (check all that apply):

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

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

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

(iii) **Chemical Characteristics:**

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

Explain:

Identify specific pollutants, if known:

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

⁶ 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 water body'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.

⁷ 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: **Pick List**. Explain findings:

- Dye (or other) test performed:

(c) Wetland Adjacency Determination with Non-TNW:

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

(d) Proximity (Relationship) to TNW

Project wetlands are **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:

Directly abuts? (Y/N) Size (in acres) Directly abuts? (Y/N) Size (in acres)

Summarize overall biological, chemical and physical functions being performed:

C. SIGNIFICANT NEXUS DETERMINATION

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

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

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

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

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

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

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
 TNWs: linear feet width (ft), Or, acres.
 Wetlands adjacent to TNWs: acres.
2. **RPWs that flow directly or indirectly into TNWs.**
 Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: **Stream 2 extends the OHWM of the RPW, Garners Bayou. Based on a review of the Houston-Galveston Area Council 2008 LiDAR data, Stream 2 extends the OHWM of Garners Bayou approximately 89.94 linear feet. Water was observed in Stream 2 in all of the Google Earth aerial images from 2002 to 2017. The feature appears to be fed by direct precipitation and stormwater runoff from the surrounding areas.**
 Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally:

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

- Tributary waters: 89.84 linear feet width (ft)
 Other non-wetland waters: acres

Identify type(s) of waters:

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

- Water body 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: WET H was observed within Stream 2.
- 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: 0.03 acres

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

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

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

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

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

Provide estimates for jurisdictional wetlands in the review area: acres

7. Impoundments of jurisdictional waters.⁹

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

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

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

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

⁸See Footnote # 3.

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

¹⁰ 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.

Identify water body and summarize rationale supporting determination:

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

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

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

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

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

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

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

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

SECTION IV: DATA SOURCES.

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

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: **Crouch Environmental Services, Inc. report dated 14 November 2017**
- 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: **14 December 2017**
- Corps navigable waters’ study:
- U.S. Geological Survey Hydrologic Atlas: **Buffalo-San Jacinto-12040104**
 - USGS NHD data
 - USGS 8 and 12 digit HUC maps
- Galveston District’s Approved List of Navigable Waters
- U.S. Geological Survey map(s). Cite scale & quad name: **1916, 1947, 1954, 1967, 1982, 1995, 2010, 2013, and 2016 Maeden & Humble, Texas Quadrangles**
- USDA Natural Resources Conservation Service Soil Survey. Citation: **Soil Survey of Harris County, Texas - 1976**
- National wetlands inventory map(s). Cite name: **NWI Google Earth Layer**
- State/Local wetland inventory map(s):
- FEMA/FIRM maps: **Panel Number 48201C0480MN, Effective 6/9/2014**
- 100-year Floodplain Elevation is: **Appx. 81 feet** (National Geodetic Vertical Datum of 1929)
- Photographs: Aerial (Name & Date): **Aerial Imagery: 1938, 1944, 1957, 1969, 1978, 1989, 1995, 2004, 2008, and 2012 1943 - 2017 Google Earth Aerials**
 - or Other (Name & Date): **Site visit photographs included in report submitted by Crouch**
- Previous determination(s). File no. and date of response letter:
- Applicable/supporting case law:
- Applicable/supporting scientific literature:

Other information (please specify): **2008 Houston-Galveston Area Council LiDAR data**

B. ADDITIONAL COMMENTS TO SUPPORT JD: Stream 2 extends the OHWM of the RPW, Garners Bayou. Based on a review of the Houston-Galveston Area Council 2008 LiDAR data, Stream 2 extends the OHWM of Garners Bayou approximately 89.84 linear feet. Therefore, this section of Stream 2 is subject to Section 404 of the Clean Water Act. WET H (0.03 acre) was observed within Stream 2. Therefore, WET H is directly abutting Stream 2 and is subject to Section 404 of the Clean Water Act.

