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

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

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): July 13, 2016

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Galveston District, SWG-2016-00614, Alabonson Park

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. See Table° W;
Universal Transverse Mercator: UTM: See Table, Pick List., Pick List.,NAD: See Table
Name of nearest water body: White Oak Bayou
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Buffalo Bayou
Name of watershed or Hydrologic Unit Code (HUC): 120401040302
☒ 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: 10/24/2016
☒ Field Determination. Date(s): 09/09/2016

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. **[*Required*]**
☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

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

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (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: **4.20** 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 body[4] 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: **Cole Creek-White Oak Bayou (HUC 120401040302); 32,926.02 square acres**
Drainage area: **Pick List**
Average annual rainfall: **49.77** inches
Average annual snowfall: **0.0** 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 **30 (or more)** 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:

Identify flow route to TNW[5]: **White Oak Bayou flows directly into TNW of Buffalo Bayou, the nearest TNW.**
Tributary stream order, if known:

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

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

Tributary is: ☐ Natural
☐ Artificial (man-made). Explain:
☒ Manipulated (man-altered). Explain: **Deepened and widened in some areas to increase capacity and channelized in areas to control erosion.**

Tributary properties with respect to top of bank (estimate):
Average width: **150** feet
Average depth: **10** feet
Average side slopes: **3:1**

Primary tributary substrate composition (check all that apply):

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

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: **Stable**
Presence of run/riffle/pool complexes. Explain: **None**
Tributary geometry: **Meandering**
Tributary gradient (approximate average slope): **1-2** %

(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: **Tributary is perennial**
Surface flow is: **Confined**. Characteristics:
Subsurface flow: **Unknown**. Explain findings:
☐ Dye (or other) test performed:

Tributary has (check all that apply):
☒ Bed and banks
☒ OHWM[6] (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: **Water color varies depending on storm water input. Water is generally slow moving.**
Identify specific pollutants, if known: **Impaired due to depressed dissolved oxygen.**

[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: **4.20** acres

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

Wetland quality. Explain: **medium to high for PFO; medium to low for PEM**

Project wetlands cross or serve as state boundaries. Explain:

(b) General Flow Relationship with Non-TNW:

Flow is: **Ephemeral flow**. Explain:

Surface flow is**: Discrete**

Characteristics:

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

- ☐ Dye (or other) test performed:

(c) Wetland Adjacency Determination with Non-TNW:

- ☐ Directly abutting
- ☒ Not directly abutting
  - ☒ Discrete wetland hydrologic connection. Explain: **PFO wetland connected by 100-year floodplain of White Oak Bayou. PEM wetlands are within the base-flood elevation of 82ft for White Oak Bayou.**
  - ☐ Ecological connection. Explain:
  - ☐ Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW

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

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

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

Estimate approximate location of wetland as within the **50 - 100-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: **During site visit, water in wetlands was either clear or murky. Chemical characteristics are unknown.**

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: **forested/100% cover for PFO; herbaceous/100% cover for PEM**
- ☒ 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 **(572)** 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)
N (143 Wetlands)	**572**		
Y (8 Wetlands)	**229 Acres**		

Summarize overall biological, chemical and physical functions being performed: **White Oak Bayou is a relatively permanent water and a third order stream within this relative reach, which is approximately 19 river miles long and flows directly into the traditional navigable water of Buffalo Bayou. The relevant reach of White Oak Bayou starts in Jersey Village, Texas at the intersection of White Oak Bayou and White Oak Bayou Tributary (HCFCD No. E127-00-00) (approximately 4.74 river miles upstream of the project site), continues as White Oak Bayou, and ends at the traditional navigable water of Buffalo Bayou which is near the intersection of Highway 90 and N Main St. in Houston, TX (approximately 14.53 river miles downstream of the project site). The relevant reach is located within a highly developed area of Houston with commercial, industrial, and residential lands surrounding it. The downstream portion of the relevant reach is located in the center of the city of Houston while the upper portion is within the suburbs of Houston that is dominated by residential subdivisions and commercial properties.**

There are approximately 151 offsite adjacent wetlands within this relevant reach that are located within a 0.5 mile buffer of the relevant reach and total approximately 572 acres, based on the US Fish and Wildlife Service National Wetlands Inventory data and ESRI aerial imaging. Approximately 285 acres of the adjacent wetlands are classified as freshwater forested/shrub wetlands, approximately 31 acres are classified as freshwater emergent wetlands, approximately 215 acres are riverine, and approximately 40 acres are freshwater ponds or other. Approximately 229 acres of these wetlands are abutting the relevant reach. Of these abutting wetlands, approximately 37.5 acres are freshwater forested/shrub wetlands with the remaining characterized as riverine or freshwater ponds.

