

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 07-Oct-16

Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 1

Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 20 T 7 s R 16 W

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** convex **Slope:** 20.0 % /

Subregion (LRR or MLRA): LRR T **Lat.:** 30° 25' 0.964" N **Long.:** 89° 37' 12.584" W **Datum:** NAD83

Soil Map Unit Name: EuB, Escambia loamy fine sand, 2 to 5 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:
Small incline above riparian drainage area in the NE portion of the AOI near the fenceline.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No hydrology indicators.

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 1

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Ref. Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	30	<input checked="" type="checkbox"/> 73.2%	FACW
2. <i>Quercus nigra</i>	10	<input checked="" type="checkbox"/> 24.4%	FAC
3. <i>Quercus falcata</i>	1	<input type="checkbox"/> 2.4%	FACU
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 20.5 20% of Total Cover: 8.2 41 = Total Cover

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Ref. Strat. Cover	Indicator Status
1. <i>Nyssa sylvatica</i>	15	<input checked="" type="checkbox"/> 50.0%	FAC
2. <i>Liquidambar styraciflua</i>	10	<input checked="" type="checkbox"/> 33.3%	FAC
3. <i>Magnolia virginiana</i>	5	<input type="checkbox"/> 16.7%	FACW
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 15 20% of Total Cover: 6 30 = Total Cover

Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Ref. Strat. Cover	Indicator Status
1. <i>Ilex coriacea</i>	50	<input checked="" type="checkbox"/> 76.9%	FACW
2. <i>Ilex glabra</i>	5	<input type="checkbox"/> 7.7%	FACW
3. <i>Ilex vomitoria</i>	10	<input type="checkbox"/> 15.4%	FAC
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 32.5 20% of Total Cover: 13 65 = Total Cover

Herb Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Ref. Strat. Cover	Indicator Status
1. <i>Arundinaria tecta</i>	1	<input type="checkbox"/> 9.1%	FACW
2. <i>Ilex coriacea</i>	10	<input checked="" type="checkbox"/> 90.9%	FACW
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 5.5 20% of Total Cover: 2.2 11 = Total Cover

Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species? Ref. Strat. Cover	Indicator Status
1. <i>Vitis rotundifolia</i>	5	<input checked="" type="checkbox"/> 100.0%	FAC
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 2.5 20% of Total Cover: 1 5 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 41 Multiply by:

OBL species 0 x 1 = 0

FACW species 101 x 2 = 202

FAC species 50 x 3 = 150

FACU species 1 x 4 = 4

UPL species 0 x 5 = 0

Column Totals: 152 (A) 356 (B)

Prevalence Index = B/A = 2.342

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).
Heavy pine litter covers much of the herbaceous layer.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR	3/2	100					Loamy Sand	Fine grained
4-12	10YR	5/4	100					Sandy Loam	Fine Grained
12-20	10YR	5/6	100					Sandy Loam	Fine grained sands

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

Soil has dry crumbly, loamy texture. No saturation.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 07-Oct-16

Applicant/Owner: NASA **State:** MS **Sampling Point:** Up- 2

Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 20 T 7 s R 16 W

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** convex **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 53.090" N **Long.:** 89° 36' 51.859" W **Datum:** NAD83

Soil Map Unit Name: HIB, Harleston fine sandy loam, 2 to 5 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)

Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No

Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:
Sideslope area within approximately 50 N-NE of Wet-2.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry Season Water Table (C2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Water-Stained Leaves (B9)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)	

Field Observations:		Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches): _____	
Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches): _____	
Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches): _____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up- 2

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	15	<input checked="" type="checkbox"/> 75.0%	FACW
2. <i>Liquidambar styraciflua</i>	5	<input checked="" type="checkbox"/> 25.0%	FAC
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 10 20% of Total Cover: 4 20 = Total Cover

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	30	<input checked="" type="checkbox"/> 71.4%	FACW
2. <i>Quercus nigra</i>	10	<input checked="" type="checkbox"/> 23.8%	FAC
3. <i>Magnolia virginiana</i>	2	<input type="checkbox"/> 4.8%	FACW
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 21 20% of Total Cover: 8.4 42 = Total Cover

Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Ilex coriacea</i>	50	<input checked="" type="checkbox"/> 76.9%	FACW
2. <i>Ilex glabra</i>	10	<input type="checkbox"/> 15.4%	FACW
3. <i>Ilex vomitoria</i>	5	<input type="checkbox"/> 7.7%	FAC
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 32.5 20% of Total Cover: 13 65 = Total Cover