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

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SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): 8 January 2018

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Galveston District, SWG-2017-00781, Houston Airport System, WET B-1, WET B-2, PUB D-1, PUB E, PUB C-1, PUB B, PUB A, WET E-5, and Garners Bayou

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: Texas County/Parish: Harris City: Houston
Center coordinates of site (lat/long in degree decimal format, NAD-83): Lat. See table° N, Long. ° W;
Universal Transverse Mercator: UTM: 15N, N., E.,NAD: 83
Name of nearest water body: Garners Bayou
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Greens Bayou
Name of watershed or Hydrologic Unit Code (HUC): Buffalo-San Jacinto-12040104

- 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: 11 December 2017
 Field Determination. Date(s): 14 December 2017

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

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

- Waters subject to the ebb and flow of the tide.
 Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

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

1. Waters of the U.S.

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

- TNWs, including territorial seas
 Wetlands adjacent to TNWs
 Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs
 Non-RPWs that flow directly or indirectly into TNWs
 Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
 Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
 Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
 Impoundments of jurisdictional waters
 Isolated (interstate or intrastate) waters, including isolated wetlands

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

Non-wetland waters: **1,519.77** linear feet: width (ft) and/or **0.55** acres
Wetlands: **4.5** acres

c. Limits (boundaries) of jurisdiction based on: 1987 Delineation Manual.

Elevation of established OHWM (if known):

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

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

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

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

³ Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

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

1. TNW

Identify TNW:

Summarize rationale supporting determination:

2. Wetland adjacent to TNW

Summarize rationale supporting conclusion that wetland is “adjacent”:

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

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

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are “relatively permanent waters” (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, fill out Section III.D.2 and 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 water body⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the water body 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: 1130 square miles

Drainage area: Pick List

Average annual rainfall: 47.84 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 10-15 river miles from TNW.

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

Project waters are 10-15 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:

⁴ 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 TNW⁵: **Garners Bayou to Greens Bayou**

Tributary stream order, if known: **First Order**

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

Tributary is: Natural
 Artificial (man-made). Explain:
 Manipulated (man-altered). Explain: **This portion of Garners Bayou has been re-routed and**

channelized.

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

Average width: **20** feet

Average depth: **3** feet

Average side slopes: **2:1**

Primary tributary substrate composition (check all that apply):

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

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: **Garners Bayou exhibits a cross-section typical of other regional creeks altered for drainage.**

Presence of run/riffle/pool complexes. Explain: **None**

Tributary geometry: **Relatively straight**

Tributary gradient (approximate average slope): %

(c) Flow:

Tributary provides for: **Seasonal flow**

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

Describe flow regime:

Other information on duration and volume:

Surface flow is: **Confined**. Characteristics:

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

Dye (or other) test performed:

Tributary has (check all that apply):

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

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

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

(iii) **Chemical Characteristics:**

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

Explain:

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

⁶ 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 water body'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.

⁷ Ibid.

Identify specific pollutants, if known: **This 2.3-mile relative reach of Garners Bayou is not on the 303 (d) list. However, the portion of Garners Bayou starting 3.25 river miles south of the relative reach is on the 303 (d) list. The cause of impairment is bacteria. Additionally, the downstream TNW, Greens Bayou, is on the 303 (d) list. The cause of impairment is bacteria.**

(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: **4.5** acres

Wetland type. Explain: **PEM, PFO, and PUB**

Wetland quality. Explain: **There are 8 wetlands (WET B-1, WET B-2, PUB D-1, PUB E, PUB C-1, PUB B, PUB A, and, WET E-5) adjacent to Garners Bayou within the project boundary. According to a review of the FEMA floodplain map in conjunction with the Houston-Galveston Area Council LIDAR data, WET B-1, WET B-2, PUB D-1, PUB E, PUB C-1, PUB B, PUB A, and, WET E-5 are located within the 100-year floodplain of Garners Bayou and serve as floodplain storage.**

Project wetlands cross or serve as state boundaries. Explain:

(b) General Flow Relationship with Non-TNW:

Flow is: **No Flow**. Explain: **There is a system of ditches on the site that connects WET B-2, PUB C-1, PUB B, and PUB A. However, the ditches do not extend the ordinary high water mark of Garners Bayou. Therefore, no channelized entrance or egress was observed flowing between the 8 wetlands and Garners Bayou. The 8 wetlands do not abut Garners Bayou. However, they are within the 100-year floodplain of Garners Bayou, and as such, demonstrate a known hydrological connection to Garners Bayou.**

Surface flow is: **Discrete**

Characteristics: **The wetlands are located within the 100-year floodplain of Garners Bayou.**

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: **The wetlands are located within the anticipated high flow of Garners Bayou (i.e. the 100-year floodplain of Garners Bayou)-Neighboring.**

Ecological connection. Explain:

Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW

Project wetlands are **15-20** river miles from TNW.

Project waters are **10-15** aerial (straight) miles from TNW.

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

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

(ii) **Chemical Characteristics:**

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

Identify specific pollutants, if known: **Unknown**

(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: **30 (or more)**

Approximately **(81.51)** 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>
See attached table.			