Wetland A, a 4.05 acre PFO wetland located on the southwesternmost boundary of the project area is located within the 100-year floodplain of White Oak Bayou and is approximately 565 ft from the relatively permanent water. Wetlands D and E total 0.15 acres of PEM wetlands and are located just northwest of Wetland A outside of the 100-year floodplain; however, according to LiDAR data utilized for this study, the elevation of these wetlands is equal to the base-flood elevation (82-ft) of White Oak Bayou. White Oak Bayou and the adjacent 4.20 acres of wetlands may have the capacity to carry pollutants or flood waters to the TNW (Buffalo Bayou). This yields substantial evidence that these wetlands are a significant nexus to White Oak Bayou and by extension Buffalo Bayou (the TNW).

We found evidence/data to support the statement that these waters (the relevant reach of White Oak Bayou and all similarly situated adjacent wetlands within this relevant reach) provide more than a speculative or insubstantial effect upon the chemical integrity of the downstream TNW, Buffalo Bayou, which this relevant reach flows into. There is a direct surface hydrologic connection between this approximate 19-mile relevant reach of White Oak Bayou to the nearest TNW. The approximate 572 acres of adjacent wetlands provide important reduction of thermal and chemical pollutants flowing into White Oak Bayou and the downstream TNW, Buffalo Bayou. White Oak Bayou is identified by the TCEQ as a 303(d) impaired water for dissolved oxygen contamination; therefore, the wetlands in this reach provide important revitalization properties for the hypoxic regions of White Oak Bayou. The aquatic resources within this reach provide more than speculative or insubstantial effects that are inseparably bound to the chemical integrity of the downstream TNW, Buffalo Bayou.

There are no known species found in this review area that require the aquatic resources of White Oak Bayou and its adjacent wetlands and the waters of the TNW, Buffalo Bayou, to fulfill their life cycle requirements. White Oak Bayou is a RPW and has a direct hydrologic connection with the TNW; as such, it is more likely to have aquatic organisms that require both features (TNW and waters in the relevant reach). It is highly feasible that species of fishes and/or invertebrates utilize White Oak Bayou for portions of their life cycles; but there is insufficient evidence to identify specific species that requires both the aquatic resources within this relevant reach and the waters of the TNW to fulfill life cycle requirements. The abutting and neighboring wetlands aid in providing species habitat, shelter from predators, and detritus and nutrients as a food source. Therefore, it is our opinion that the aquatic resources within this relevant reach of White Oak Bayou, although speculative, provide more than an important effect on the biological integrity of the downstream TNW.

Within this relevant reach of White Oak Bayou, there are approximately 572 acres of similarly situated wetlands abutting or neighboring White Oak Bayou. The TNW, Buffalo Bayou, is immediately downstream of this relevant reach. The retention of water and retardation of overbank flooding associated with adjacent wetlands is vital to maintain and protect the physical integrity of the downstream TNW. The effects of removing the abutting wetlands would increase the velocity and flow into White Oak Bayou and Buffalo Bayou; resulting in more than a speculative or insubstantial effect upon the physical attributes of the downstream TNW. Increased flow will increase "out of bank" flooding and scouring, resulting in the loss of property and the physical attributes of the TNW. Therefore, the aquatic resources within this reach provide more than speculative or insubstantial effects that are inseparably bound to maintain the physical integrity of the downstream TNW.

In conclusion, we determined that there is sufficient evidence to support the statement that the aquatic resources within the approximate 19-mile relevant reach of White Oak Bayou and its 572 acres of adjacent wetland provide a significant nexus (more than speculative or insubstantial effect) to the chemical, physical, and/or biological integrity of the downstream TNW (Buffalo Bayou). It is our opinion that this relevant reach of White Oak Bayou and its adjacent wetlands are waters of the US subject to Section 404 of the Clean Water Act.