Herb Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Lycopodiella alopecuroides</i>	1	<input type="checkbox"/> 100.0%	OBL
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 0.5 20% of Total Cover: 0.2 1 = Total Cover

Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Vitis rotundifolia</i>	2	<input type="checkbox"/> 100.0%	FAC
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 1 20% of Total Cover: 0.4 2 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 1 Multiply by: 1

OBL species: 1 x 1 = 1

FACW species: 107 x 2 = 214

FAC species: 22 x 3 = 66

FACU species: 0 x 4 = 0

UPL species: 0 x 5 = 0

Column Totals: 130 (A) 281 (B)

Prevalence Index = B/A = 2.162

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features			Texture	Remarks
	Color (moist)	3/2	%	Color (moist)	%	Type ¹		
0-6	10YR	3/2	100				Sandy Loam	
6-24	10YR	5/6	100				Sandy Loam	

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)	<input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)	<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)	<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 153B)
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input type="checkbox"/> Marl (F10) (LRR U)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)	
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)	
<input type="checkbox"/> Sandy Muck Mineral (S1) (LRR O, S)	<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)	
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)	
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)	
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:
 No hydric indicators observed.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation City/County: Waveland - Hancock Sampling Date: 10-Oct-16
 Applicant/Owner: NASA State: MS Sampling Point: Up - 3A
 Investigator(s): Lars Larson, Randy Ellis Section, Township, Range: S 20 T 7 s R 16 W
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope: 0.0 % / 0.0 °
 Subregion (LRR or MLRA): LRR T Lat.: 30° 25' 1.581" N Long.: 89° 37' 10.657" W Datum: NAD83
 Soil Map Unit Name: At, Atmore silt loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:
 Upland terrace approximately 50-60- feet frm wet transitional area 200 to 300 south of fenceline in NE part of AOI

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 No observed evidence of hydrology indicators.

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 3A

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	25	<input checked="" type="checkbox"/> 78.1%	FACW
2. _____		<input type="checkbox"/> 0.0%	
3. <i>Nyssa sylvatica</i>	5	<input type="checkbox"/> 15.6%	FAC
4. <i>Magnolia grandiflora</i>	2	<input type="checkbox"/> 6.3%	FAC
5. _____		<input type="checkbox"/> 0.0%	
6. _____	0	<input type="checkbox"/> 0.0%	
7. _____	0	<input type="checkbox"/> 0.0%	
8. _____	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>16</u>	20% of Total Cover: <u>6.4</u>	<u>32</u>	= Total Cover
Sapling or Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	30	<input checked="" type="checkbox"/> 76.9%	FACW
2. <i>Magnolia virginiana</i>	5	<input type="checkbox"/> 12.8%	FACW
3. <i>Nyssa sylvatica</i>	2	<input type="checkbox"/> 5.1%	FAC
4. <i>Quercus falcata</i>	1	<input type="checkbox"/> 2.6%	FACU
5. _____	1	<input type="checkbox"/> 2.6%	
6. _____	0	<input type="checkbox"/> 0.0%	
7. _____	0	<input type="checkbox"/> 0.0%	
8. _____	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>19.5</u>	20% of Total Cover: <u>7.8</u>	<u>39</u>	= Total Cover
Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Ilex coriacea</i>	50	<input checked="" type="checkbox"/> 84.7%	FACW
2. <i>Ilex vomitoria</i>	5	<input type="checkbox"/> 8.5%	FAC
3. <i>Ilex opaca</i>	3	<input type="checkbox"/> 5.1%	FAC
4. <i>Quercus falcata</i>	1	<input type="checkbox"/> 1.7%	FACU
5. _____	0	<input type="checkbox"/> 0.0%	
6. _____	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>29.5</u>	20% of Total Cover: <u>11.8</u>	<u>59</u>	= Total Cover
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Ilex coriacea</i>	5	<input checked="" type="checkbox"/> 100.0%	FACW
2. _____	0	<input type="checkbox"/> 0.0%	
3. _____	0	<input type="checkbox"/> 0.0%	
4. _____	0	<input type="checkbox"/> 0.0%	
5. _____	0	<input type="checkbox"/> 0.0%	
6. _____	0	<input type="checkbox"/> 0.0%	
7. _____	0	<input type="checkbox"/> 0.0%	
8. _____	0	<input type="checkbox"/> 0.0%	
9. _____	0	<input type="checkbox"/> 0.0%	
10. _____	0	<input type="checkbox"/> 0.0%	
11. _____	0	<input type="checkbox"/> 0.0%	
12. _____	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>2.5</u>	20% of Total Cover: <u>1</u>	<u>5</u>	= Total Cover
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. _____	0	<input type="checkbox"/> 0.0%	
2. _____	0	<input type="checkbox"/> 0.0%	
3. _____	0	<input type="checkbox"/> 0.0%	
4. _____	0	<input type="checkbox"/> 0.0%	
5. _____	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>0</u>	20% of Total Cover: <u>0</u>	<u>0</u>	= Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species 0 x 1 = 0