Summarize overall biological, chemical and physical functions being performed: **Based on our analysis, we determined there are approximately 31 adjacent wetlands located within this 2.3-mile, first order relative reach of Garners Bayou. All wetlands considered in this analysis are adjacent to, but not abutting, Garners Bayou.**

These 31 wetlands total appx 77.01 acres of adjacent wetlands provide for the removal of pollutants (phytosequestration), floodplain storage, and biotic diversity.

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: **This relative reach of Garners Bayou is a first order tributary that is approximately 2.3 miles long. This reach concludes approximately 15 miles upstream of the nearest TNW. Garners Bayou has a direct connection to the downstream TNW, Greens Bayou.**
-Within the project boundary there are 8 wetlands (WET B-1, WET B-2, PUB D-1, PUB E, PUB C-1, PUB B, PUB A, and, WET E-5: totaling 4.5 acres) adjacent to this relative reach of Garners Bayou. According to a review of the FEMA floodplain map in conjunction with the Houston-Galveston Area Council LIDAR data, WET B-1, WET B-2, PUB D-1, PUB

E, PUB C-1, PUB B, PUB A, and, WET E-5 are located within the 100-year floodplain of Garners Bayou, and therefore, neighbor Garners Bayou. WET B-1, WET B-2, PUB D-1, PUB E, PUB C-1, PUB B, PUB A, and, WET E-5, in combination with 31 wetlands located within the 100-year floodplain of Garners Bayou within the 2.3-mile relative reach, total approximately 81.51 acres. All wetlands considered in this analysis are adjacent to, but not abutting, Garners Bayou.

- There is not a surface hydrologic break between this approximate 2.3-mile relative reach of Garners Bayou and the downstream TNW, Greens Bayou; thus, a direct surface hydrologic connection exists. Greens Bayou downstream of this reach is identified on the TCEQ 303(d) list of impaired waters due to bacteria. The approximate 81.51 acres of adjacent wetlands aid in providing important filtration to aid in the reduction and treatment of bacteria, thermal, and chemical pollutants in Greens Bayou. Therefore, the aquatic resources within this review area should provide important sequestering functions to aid in the chemical integrity of the downstream TNW, located approximately 15 river miles downstream.

-Within this relative reach of Garners Bayou, there are approximately 81.51 acres of similarly situated adjacent wetlands located within the 100-year floodplain. The TNW, Greens Bayou, begins approximately 15 river miles downstream. The retention of water and retardation of overbank flooding associated with these adjacent wetlands located in a floodplain serve an important functions in and associated with the physical functions of the downstream TNW. The effects of removing approximately 81.51 acres of wetlands would increase the velocity and flow of water into the TNW (Greens Bayou). Increased flow will increase "out of bank" flooding and scouring, resulting in loss of property and the physical attributes of the TNW. These aquatic resources (~ 81.51 acres of wetlands and 2.3 miles of tributary) provide more than speculative or insubstantial effect upon the physical attributes for the downstream TNW.

-There are no known species found in this project area that require these aquatic resources within this relative reach and/or review area and the waters of the TNW to fulfill their life cycle requirements. However, based on the fact that the waterway in this reach is an RPW with a direct hydrologic connection with the TNW, it is highly feasible that species of fishes and/or invertebrates can utilize locations of Garners Bayou for portions of their lifecycles; but there is not sufficient evidence to identify a species that requires both the aquatic resources within this reach and the waters of the TNW to full lifecycle requirements. The aquatic resources within this review area aid and support the biological integrity of the downstream TNW.

-In conclusion, it is the Corps opinion that the waters within this review area: a 2.3-mile, first order stream combined with approximately 81.51 acres of adjacent wetlands do provide more than a speculative or substantial effect upon the chemical, biological and/or physical integrity of 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: **The portion of Garners Bayou within the site is a rerouted and channelized extent of the natural Garners Bayou. Water was observed in Garners Bayou in all of the Google Earth aerial images from 2002 to 2017. The feature appears to be fed by direct precipitation and stormwater runoff from the surrounding areas.**
- Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally:

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

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

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

- Water body 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:

⁸See Footnote # 3.

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

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

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

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

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

Provide acreage estimates for jurisdictional wetlands in the review area: 4.5 acres

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

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

Provide estimates for jurisdictional wetlands in the review area: acres

7. Impoundments of jurisdictional waters.⁹

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

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

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

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

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).

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

¹⁰ 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.