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 relevant reach of White Oak Bayou is a relatively permanent water and a third order stream that flows into Buffalo Bayou, the downstream TNW. There are approximately 229 acres of abutting wetlands and 572 acres of neighboring wetlands. This relevant reach of White Oak Bayou and its adjacent wetlands provide important filtration to aid in the treatment of thermal and chemical pollutants. The system also retains flood waters and reduces overbank flooding downstream, thereby decreasing the velocity and amount of water flowing downstream into Buffalo Bayou. Retaining flood waters also reduces scouring and the loss of property as well as preserving the physical attributes of the downstream TNW. White Oak Bayou and its adjacent wetlands also likely supports aquatic organisms and the adjacent wetlands provide species habitat, shelter from predators and produce nutrients and detritus as a food source for downstream organisms. Based on this information, we determined that this relevant reach of White Oak Bayou and its adjacent wetlands provide more than speculative or insubstantial effect on the chemical, physical, and/or biological integrity of the downstream TNW, Buffalo Bayou.**

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: **Water is visible in White Oak Bayou (0.11 miles south of the project site) in all of the Google**

Earth aerial photos from when it was first channelized between 1953 and 1978. Therefore, it is a perennial relatively permanent water.

☐ 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-RPWs[8] 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 jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: **4.20** 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.

[8]See Footnote # 3.

[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.*

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

Identify water body and summarize rationale supporting determination:

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft)
☐ Other non-wetland waters: acres
Identify type(s) of waters:
☐ Wetlands: acres

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

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: **Spirit Environmental, LLC**
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report
☐ Data sheets prepared by the Corps:
☐ Corps navigable waters' study:
☐ U.S. Geological Survey Hydrologic Atlas:
☐ USGS NHD data
☐ USGS 8 and 12 digit HUC maps
☐ Galveston District's Approved List of Navigable Waters
☒ U.S. Geological Survey map(s). Cite scale & quad name: **Aldine 2013, 1:30,300**
☒ USDA Natural Resources Conservation Service Soil Survey. Citation: **USDA, NRCS; Web Soil Survey**
☒ National wetlands inventory map(s). Cite name: **USFWS, National Wetlands Inventory; Houston, TX**
☐ State/Local wetland inventory map(s):
☒ FEMA/FIRM maps: **Panel 48201C0465M, 6/9/2014**
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date): **Google Earth 2016; ESRI 2015**
or ☐ Other (Name & Date):
☐ Previous determination(s). File no. and date of response letter:
☐ Applicable/supporting case law:

☐ Applicable/supporting scientific literature:
☒ Other information (please specify): **Site Photographs taken by Spirit Environmental, LLC staff during wetland delineation; June 2016**

B. ADDITIONAL COMMENTS TO SUPPORT JD: White Oak Bayou is a relatively permanent water and a third order stream within this relative reach, which is approximately 19 river miles long and flows directly into the traditional navigable water of Buffalo Bayou. The relevant reach of White Oak Bayou starts in Jersey Village, Texas at the intersection of White Oak Bayou and White Oak Bayou Tributary (HCFCD No. E127-00-00) (approximately 4.74 river miles upstream of the project site), continues as White Oak Bayou, and ends at the traditional navigable water of Buffalo Bayou which is near the intersection of Highway 90 and N Main St. in Houston, TX (approximately 14.53 river miles downstream of the project site). The relevant reach is located within a highly developed area of Houston with commercial, industrial, and residential lands surrounding it. The downstream portion of the relevant reach is located in the center of the city of Houston while the upper portion is within the suburbs of Houston that is dominated by residential subdivisions and commercial properties.

There are approximately 151 offsite adjacent wetlands within this relevant reach that are located within a 0.5 mile buffer of the relevant reach and total approximately 572 acres, based on the US Fish and Wildlife Service National Wetlands Inventory data and ESRI aerial imaging. Approximately 285 acres of the adjacent wetlands are classified as freshwater forested/shrub wetlands, approximately 31 acres are classified as freshwater emergent wetlands, approximately 215 acres are riverine, and approximately 40 acres are freshwater ponds or other. Approximately 229 acres of these wetlands are abutting the relevant reach. Of these abutting wetlands, approximately 37.5 acres are freshwater forested/shrub wetlands with the remaining characterized as riverine or freshwater ponds.