FACW species 115 x 2 = 230

FAC species 17 x 3 = 51

FACU species 2 x 4 = 8

UPL species 0 x 5 = 0

Column Totals: 134 (A) 289 (B)

Prevalence Index = B/A = 2.157

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 3A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR	4/2						
3-10	10YR	5/3						
10-20	10YR	6/4						

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

Bright orange-brown mottling observed in 6 -20 inch intervals.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 10-Oct-16

Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 3B

Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 20 T 7 s R 16 W

Landform (hillslope, terrace, etc.): Floodplain **Local relief (concave, convex, none):** concave **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR T **Lat:** 30° 25' 1.450" N **Long.:** 89° 37' 9.611" W **Datum:** NAD83

Soil Map Unit Name: At, Atmore silt loam, 0 to 2 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)

Are Vegetation **, Soil** **, or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No

Are Vegetation **, Soil** **, or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)
<u>Primary Indicators (minimum of one required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): <u>11</u>		Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Dominant Species?

Sampling Point: Up - 3B

Tree Stratum (Plot size: _____)		Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	25	<input checked="" type="checkbox"/> 71.4%	FACW
2.	<i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 28.6%	FACW
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 17.5 20% of Total Cover: 7 **35 = Total Cover**

Sapling or Sapling/Shrub Stratum (Plot size: _____)		Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	5	<input checked="" type="checkbox"/> 50.0%	FACW
2.	<i>Magnolia virginiana</i>	3	<input checked="" type="checkbox"/> 30.0%	FACW
3.	<i>Nyssa sylvatica</i>	2	<input checked="" type="checkbox"/> 20.0%	FAC
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 5 20% of Total Cover: 2 **10 = Total Cover**

Shrub Stratum (Plot size: _____)		Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Ilex coriacea</i>	25	<input checked="" type="checkbox"/> 71.4%	FACW
2.	<i>Cyrilla racemiflora</i>	10	<input checked="" type="checkbox"/> 28.6%	FACW
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 17.5 20% of Total Cover: 7 **35 = Total Cover**

Herb Stratum (Plot size: _____)		Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Lycopodiella alopecuroides</i>	5	<input checked="" type="checkbox"/> 71.4%	OBL
2.	<i>Woodwardia areolata</i>	2	<input checked="" type="checkbox"/> 28.6%	OBL
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
9.		0	<input type="checkbox"/> 0.0%	
10.		0	<input type="checkbox"/> 0.0%	
11.		0	<input type="checkbox"/> 0.0%	
12.		0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 3.5 20% of Total Cover: 1.4 **7 = Total Cover**

Woody Vine Stratum (Plot size: _____)		Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Smlax laurifolia</i>	1	<input type="checkbox"/> 100.0%	FACW
2.		0	<input type="checkbox"/> 0.0%	
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 0.5 20% of Total Cover: 0.2 **1 = Total Cover**

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 9 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 7 Multiply by:

OBL species 7 x 1 = 7

FACW species 79 x 2 = 158

FAC species 2 x 3 = 6

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 88 (A) 171 (B)

Prevalence Index = B/A = 1.943

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is > 50%
- 3 - Prevalence Index is ≤ 3.0¹
- Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present?

Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **Up - 3B**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR	3/1	100					Sandy Loam	
3-12	10YR	3/2	99	10YR	7/3	1	D M	Sandy Loam	Very fine grained

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 10-Oct-16

Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 4

Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 20 T 7 S R 16 W

Landform (hillslope, terrace, etc.): **Local relief (concave, convex, none):** **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR T **Lat.:** 30° 25' 3.162" N **Long.:** 89° 36' 56.200" W **Datum:** NAD83

Soil Map Unit Name: Atmore **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)

Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No

Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:
 Transitional area approximately 150-200 feet south of North fenceline. Begin picking up Live Oaks and S. Red Oaks.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 4

Tree Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 76.9%	FACW
2.	<i>Quercus falcata</i>	2	<input type="checkbox"/> 15.4%	FACU
3.	<i>Quercus virginiana</i>	1	<input type="checkbox"/> 7.7%	FACU
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>6.5</u> 20% of Total Cover: <u>2.6</u>		<u>13</u>	= Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	25	<input checked="" type="checkbox"/> 78.1%	FACW
2.	<i>Pinus palustris</i>	5	<input type="checkbox"/> 15.6%	FACU
3.	<i>Quercus virginiana</i>	2	<input type="checkbox"/> 6.3%	FACU
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>16</u> 20% of Total Cover: <u>6.4</u>		<u>32</u>	= Total Cover	
Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Ilex coriacea</i>	50	<input checked="" type="checkbox"/> 100.0%	FACW
2.		0	<input type="checkbox"/> 0.0%	
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>25</u> 20% of Total Cover: <u>10</u>		<u>50</u>	= Total Cover	
Herb Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Lycopodiella alopecuroides</i>	5	<input checked="" type="checkbox"/> 100.0%	OBL
2.		0	<input type="checkbox"/> 0.0%	
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
9.		0	<input type="checkbox"/> 0.0%	
10.		0	<input type="checkbox"/> 0.0%	
11.		0	<input type="checkbox"/> 0.0%	
12.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>2.5</u> 20% of Total Cover: <u>1</u>		<u>5</u>	= Total Cover	
Woody Vine Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Smilax laurifolia</i>	1	<input type="checkbox"/> 100.0%	FACW
2.		0	<input type="checkbox"/> 0.0%	
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>0.5</u> 20% of Total Cover: <u>0.2</u>		<u>1</u>	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: Multiply by:

OBL species	<u>5</u>	x 1 =	<u>5</u>
FACW species	<u>86</u>	x 2 =	<u>172</u>
FAC species	<u>0</u>	x 3 =	<u>0</u>
FACU species	<u>10</u>	x 4 =	<u>40</u>
UPL species	<u>0</u>	x 5 =	<u>0</u>
Column Totals:	<u>101</u> (A)		<u>217</u> (B)

Prevalence Index = B/A = 2.149

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0 ¹
 - Problematic Hydrophytic Vegetation ¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR	3/3	100						
4-16	10YR	5/6	100						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 11-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 5
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 28 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** none **Slope:** 2.0 % / 1.1 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 42.587" N **Long.:** 89° 36' 41.655" W **Datum:** NAD83
Soil Map Unit Name: PoB, Poarch fine sandy loam, 2 to 5% slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<u>Secondary Indicators (minimum of 2 required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 5

Tree Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? <input type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	20	<input checked="" type="checkbox"/>	66.7%	FACW
2.	<i>Nyssa sylvatica</i>	5	<input type="checkbox"/>	16.7%	FAC
3.	<i>Quercus nigra</i>	5	<input type="checkbox"/>	16.7%	FAC
4.	<i>Quercus texana</i>	0	<input type="checkbox"/>	0.0%	FACW
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>15</u>		20% of Total Cover: <u>6</u>	<u>30</u>	= Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)					
1.	<i>Pinus elliotii</i>	30	<input checked="" type="checkbox"/>	69.8%	FACW
2.	<i>Quercus nigra</i>	8	<input type="checkbox"/>	18.6%	FAC
3.	<i>Magnolia virginiana</i>	5	<input type="checkbox"/>	11.6%	FACW
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>21.5</u>		20% of Total Cover: <u>8.6</u>	<u>43</u>	= Total Cover	
Shrub Stratum (Plot size: 30 m)					
1.	<i>Ilex coriacea</i>	50	<input checked="" type="checkbox"/>	83.3%	FACW
2.	<i>Ilex vomitoria</i>	10	<input type="checkbox"/>	16.7%	FAC
3.		0	<input type="checkbox"/>	0.0%	
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>30</u>		20% of Total Cover: <u>12</u>	<u>60</u>	= Total Cover	
Herb Stratum (Plot size: 30 m)					
1.		0	<input type="checkbox"/>	0.0%	
2.		0	<input type="checkbox"/>	0.0%	
3.		0	<input type="checkbox"/>	0.0%	
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
9.		0	<input type="checkbox"/>	0.0%	
10.		0	<input type="checkbox"/>	0.0%	
11.		0	<input type="checkbox"/>	0.0%	
12.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>0</u>		20% of Total Cover: <u>0</u>	<u>0</u>	= Total Cover	
Woody Vine Stratum (Plot size: 30 m)					
1.	<i>Vitis rotundifolia</i>	2	<input type="checkbox"/>	100.0%	FAC
2.		0	<input type="checkbox"/>	0.0%	
3.		0	<input type="checkbox"/>	0.0%	
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>1</u>		20% of Total Cover: <u>0.4</u>	<u>2</u>	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>105</u>	x 2 = <u>210</u>
FAC species <u>30</u>	x 3 = <u>90</u>
FACU species <u>0</u>	x 4 = <u>0</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>135</u> (A)	<u>300</u> (B)
Prevalence Index = B/A = <u>2.222</u>	