- Waters do not meet the “Significant Nexus” standard, where such a finding is required for jurisdiction. Explain:
- Other: (explain, if not covered above):

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

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

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

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

SECTION IV: DATA SOURCES.

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

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: **Crouch Environmental Services, Inc. report dated 14 November 2017**
- 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: **14 December 2017**
- Corps navigable waters’ study:
- U.S. Geological Survey Hydrologic Atlas: **Buffalo-San Jacinto-12040104**
 - USGS NHD data
 - USGS 8 and 12 digit HUC maps
- Galveston District’s Approved List of Navigable Waters
- U.S. Geological Survey map(s). Cite scale & quad name: **1916, 1947, 1954, 1967, 1982, 1995, 2010, 2013, and 2016 Maeden & Humble, Texas Quadrangles**
- USDA Natural Resources Conservation Service Soil Survey. Citation: **Soil Survey of Harris County, Texas - 1976**
- National wetlands inventory map(s). Cite name: **NWI Google Earth Layer**
- State/Local wetland inventory map(s):
- FEMA/FIRM maps: **Panel Number 48201C0480M, Effective 6/9/2014**
- 100-year Floodplain Elevation is: **Appx. 81 feet** (National Geodetic Vertical Datum of 1929)
- Photographs: Aerial (Name & Date): **Aerial Imagery: 1938, 1944, 1957, 1969, 1978, 1989, 1995, 2004, 2008, and 2012 1943 - 2017 Google Earth Aerials**
 - or Other (Name & Date): **Site visit photographs included in report submitted by Crouch**
- Previous determination(s). File no. and date of response letter:
- Applicable/supporting case law:
- Applicable/supporting scientific literature:
- Other information (please specify): **2008 Houston-Galveston Area Council LiDAR data**

B. ADDITIONAL COMMENTS TO SUPPORT JD: Based on our 14 December 2017 site visit and a review of on and off-site data associated with this request, we have determined that the project area contains waters of the United States, specifically Garners Bayou and wetlands adjacent to but not directly abutting Garners Bayou. Garners Bayou is a relatively permanent water (RPW) that flows directly into Greens Bayou (TNW).

There are 8 wetlands (WET B-1, WET B-2, PUB D-1, PUB E, PUB C-1, PUB B, PUB A, and, WET E-5; totaling 4.5 acres) adjacent to Garners Bayou within the project boundary. According to a review of the FEMA floodplain map in conjunction with the Houston-Galveston Area Council LIDAR data, WET B-1, WET B-2, PUB D-1, PUB E, PUB C-1, PUB B, PUB A, and, WET E-5 are located within the 100-year floodplain of Garners Bayou, and therefore, neighbor Garners Bayou. WET B-1, WET B-2, PUB D-1, PUB E, PUB C-1, PUB B, PUB A, and, WET E-5, in combination with 31 wetlands located within the 100-year floodplain of Garners Bayou within the 2.3-mile relative reach, total approximately 81.51 acres. All wetlands considered in this analysis are adjacent, but not abutting, to Garners Bayou.

There is not a surface hydrologic break between this approximate 2.3-mile relative reach of Garners Bayou and the downstream TNW, Greens Bayou; thus, a direct surface hydrologic connection exists. Greens Bayou is identified on the TCEQ 303(d) list of impaired waters due to bacteria downstream of this reach. The approximate 81.51 acres of adjacent wetlands aid in providing filtration & eliminating and/or treating of bacteria, thermal, and chemical pollutants in Greens Bayou. Therefore, while it appears that the aquatic resources within this reach provide more important chemical functions to the downstream TNW, there is not sufficient evidence to substantiate this empirically.

Within this relative reach of Garners Bayou, there are approximately 81.51 acres of similarly situated adjacent wetlands located within the 100-year floodplain. The TNW, Greens Bayou, begins approximately 15 river miles downstream. The retention of water and retardation of overbank flooding associated with adjacent wetlands located in a floodplain is well documented. The effects of removing approximately 81.51 acres of wetlands would increase the velocity and flow of liquids into Greens Bayou, resulting in a more than speculative or insubstantial effect upon the physical attributes for the downstream TNW. Increased flow will increase "out of bank" flooding and scouring, resulting in loss of property and the physical attributes of the TNW.

There are no known species found in this review that require these aquatic resources within this relative reach and/or review area and the waters of the TNW to fulfill their life cycle requirements. However, based on the fact that the waterway in this reach is an RPW with a direct hydrologic connection with the TNW, it is highly feasible that species of fishes and/or invertebrates can utilize locations of Garners Bayou for portions of their lifecycles, but there is not sufficient evidence to identify a species that requires both the aquatic resources within this reach and the waters of the TNW to full lifecycle requirements. The aquatic resources within this review area aid and support the biological integrity of the downstream TNW.