Wetland A, a 4.05 acre PFO wetland located on the southwesternmost boundary of the project area is located within the 100-year floodplain of White Oak Bayou and is approximately 565 ft from the relatively permanent water. Wetlands D and E total 0.15 acres of PEM wetlands and are located just northwest of Wetland A outside of the 100-year floodplain; however, according to LiDAR data utilized for this study, the elevation of these wetlands is equal to the base-flood elevation (82-ft) of White Oak Bayou. White Oak Bayou and the adjacent 4.20 acres of wetlands may have the capacity to carry pollutants or flood waters to the TNW (Buffalo Bayou). This yields substantial evidence that these wetlands are a significant nexus to White Oak Bayou and by extension Buffalo Bayou (the TNW).

We found evidence/data to support the statement that these waters (the relevant reach of White Oak Bayou and all similarly situated adjacent wetlands within this relevant reach) provide more than a speculative or insubstantial effect upon the chemical integrity of the downstream TNW, Buffalo Bayou, which this relevant reach flows into. There is a direct surface hydrologic connection between this approximate 19-mile relevant reach of White Oak Bayou to the nearest TNW. The approximate 572 acres of adjacent wetlands provide important reduction of thermal and chemical pollutants flowing into White Oak Bayou and the downstream TNW, Buffalo Bayou. White Oak Bayou is identified by the TCEQ as a 303(d) impaired water for dissolved oxygen contamination; therefore, the wetlands in this reach provide important revitalization properties for the hypoxic regions of White Oak Bayou. The aquatic resources within this reach provide more than speculative or insubstantial effects that are inseparably bound to the chemical integrity of the downstream TNW, Buffalo Bayou.

There are no known species found in this review area that require the aquatic resources of White Oak Bayou and its adjacent wetlands and the waters of the TNW, Buffalo Bayou, to fulfill their life cycle requirements. White Oak Bayou is a RPW and has a direct hydrologic connection with the TNW; as such, it is more likely to have aquatic organisms that require both features (TNW and waters in the relevant reach). It is highly feasible that species of fishes and/or invertebrates utilize White Oak Bayou for portions of their life cycles; but there is insufficient evidence to identify specific species that requires both the aquatic resources within this relevant reach and the waters of the TNW to fulfill life cycle requirements. The abutting and neighboring wetlands aid in providing species habitat, shelter from predators, and detritus and nutrients as a food source. Therefore, it is our opinion that the aquatic resources within this relevant reach of White Oak Bayou, although speculative, provide more than an important effect on the biological integrity of the downstream TNW.

Within this relevant reach of White Oak Bayou, there are approximately 572 acres of similarly situated wetlands abutting or neighboring White Oak Bayou. The TNW, Buffalo Bayou, is immediately downstream of this relevant reach. The retention of water and retardation of overbank flooding associated with adjacent wetlands is vital to maintain and protect the physical integrity of the downstream TNW. The effects of removing the abutting wetlands would increase the velocity and flow into White Oak Bayou and Buffalo Bayou; resulting in more than a speculative or insubstantial effect upon the physical attributes of the downstream TNW. Increased flow will increase "out of bank" flooding and scouring, resulting in the loss of property and the physical attributes of the TNW. Therefore, the aquatic resources within this reach provide more than speculative or insubstantial effects that are inseparably bound to maintain the physical integrity of the downstream TNW.

In conclusion, we determined that there is sufficient evidence to support the statement that the aquatic resources within the approximate 19-mile relevant reach of White Oak Bayou and its 572 acres of adjacent wetland provide a significant nexus (more than speculative or insubstantial effect) to the chemical, physical, and/or biological integrity of the downstream TNW (Buffalo Bayou). It is our opinion that this relevant reach of White Oak Bayou and its adjacent wetlands are waters of the US subject to Section 404 of the Clean Water Act.