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).
Heavy pine litter... very little herbaceous layer.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix			Redox Features			Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹		
0-6	10YR	3/3	100					
6-16	10YR	5/4	100					some mottling

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (Inches): _____

Hydric Soil Present? Yes No

Remarks:

No strong hydric indicators. Some dark orange mottling in lower interval of soil column.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation
 City/County: Waveland - Hancock
 Sampling Date: 11-Oct-16
Applicant/Owner: NASA
 State: MS
 Sampling Point: Up - 6
Investigator(s): Lars Larson, Randy Ellis
 Section, Township, Range: 5 28
 T 7 s
 R 16 W
Landform (hillslope, terrace, etc.): Hillside
 Local relief (concave, convex, none): convex
 Slope: 3.0 % / 1.7 °
Subregion (LRR or MLRA): LRR T
 Lat.: 30° 24' 40.701" N
 Long.: 89° 36' 31.360" W
 Datum: NAD83
Soil Map Unit Name: EsB, Escambia loam, 2 to 5 percent slopes
 NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year?
 Yes No
 (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?**
 Are "Normal Circumstances" present?
 Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?**
 (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks: Sideslope approximately 300 feet west of East Site Road (A. Jackson) and 200-300 feet south of TS Creek.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (minimum of 2 required)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)	
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 6

Tree Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? <input checked="" type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	15	<input checked="" type="checkbox"/>	53.6%	FACW
2.	<i>Quercus nigra</i>	10	<input checked="" type="checkbox"/>	35.7%	FAC
3.	<i>Nyssa sylvatica</i>	2	<input type="checkbox"/>	7.1%	FAC
4.	<i>Quercus texana</i>	1	<input type="checkbox"/>	3.6%	FACW
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: 14		20% of Total Cover: 5.6	28	= Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? <input checked="" type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	15	<input checked="" type="checkbox"/>	48.4%	FACW
2.	<i>Quercus nigra</i>	10	<input checked="" type="checkbox"/>	32.3%	FAC
3.	<i>Nyssa sylvatica</i>	5	<input type="checkbox"/>	16.1%	FAC
4.	<i>Ilex opaca</i>	1	<input type="checkbox"/>	3.2%	FAC
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: 15.5		20% of Total Cover: 6.2	31	= Total Cover	
Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? <input checked="" type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1.	<i>Ilex coriacea</i>	15	<input checked="" type="checkbox"/>	71.4%	FACW
2.	<i>Ilex vomitoria</i>	5	<input checked="" type="checkbox"/>	23.8%	FAC
3.	<i>Persea borbonia</i>	1	<input type="checkbox"/>	4.8%	FACW
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: 10.5		20% of Total Cover: 4.2	21	= Total Cover	
Herb Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? <input checked="" type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1.	<i>Arundinaria tecta</i>	5	<input checked="" type="checkbox"/>	100.0%	FACW
2.		0	<input type="checkbox"/>	0.0%	
3.		0	<input type="checkbox"/>	0.0%	
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
9.		0	<input type="checkbox"/>	0.0%	
10.		0	<input type="checkbox"/>	0.0%	
11.		0	<input type="checkbox"/>	0.0%	
12.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: 2.5		20% of Total Cover: 1	5	= Total Cover	
Woody Vine Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? <input checked="" type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1.	<i>Vitis rotundifolia</i>	5	<input checked="" type="checkbox"/>	100.0%	FAC
2.		0	<input type="checkbox"/>	0.0%	
3.		0	<input type="checkbox"/>	0.0%	
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: 2.5		20% of Total Cover: 1	5	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 90 (A) Multiply by: 2.422 (B)