In conclusion, it is the Corps' opinion that there is sufficient evidence to support the statement that the aquatic resources within this approximate 2.3-mile relative reach and its appx 81.51 acres of adjacent wetlands provide a significant nexus (more than a speculative or insubstantial) effect upon the chemical, physical, and/or biological integrity of the downstream TNW. As such, they are subject to federal jurisdiction under Section 404 of the Clean Water Act.

Wetlands Considered in the Cumulative Analysis

NWI Wetland Type	Approximate Amount (Acres)	Directly Abuts?		Latitude	Longitude
<i>Inside Project Site</i>					
PFO	3.70	No	WET B-1	29.993206°	-95.301442°
PFO	0.04	No	WET B-2	29.992172°	-95.301388°
PUB	0.08	No	PUB D-1	29.993707°	-95.300523°
PUB	0.12	No	PUB E	29.993335°	-95.300770°
PUB	0.11	No	PUB C-1	29.991900°	-95.301289°
PUB	0.10	No	PUB B	29.991589°	-95.301337°
PUB	0.14	No	PUB A	29.990719°	-95.301272°
PEM	0.21	No	WET E-5	29.990962°	-95.303575°
<i>Outside Project Site</i>					
PEM	0.54	No			
PEM	0.53	No			
PEM	0.28	No			
PEM	7.00	No			
PEM	0.21	No			
PEM	0.95	No			
PEM	0.18	No			
PEM	0.95	No			
PEM	0.95	No			
PEM	0.18	No			
PEM	0.15	No			
PEM	0.59	No			
PEM	0.14	No			
PEM	0.00	No			
PFO	0.60	No			
PFO	1.00	No			
PFO	1.10	No			
PFO	0.78	No			
PFO	0.86	No			
PFO	0.10	No			
PFO	1.58	No			
PFO	33.00	No			
PFO	16.80	No			
PFO	0.20	No			
PFO	0.36	No			
PFO	0.10	No			
PFO	2.57	No			
PFO	0.49	No			
PFO	1.71	No			
PUB	2.11	No			
PUB	1.00	No			
Approximate Total:		81.51			

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): 8 January 2018

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Galveston District, SWG-2017-00781, Houston Airport System, WET A-1, WET A-2, WET C, WET D, WET F, WET G, PUB C-2, PUB D-2, WET E-1, WET E-2, WET E-3, and WET E-4

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: Texas County/Parish: Harris City: Houston
Center coordinates of site (lat/long in degree decimal format, NAD-83): Lat. See Table ° N, Long. ° W;
Universal Transverse Mercator: UTM: 15N, N., E..NAD: 83
Name of nearest water body: Garners Bayou
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: None
Name of watershed or Hydrologic Unit Code (HUC): Buffalo-San Jacinto-12040104

- 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: 11 December 2017
 Field Determination. Date(s): 14 December 2017

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

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

- Waters subject to the ebb and flow of the tide.
 Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

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

1. Waters of the U.S.

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

- TNWs, including territorial seas
 Wetlands adjacent to TNWs
 Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs
 Non-RPWs that flow directly or indirectly into TNWs
 Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
 Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
 Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
 Impoundments of jurisdictional waters
 Isolated (interstate or intrastate) waters, including isolated wetlands

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

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

c. Limits (boundaries) of jurisdiction based on: **Pick List**

Elevation of established OHWM (if known):

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

- Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.
Explain: There are 12 isolated wetlands on the project site totaling appx 1.55 acres (see table). The wetlands were identified using the Atlantic and Gulf Coastal Plain Region Supplement to the 1987 Corps of Engineers Wetland Delineation Manual, which requires a dominance of hydrophytic vegetation, wetland hydrology indicators, and hydric soils, under normal

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

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

³ Supporting documentation is presented in Section III.F.

conditions. The nearest water of the United States is Garners Bayou located within the project site. The navigable portion of Greens Bayou is the nearest Traditional Navigable Water. According to the FEMA floodplain map, all of these subject wetlands are located outside the 100 year floodplain of any water of the United States. As such they are located outside the anticipated high flow of any water of the United States. Based on the 14 December 2017 site visit and off-site review it has been verified that none of these wetlands have a confined hydrological surface connection to any water of the United States, nor are they "inseparably bound" to any waters of the United States under normal hydrologic conditions.