Name	Approx. Size (Acres)	Latitude	Longitude	UTM Northing	Easting	Distance to Nearest WOTUS
Wetland A	**4.05 AC**	**29.879097°**	**-95.492357°**	**15 3307997.638**	**259288.573**	**Approx. 572 ft from White Oak**
Wetland D	**0.06 AC**	**29.880481°**	**-95.493469°**	**15 3308153.398**	**259184.470**	**Approx. 1,375 ft from White Oak**
Wetland E	**0.09 AC**	**29.880644°**	**-95.493510°**	**15 3308171.554**	**259180.901**	**Approx. 1,414 ft from White Oak**

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

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

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): July 13, 2016

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Galveston District, SWG-2016-00614, Alabonson Park

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. See Table° W
Universal Transverse Mercator: UTM: See Table NAD: See Table
Name of nearest water body: White Oak Bayou
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: None
Name of watershed or Hydrologic Unit Code (HUC): 120401040302
☒ 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: 10/24/2016
☒ Field Determination. Date(s): 09/09/2016

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. **[*Required*]**
☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are 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 waters[2] (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 two wetlands (Wetlands B and C) identified within the project area that are isolated. These wetlands are not located within the FEMA-designated 100-year floodplain of any nearby waterbody, nor are they adjacent or abutting any natural tributaries of downstream TNW's. LIDAR data indicates that the property generally slopes to the southwest and that the lower southwest section of the property is within the base flood elevation ("BFE") of 82 ft. All of the isolated wetlands**

[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.

are above the BFE of 82 ft. See the attached map for the LIDAR output and base flood elevation information in relation to each isolated wetland. It is unlikely that these wetlands contribute physical, biological, or chemical benefits to downstream TNW's.

Wetlands B and C are both characterized as palustrine, forested ("PFO") wetlands which total approximately 0.9 acres of the project area. Both of these wetlands are dominated by hydrophytic vegetation including Fraxinus pennsylvanica, Celtis occidentalis, Ulmus americana, and Carex cherokeensis. Wetlands B and C do not appear to have a hydrologic connection to any waters of the U.S.

Based upon visual observations of on-site topography and a review of historic aerial imagery, the site is level and was historically used in the past for agricultural purposes. The 1987 Wetland Delineation Manual and the Atlantic and Gulf Coastal Plain Regional Supplement require that all three wetland criteria be present under normal circumstances for areas to be determined a wetland. Wetlands B and C are depressional areas that experienced seasonal hydrology during and after rain events, providing the conditions necessary for wetland to establish.

The nearest water of the U.S. is White Oak Bayou which is located approximately 1,165 feet south of Wetland C which is positioned at the southernmost border of the project area. As a relatively permanent water, White Oak Bayou is considered to be a jurisdictional water of the U.S by the USACE. Wetlands B and C are not located in reasonably close proximity to any waters of the U.S. As such, under normal conditions in the hydrologic cycle, these wetlands would not be anticipated to share surface hydrology with the nearest water of the U.S. They are not a tidal water, nor part of a surface water tributary system to interstate water or navigable water of the U.S. nor are they located "adjacent" (as defined in federal regulations) to any tributary waters; as such the wetlands have been determined to be "isolated" as defined in the federal regulations, 33 CFR §330.2(e).

"Adjacent" as per Federal Regulations 33 CFR §328.3 is defined as "bordering, contiguous, or neighboring." Wetlands separated from other waters of the U.S. by man-made dikes or barriers, Natural River berms, beach dunes, and the like are "adjacent wetlands". The nearest waters of the U.S. to Wetlands B and C is White Oak Bayou. These wetlands do not border nor are they contiguous (abutting) to White Oak Bayou. These wetlands are not neighboring to White Oak Bayou as determined by the fact that they are, under normal conditions in the hydrologic cycle, not located in reasonably close proximity to another water of the U.S. (and is not located in a contiguous or bordering landscape position) that would have shared surface hydrology with another water of the U.S. during expected high flow (e.g., the 100-year floodplain elevation). Nor is there any known demonstrable species ecological interconnection requiring the wetlands in question and the nearest water of the U.S. to spawn and/or fulfill its life cycle requirements. Wetlands B and C are physically separated from White Oak Bayou by geographic factors that do not allow the exchange of waters, via a confined surface hydrology connection, during normal conditions and are not inseparably bound with White Oak Bayou.

"Isolated" waters as defined in 33 CFR §330.2(e) is: "those non-tidal waters of the U.S. that are: (1) not a part of a surface tributary system to interstate or navigable waters of the U.S.; and (2) not adjacent to such tributary waterbodies." Wetlands B and C have been determined to be Isolated.