OBL species: 0 x 1 = 0

FACW species: 52 x 2 = 104

FAC species: 38 x 3 = 114

FACU species: 0 x 4 = 0

UPL species: 0 x 5 = 0

Column Totals: 90 (A) 218 (B)

Prevalence Index = B/A = 2.422

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 6

Profile Description: (Describe to the depth needed to document the Indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features			Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹		
0-6	10YR	3/2						
6-22	10YR	5/6	100				Sandy Loam	

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

Soil becomes bright yellowish brown below 5 inches.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 11-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 7
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 28 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** none **Slope:** 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T **Lat:** 30° 24' 46.148" N **Long.:** 89° 36' 26.206" W **Datum:** NAD83
Soil Map Unit Name: EsB, Escambia loam, 2 to 5 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 7

		Absolute % Cover	Dominant Species? <input type="checkbox"/>	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: <u>30 m</u>)					
1.	<i>Pinus ellottii</i>	30	<input checked="" type="checkbox"/>	85.7%	FACW
2.	<i>Quercus nigra</i>	5	<input type="checkbox"/>	14.3%	FAC
3.		0	<input type="checkbox"/>	0.0%	
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>17.5</u> 20% of Total Cover: <u>7</u>		<u>35</u>	= Total Cover		
Sapling or Sapling/Shrub Stratum (Plot size: <u>30 m</u>)					
1.	<i>Pinus ellottii</i>	25	<input checked="" type="checkbox"/>	62.5%	FACW
2.	<i>Acer rubrum</i>	10	<input checked="" type="checkbox"/>	25.0%	FAC
3.	<i>Quercus nigra</i>	5	<input type="checkbox"/>	12.5%	FAC
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>20</u> 20% of Total Cover: <u>8</u>		<u>40</u>	= Total Cover		
Shrub Stratum (Plot size: <u>30 m</u>)					
1.	<i>Morella cerifera</i>	30	<input checked="" type="checkbox"/>	66.7%	FAC
2.	<i>Acer rubrum</i>	10	<input checked="" type="checkbox"/>	22.2%	FAC
3.	<i>Ilex vomitoria</i>	5	<input type="checkbox"/>	11.1%	FAC
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>22.5</u> 20% of Total Cover: <u>9</u>		<u>45</u>	= Total Cover		
Herb Stratum (Plot size: <u>30 m</u>)					
1.	<i>Eupatorium capillifolium</i>	2	<input type="checkbox"/>	100.0%	FACU
2.		0	<input type="checkbox"/>	0.0%	
3.		0	<input type="checkbox"/>	0.0%	
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
9.		0	<input type="checkbox"/>	0.0%	
10.		0	<input type="checkbox"/>	0.0%	
11.		0	<input type="checkbox"/>	0.0%	
12.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>1</u> 20% of Total Cover: <u>0.4</u>		<u>2</u>	= Total Cover		
Woody Vine Stratum (Plot size: <u>30 m</u>)					
1.	<i>Vitis rotundifolia</i>	5	<input checked="" type="checkbox"/>	100.0%	FAC
2.		0	<input type="checkbox"/>	0.0%	
3.		0	<input type="checkbox"/>	0.0%	
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>2.5</u> 20% of Total Cover: <u>1</u>		<u>5</u>	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species <u>0</u>	x 1 =	<u>0</u>
FACW species <u>55</u>	x 2 =	<u>110</u>
FAC species <u>70</u>	x 3 =	<u>210</u>
FACU species <u>2</u>	x 4 =	<u>8</u>
UPL species <u>0</u>	x 5 =	<u>0</u>
Column Totals:	<u>127</u> (A)	<u>328</u> (B)

Prevalence Index = B/A = 2.583

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test Is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR	3/2	100						
5-20	10YR	4/4	95	10YR	6/6	5	C	M	Loamy Sand Mottling in lower horizon.