-Based on off-site data and on-site data collected during the site visit conducted 14 December 2017, there are no known hydrological connections between WET A-1, WET A-2, WET C, WET D, WET F, WET G, PUB C-2, PUB D-2, WET E-1, WET E-2, WET E-3, and WET E-4 and Garners Bayou or any other water of the United States.

-There are no confined surface hydrologic connections between WET A-1, WET A-2, WET C, WET D, WET F, WET G, PUB C-2, PUB D-2, WET E-1, WET E-2, WET E-3, and WET E-4 and any water of the United States.

-WET A-1, WET A-2, WET C, WET D, WET F, WET G, PUB C-2, PUB D-2, WET E-1, WET E-2, WET E-3, and WET E-4 are isolated and are not waters of the United States, as defined in 33 CFR 328.3(a). They are not currently used, were not used in the past, nor are they susceptible to use for interstate or foreign commerce. The destruction of these subject wetlands would not affect interstate or foreign travelers for recreational or other purposes, would not affect fish or shellfish that could be taken and sold in interstate or foreign commerce, and would not affect the current use or potential use for industrial purposes by industries in interstate commerce.

-WET A-1, WET A-2, WET C, WET D, WET F, WET G, PUB C-2, PUB D-2, WET E-1, WET E-2, WET E-3, and WET E-4 are not subject to the ebb and flow of the daily tide.

-WET A-1, WET A-2, WET C, WET D, WET F, WET G, PUB C-2, PUB D-2, WET E-1, WET E-2, WET E-3, and WET E-4 do not cross interstate or tribal boundaries.

-WET A-1, WET A-2, WET C, WET D, WET F, WET G, PUB C-2, PUB D-2, WET E-1, WET E-2, WET E-3, and WET E-4 are not impoundments of a water of the United States.

-WET A-1, WET A-2, WET C, WET D, WET F, WET G, PUB C-2, PUB D-2, WET E-1, WET E-2, WET E-3, and WET E-4 are not part of a surface tributary system of any of the above.

-WET A-1, WET A-2, WET C, WET D, WET F, WET G, PUB C-2, PUB D-2, WET E-1, WET E-2, WET E-3, and WET E-4 are not part of the territorial seas.

-WET A-1, WET A-2, WET C, WET D, WET F, WET G, PUB C-2, PUB D-2, WET E-1, WET E-2, WET E-3, and WET E-4 are not adjacent (bordering, contiguous, or neighboring) as defined by 33CFR 328.3(c) to any waters of the U.S.

-WET A-1, WET A-2, WET C, WET D, WET F, WET G, PUB C-2, PUB D-2, WET E-1, WET E-2, WET E-3, and WET E-4 have been determined not to be "ecologically adjacent", as defined in the Rapanos guidance as being "reasonably close" such that an ecologic interconnectivity is beyond speculation or insubstantial. There are no known species in this georegion that require any of the subject wetlands and the nearest waterbody (a water of the United States other than an adjacent wetland) to fulfill spawning and/or life cycle requirements.

-WET A-1, WET A-2, WET C, WET D, WET F, WET G, PUB C-2, PUB D-2, WET E-1, WET E-2, WET E-3, and WET E-4 are isolated wetlands as defined in 33 CFR 330.2(e): those non-tidal waters of the United States that are not part of a surface tributary system to interstate or navigable waters of the United States, and are not adjacent to such tributary waterbodies. They are all located outside of the 100-year floodplain of any water of the United States and do not have a confined hydrological surface connection to any water of the United States.

-The wetlands have no known nexus to interstate commerce. We determined the wetlands are not waters of the United States and are not subject to Section 404 of the Clean Water Act.

-Four non-tidal, upland man-made drainage ditches and one swale were observed on the site. These features are not reroutes of a tributary. They do not extend the ordinary high water mark of a tributary either. Therefore, these features are non-jurisdictional and not subject to Section 404 of the Clean Water Act.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

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

- 1. **TNW**
Identify TNW:

Summarize rationale supporting determination:

- 2. **Wetland adjacent to TNW**
Summarize rationale supporting conclusion that wetland is “adjacent”:

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

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

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are “relatively permanent waters” (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, fill out Section III.D.2 and 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 water body⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the water body 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:

⁴ 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 TNW⁵:
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: **Pick List**. Explain findings:

Dye (or other) test performed:

Tributary has (check all that apply):

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

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

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

(iii) **Chemical Characteristics:**

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

Explain:

Identify specific pollutants, if known:

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

⁶ 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 water body's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

⁷Ibid.