"Waters of the U.S." are defined in 33 CFR §328.2(e) 1 through 7. These wetlands: (1) are not currently used, or were used in the past, nor are susceptible to use for interstate or foreign commerce nor subject to the ebb and flow of the daily tide; (2) do not cross interstate or tribal boundaries; (3) the destruction of these wetlands are not expected to affect (1) interstate or foreign travelers for recreational purposes or other purposes or, (ii) fish or shellfish that could be taken and sold in interstate or foreign commerce or (iii) current use or potential use for industrial purposes by industries in interstate commerce; (4) are not an impoundment of waters of the U.S.; (5) are not part of a surface tributary system of (a)(1) through (4); (6) are not part of the territorial seas; and (7) are not adjacent to waters of the U.S. identified in (a)(1) through (6).

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 body[4] 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:

Identify flow route to TNW[5]:
Tributary stream order, if known:

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

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

Tributary is:
- ☐ Natural
- ☐ Artificial (man-made). Explain:
- ☐ Manipulated (man-altered). Explain:

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
- ☐ OHWM[6] (check all indicators that apply):
  - ☐ clear, natural line impressed on the bank
  - ☐ changes in the character of soil
  - ☐ shelving
  - ☐ vegetation matted down, bent, or absent
  - ☐ leaf litter disturbed or washed away
  - ☐ sediment deposition
  - ☐ water staining
  - ☐ other (list):
  - ☐ the presence of litter and debris
  - ☐ destruction of terrestrial vegetation
  - ☐ the presence of wrack line
  - ☐ sediment sorting
  - ☐ scour
  - ☐ multiple observed or predicted flow events
  - ☐ abrupt change in plant community
- ☐ 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:
  - ☐ oil or scum line along shore objects
  - ☐ fine shell or debris deposits (foreshore)
  - ☐ physical markings/characteristics
  - ☐ tidal gauges
  - ☐ other (list):
- ☐ Mean High Water Mark indicated by:
  - ☐ survey to available datum;
  - ☐ physical markings;
  - ☐ vegetation lines/changes in vegetation types.

(iii) Chemical Characteristics:

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain:
Identify specific pollutants, if known:

[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:
   - ☐ 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-RPWs[8] 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 jurisidictional. 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:

[8]See Footnote # 3.
[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.*

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: **Approx 0.95** 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: **Spirit Environmental, LLC**
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report
☐ Data sheets prepared by the Corps:
☐ Corps navigable waters' study:
☐ U.S. Geological Survey Hydrologic Atlas:
☐ USGS NHD data
☐ USGS 8 and 12 digit HUC maps
☐ Galveston District's Approved List of Navigable Waters
☒ U.S. Geological Survey map(s). Cite scale & quad name: **Aldine 2013, 1:30,300**
☒ USDA Natural Resources Conservation Service Soil Survey. Citation: **USDA, NRCS; Web Soil Survey**
☒ National wetlands inventory map(s). Cite name: **USFWS, National Wetlands Inventory; Houston, TX**
☐ State/Local wetland inventory map(s):
☒ FEMA/FIRM maps: **Panel 48201C0465M, 6/9/2014**
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date): **Google Earth 2016; ESRI 2015**
or ☐ Other (Name & Date):
☐ Previous determination(s). File no. and date of response letter:
☐ Applicable/supporting case law:
☐ Applicable/supporting scientific literature:
☒ Other information (please specify): **Site Photographs taken by Spirit Environmental, LLC staff during wetland delineation; June 2016**

B. ADDITIONAL COMMENTS TO SUPPORT JD: There are two wetlands (Wetlands B and C) identified within the project area that are isolated. These wetlands are not located within the FEMA-designated 100-year floodplain of any nearby waterbody, nor are they adjacent or abutting any natural tributaries of downstream TNW's. LIDAR data indicates that the property generally slopes to the southwest and that the lower southwest section of the property is within the base flood elevation ("BFE") of 82 ft. All of the isolated wetlands are

above the BFE of 82 ft. See the attached map for the LIDAR output and base flood elevation information in relation to each isolated wetland. It is unlikely that these wetlands contribute physical, biological, or chemical benefits to downstream TNW's.