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

there appears to be some silty clay below 16 inches. Some dark orange brown mottles and some rusty orange redox features in approximately 5% of the total matrix.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation
 City/County: Waveland - Hancock
 Sampling Date: 11-Oct-16
Applicant/Owner: NASA
 State: MS
 Sampling Point: Up - 8
Investigator(s): Lars Larson, Randy Ellis
 Section, Township, Range: S 29 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Hillside
 Local relief (concave, convex, none): convex
 Slope: 3.0 % / 1.7°
Subregion (LRR or MLRA): LRR T
 Lat.: 30° 24' 39.235" N
 Long.: 89° 36' 47.454" W
 Datum: NAD83
Soil Map Unit Name: EsB, Escambia loam, 2 to 5 percent slopes
 NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?**
 Are "Normal Circumstances" present? Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?**
 (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks: Sideslope within 30 to 40 feet of drainage way approximately 200 feet from Turtleskin Creek Bridge.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (minimum of 2 required)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)	
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 8

		Absolute % Cover	Dominant Species? <input type="checkbox"/>	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: <u>30 m</u>)					
1.	<i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/>	55.6%	FACW
2.	<i>Nyssa sylvatica</i>	5	<input checked="" type="checkbox"/>	27.8%	FAC
3.	<i>Quercus nigra</i>	3	<input type="checkbox"/>	16.7%	FAC
4.			<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>9</u>		20% of Total Cover: <u>3.6</u>	<u>18</u>	= Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size: <u>30 m</u>)					
1.	<i>Nyssa sylvatica</i>	10	<input checked="" type="checkbox"/>	55.6%	FAC
2.	<i>Pinus elliotii</i>	5	<input checked="" type="checkbox"/>	27.8%	FACW
3.	<i>Quercus texana</i>	1	<input type="checkbox"/>	5.6%	FACW
4.	<i>Quercus nigra</i>	2	<input type="checkbox"/>	11.1%	FAC
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>9</u>		20% of Total Cover: <u>3.6</u>	<u>18</u>	= Total Cover	
Shrub Stratum (Plot size: <u>30 m</u>)					
1.	<i>Ilex coriacea</i>	20	<input checked="" type="checkbox"/>	71.4%	FACW
2.	<i>Ilex vomitoria</i>	5	<input type="checkbox"/>	17.9%	FAC
3.	<i>Cyrilla racemiflora</i>	3	<input type="checkbox"/>	10.7%	FACW
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>14</u>		20% of Total Cover: <u>5.6</u>	<u>28</u>	= Total Cover	
Herb Stratum (Plot size: <u>30 m</u>)					
1.	<i>Ilex coriacea</i>	5	<input checked="" type="checkbox"/>	71.4%	FACW
2.	<i>Morella cerifera</i>	2	<input checked="" type="checkbox"/>	28.6%	FAC
3.		0	<input type="checkbox"/>	0.0%	
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
9.		0	<input type="checkbox"/>	0.0%	
10.		0	<input type="checkbox"/>	0.0%	
11.		0	<input type="checkbox"/>	0.0%	
12.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>3.5</u>		20% of Total Cover: <u>1.4</u>	<u>7</u>	= Total Cover	
Woody Vine Stratum (Plot size: <u>30 m</u>)					
1.	<i>Vitis rotundifolia</i>	1	<input type="checkbox"/>	100.0%	FAC
2.		0	<input type="checkbox"/>	0.0%	
3.		0	<input type="checkbox"/>	0.0%	
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>0.5</u>		20% of Total Cover: <u>0.2</u>	<u>1</u>	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	0	x 1 = 0
FACW species	44	x 2 = 88
FAC species	28	x 3 = 84
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	72 (A)	172 (B)
Prevalence Index = B/A =		<u>2.389</u>

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR	4/2	100					
4-16	10YR	5/6	100					

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation
 City/County: Waveland - Hancock
 Sampling Date: 11-Oct-16
Applicant/Owner: NASA
 State: MS
 Sampling Point: Up -9
Investigator(s): Lars Larson, Randy Ellis
 Section, Township, Range: S 29 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Hillside
 Local relief (concave, convex, none):
 Slope: 1.0 % / 0.6 °
Subregion (LRR or MLRA): LRR T
 Lat.: 30° 24' 29.150" N
 Long.: 89° 36' 46.346" W
 Datum: NAD83
Soil Map Unit Name: EsB, Escambia loam, 2 to 5 percent slopes
 NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?**
 Are "Normal Circumstances" present? Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?**
 (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	
Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	