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

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

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

(i) **Physical Characteristics:**

(a) General Wetland Characteristics:

Properties:

Wetland size: _____ 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: **Pick List**. Explain findings:

Dye (or other) test performed:

(c) Wetland Adjacency Determination with Non-TNW:

Directly abutting

Not directly abutting

Discrete wetland hydrologic connection. Explain:

Ecological connection. Explain:

Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW

Project wetlands are **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:

Directly abuts? (Y/N) Size (in acres) Directly abuts? (Y/N) Size (in acres)

Summarize overall biological, chemical and physical functions being performed:

C. SIGNIFICANT NEXUS DETERMINATION

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

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

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

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

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

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

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

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

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

Identify type(s) of waters:

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

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

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

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

Identify type(s) of waters:

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

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

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

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

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

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

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

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

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

Provide estimates for jurisdictional wetlands in the review area: acres

7. Impoundments of jurisdictional waters.⁹

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

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

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

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

Identify water body and summarize rationale supporting determination:

⁸See Footnote # 3.

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

¹⁰ 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 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): Four upland man-made drainage ditches and a swale

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: **appx 1.55** 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: **Crouch Environmental Services, Inc. report dated 14 November 2017**
- 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: **14 December 2017**
- Corps navigable waters' study:
- U.S. Geological Survey Hydrologic Atlas: **Buffalo-San Jacinto-12040104**
 - USGS NHD data
 - USGS 8 and 12 digit HUC maps
- Galveston District's Approved List of Navigable Waters
- U.S. Geological Survey map(s). Cite scale & quad name: **1916, 1947, 1954, 1967, 1982, 1995, 2010, 2013, and 2016 Maeden & Humble, Texas Quadrangles**
- USDA Natural Resources Conservation Service Soil Survey. Citation: **Soil Survey of Harris County, Texas - 1976**
- National wetlands inventory map(s). Cite name: **NWI Google Earth Layer**
- State/Local wetland inventory map(s):
- FEMA/FIRM maps: **Panel Number 48201C0480MN, Effective 6/9/2014**
- 100-year Floodplain Elevation is: **Appx. 81 feet** (National Geodectic Vertical Datum of 1929)
- Photographs: Aerial (Name & Date): **Aerial Imagery: 1938, 1944, 1957, 1969, 1978, 1989, 1995, 2004, 2008, and 2012 1943 - 2017 Google Earth Aerials**
 - or Other (Name & Date): **Site visit photographs included in report submitted by Crouch**
- Previous determination(s). File no. and date of response letter:
- Applicable/supporting case law:
- Applicable/supporting scientific literature:
- Other information (please specify): **2008 Houston-Galveston Area Council LiDAR data**

B. ADDITIONAL COMMENTS TO SUPPORT JD: There are 12 isolated wetlands on the project site totaling appx 1.55 acres (see table). The wetlands were identified using the Atlantic and Gulf Coastal Plain Region Supplement to the 1987 Corps of Engineers Wetland Delineation Manual, which requires a dominance of hydrophytic vegetation, wetland hydrology indicators, and hydric soils, under normal conditions. The nearest water of the United States is Garners Bayou located within the project site. The navigable portion of Greens Bayou is the nearest Traditional Navigable Water. According to the FEMA floodplain map, all of these subject wetlands are located outside the 100 year floodplain of any water of the United States. As such they are located outside the anticipated high flow of any water of the United States. Based on the 14 December 2017 site visit and off-site review it has been verified that none of these wetlands have a confined hydrological surface connection to any water of the United States, nor are they “inseparably bound” to any waters of the United States under normal hydrologic conditions.

-Based on off-site data and on-site data collected during the site visit conducted 14 December 2017, there are no known hydrological connections between WET A-1, WET A-2, WET C, WET D, WET F, WET G, PUB C-2, PUB D-2, WET E-1, WET E-2, WET E-3, and WET E-4 and Garners Bayou or any other water of the United States.

-There are no confined surface hydrologic connections between WET A-1, WET A-2, WET C, WET D, WET F, WET G, PUB C-2, PUB D-2, WET E-1, WET E-2, WET E-3, and WET E-4 and any water of the United States.

-WET A-1, WET A-2, WET C, WET D, WET F, WET G, PUB C-2, PUB D-2, WET E-1, WET E-2, WET E-3, and WET E-4 are isolated and are not waters of the United States, as defined in 33 CFR 328.3(a). They are not currently used, were not used in the past, nor are they susceptible to use for interstate or foreign commerce. The destruction of these subject wetlands would not affect interstate or foreign travelers for recreational or other purposes, would not affect fish or shellfish that could be taken and sold in interstate or foreign commerce, and would not affect the current use or potential use for industrial purposes by industries in interstate commerce.