Wetlands B and C are both characterized as palustrine, forested ("PFO") wetlands which total approximately 0.9 acres of the project area. Both of these wetlands are dominated by hydrophytic vegetation including Fraxinus pennsylvanica, Celtis occidentalis, Ulmus americana, and Carex cherokeensis. Wetlands B and C do not appear to have a hydrologic connection to any waters of the U.S.

Based upon visual observations of on-site topography and a review of historic aerial imagery, the site is level and was historically used in the past for agricultural purposes. The 1987 Wetland Delineation Manual and the Atlantic and Gulf Coastal Plain Regional Supplement require that all three wetland criteria be present under normal circumstances for areas to be determined a wetland. Wetlands B and C are depressional areas that experienced seasonal hydrology during and after rain events, providing the conditions necessary for wetland to establish.

The nearest water of the U.S. is White Oak Bayou which is located approximately 1,165 feet south of Wetland C which is positioned at the southernmost border of the project area. As a relatively permanent water, White Oak Bayou is considered to be a jurisdictional water of the U.S by the USACE. Wetlands B and C are not located in reasonably close proximity to any waters of the U.S. As such, under normal conditions in the hydrologic cycle, these wetlands would not be anticipated to share surface hydrology with the nearest water of the U.S. They are not a tidal water, nor part of a surface water tributary system to interstate water or navigable water of the U.S. nor are they located "adjacent" (as defined in federal regulations) to any tributary waters; as such the wetlands have been determined to be "isolated" as defined in the federal regulations, 33 CFR §330.2(e).

"Adjacent" as per Federal Regulations 33 CFR §328.3 is defined as "bordering, contiguous, or neighboring." Wetlands separated from other waters of the U.S. by man-made dikes or barriers, Natural River berms, beach dunes, and the like are "adjacent wetlands". The nearest waters of the U.S. to Wetlands B and C is White Oak Bayou. These wetlands do not border nor are they contiguous (abutting) to White Oak Bayou. These wetlands are not neighboring to White Oak Bayou as determined by the fact that they are, under normal conditions in the hydrologic cycle, not located in reasonably close proximity to another water of the U.S. (and is not located in a contiguous or bordering landscape position) that would have shared surface hydrology with another water of the U.S. during expected high flow (e.g., the 100-year floodplain elevation). Nor is there any known demonstrable species ecological interconnection requiring the wetlands in question and the nearest water of the U.S. to spawn and/or fulfill its life cycle requirements. Wetlands B and C are physically separated from White Oak Bayou by geographic factors that do not allow the exchange of waters, via a confined surface hydrology connection, during normal conditions and are not inseparably bound with White Oak Bayou.

"Isolated" waters as defined in 33 CFR §330.2(e) is: "those non-tidal waters of the U.S. that are: (1) not a part of a surface tributary system to interstate or navigable waters of the U.S.; and (2) not adjacent to such tributary waterbodies." Wetlands B and C have been determined to be Isolated.

"Waters of the U.S." are defined in 33 CFR §328.2(e) 1 through 7. These wetlands: (1) are not currently used, or were used in the past, nor are susceptible to use for interstate or foreign commerce nor subject to the ebb and flow of the daily tide; (2) do not cross interstate or tribal boundaries; (3) the destruction of these wetlands are not expected to affect (1) interstate or foreign travelers for recreational purposes or other purposes or, (ii) fish or shellfish that could be taken and sold in interstate or foreign commerce or (iii) current use or potential use for industrial purposes by industries in interstate commerce; (4) are not an impoundment of waters of the U.S.; (5) are not part of a surface tributary system of (a)(1) through (4); (6) are not part of the territorial seas; and (7) are not adjacent to waters of the U.S. identified in (a)(1) through (6).

Wetland Name	Approx. Size (Acres)	Wetland Type	Latitude	Longitude	UTM Northing	Easting
Wetland B	0.7	PFO	29.883250°	-95.492153°	3308457.609	259318.265
Wetland C	0.2	PFO	29.879620°	-95.490294°	3308051.298	259489.137

In conclusion, SWG has determined these are isolated wetlands and they lack a nexus to interstate commerce. As such, they are not subject to federal jurisdiction under Section 404 of the CWA.