-WET A-1, WET A-2, WET C, WET D, WET F, WET G, PUB C-2, PUB D-2, WET E-1, WET E-2, WET E-3, and WET E-4 are not subject to the ebb and flow of the daily tide.

-WET A-1, WET A-2, WET C, WET D, WET F, WET G, PUB C-2, PUB D-2, WET E-1, WET E-2, WET E-3, and WET E-4 do not cross interstate or tribal boundaries.

-WET A-1, WET A-2, WET C, WET D, WET F, WET G, PUB C-2, PUB D-2, WET E-1, WET E-2, WET E-3, and WET E-4 are not impoundments of a water of the United States.

-WET A-1, WET A-2, WET C, WET D, WET F, WET G, PUB C-2, PUB D-2, WET E-1, WET E-2, WET E-3, and WET E-4 are not part of a surface tributary system of any of the above.

-WET A-1, WET A-2, WET C, WET D, WET F, WET G, PUB C-2, PUB D-2, WET E-1, WET E-2, WET E-3, and WET E-4 are not part of the territorial seas.

-WET A-1, WET A-2, WET C, WET D, WET F, WET G, PUB C-2, PUB D-2, WET E-1, WET E-2, WET E-3, and WET E-4 are not adjacent (bordering, contiguous, or neighboring) as defined by 33CFR 328.3(c) to any waters of the U.S.

-WET A-1, WET A-2, WET C, WET D, WET F, WET G, PUB C-2, PUB D-2, WET E-1, WET E-2, WET E-3, and WET E-4 have been determined not to be "ecologically adjacent", as defined in the Rapanos guidance as being "reasonably close" such that an ecologic interconnectivity is beyond speculation or insubstantial. There are no known species in this georegion that require any of the subject wetlands and the nearest waterbody (a water of the United States other than an adjacent wetland) to fulfill spawning and/or life cycle requirements.

-WET A-1, WET A-2, WET C, WET D, WET F, WET G, PUB C-2, PUB D-2, WET E-1, WET E-2, WET E-3, and WET E-4 are isolated wetlands as defined in 33 CFR 330.2(e): those non-tidal waters of the United States that are not part of a surface tributary system to interstate or navigable waters of the United States, and are not adjacent to such tributary waterbodies. They are all located outside of the 100-year floodplain of any water of the United States and do not have a confined hydrological surface connection to any water of the United States.

-The wetlands have no known nexus to interstate commerce. We determined the wetlands are not waters of the United States and are not subject to Section 404 of the Clean Water Act.

-In conclusion, it is SWG's draft determination that these 12 wetlands on the tract totaling appx 1.55 acres are "isolated" and lack a nexus to interstate commerce. As such, these wetlands are not waters of the United States subject to Section 404 of the Clean Water Act.

TABLE

Wetland Feature ID	Approximate Acreage	Latitude	Longitude	Northing (Meters)	Easting (Meters)	Appx. Distance to Garners Bayou (miles)
WET A-1	0.16	29.995927	-95.301236	3320563.5	278012	0.39
WET A-2	0.42	29.995288	-95.301333	3320492.9	278001.2	0.34
WET C	0.003	29.995661	-95.300147	3320531.9	278117.1	0.37
WET D	0.03	29.995834	-95.299723	3320550.3	278157.8	0.38
WET F	0.06	29.992210	-95.300705	3320150.4	278054.9	0.13
WET G	0.008	29.991724	-95.300892	3320096.9	278035.8	0.1
PUB C-2	0.01	29.991841	-95.301901	3320111.8	277938.7	0.1
PUB D-2	0.12	29.991894	-95.302226	3320118.4	277907.5	0.11
WET E-1	0.15	29.991777	-95.302971	3320106.8	277835.3	0.1
WET E-2	0.08	29.991651	-95.302922	3320092.8	277839.8	0.09
WET E-3	0.02	29.991319	-95.303021	3320056.2	277829.5	0.07
WET E-4	0.49	29.991409	-95.303360	3320066.8	277797	0.08

-Four non-tidal, upland man-made drainage ditches and one swale were observed on the site. These features are not reroutes of a tributary. They do not extend the ordinary high water mark of a tributary either. Therefore, these features are non-jurisdictional and not subject to Section 404 of the Clean Water Act.