Remarks:
 Sideslope of moving into land drainage feature that feeds and ephemeral stream flowing into Turtleskin Creek.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction In Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (Includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up -9

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 31.3%	FACW
2. <i>Magnolia virginiana</i>	15	<input checked="" type="checkbox"/> 46.9%	FACW
3. <i>Quercus nigra</i>	5	<input type="checkbox"/> 15.6%	FAC
4. <i>Nyssa sylvatica</i>	2	<input type="checkbox"/> 6.3%	FAC
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	16	20% of Total Cover: 6.4	32 = Total Cover

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Magnolia virginiana</i>	20	<input checked="" type="checkbox"/> 57.1%	FACW
2. <i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 28.6%	FACW
3. <i>Nyssa sylvatica</i>	5	<input type="checkbox"/> 14.3%	FAC
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	17.5	20% of Total Cover: 7	35 = Total Cover

Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Ilex coriacea</i>	50	<input checked="" type="checkbox"/> 83.3%	FACW
2. <i>Ilex vomitoria</i>	5	<input type="checkbox"/> 8.3%	FAC
3. <i>Cyrilla racemiflora</i>	5	<input type="checkbox"/> 8.3%	FACW
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	30	20% of Total Cover: 12	60 = Total Cover

Herb Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Arundinaria tecta</i>	3	<input type="checkbox"/> 100.0%	FACW
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	1.5	20% of Total Cover: 0.6	3 = Total Cover

Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Vitis rotundifolia</i>	1	<input type="checkbox"/> 100.0%	FAC
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	0.5	20% of Total Cover: 0.2	1 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 131 (A) Multiply by: 280 (B)

OBL species 0 x 1 = 0

FACW species 113 x 2 = 226

FAC species 18 x 3 = 54

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 131 (A) 280 (B)

Prevalence Index = B/A = 2.137

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0 ¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up -9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR	3/2	100					Loamy Sand	
5-16	10YR	4/4	100					Loamy Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

Sandy loam, fairly dry with crumbly texture. Uniform grayish yellow to brown below 4-inches.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation
 City/County: Waveland - Hancock
 Sampling Date: 12-Oct-16
Applicant/Owner: NASA
 State: MS
 Sampling Point: Up - 10
Investigator(s): Lars Larson, Randv Ellis
 Section, Township, Range: S 31 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Terrace
 Local relief (concave, convex, none):
 Slope: 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T
 Lat.: 30° 24' 9.104" N
 Long.: 89° 37' 34.545" W
 Datum: NAD83
Soil Map Unit Name: SaC, Saucier fine sandy loam, 5 to 8 percent slopes
 NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?**
 Are "Normal Circumstances" present? Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?**
 (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:
 Just off logging road-cut trail 30 feet approximately 500-feet south of railbed on West side of AOI.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 10

Tree Stratum (Plot size: <u>30 m</u>)		Absolute % Cover	Dominant Species? <input checked="" type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1.	<u>Pinus elliotii</u>	15	<input checked="" type="checkbox"/>	53.6%	FACW
2.	<u>Nyssa sylvatica</u>	5	<input type="checkbox"/>	17.9%	FAC
3.	<u>Quercus virginiana</u>	5	<input type="checkbox"/>	17.9%	FACU
4.	<u>Quercus nigra</u>	3	<input type="checkbox"/>	10.7%	FAC
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>14</u> 20% of Total Cover: <u>5.6</u>		<u>28</u>	= Total Cover		
Sapling or Sapling/Shrub Stratum (Plot size: <u>30 m</u>)		Absolute % Cover	Dominant Species? <input checked="" type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1.	<u>Pinus elliotii</u>	15	<input checked="" type="checkbox"/>	60.0%	FACW
2.	<u>Quercus nigra</u>	10	<input checked="" type="checkbox"/>	40.0%	FAC
3.		0	<input type="checkbox"/>	0.0%	
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>12.5</u> 20% of Total Cover: <u>5</u>		<u>25</u>	= Total Cover		
Shrub Stratum (Plot size: <u>30 m</u>)		Absolute % Cover	Dominant Species? <input checked="" type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1.	<u>Ilex vomitoria</u>	40	<input checked="" type="checkbox"/>	75.5%	FAC
2.	<u>Ilex coriacea</u>	10	<input type="checkbox"/>	18.9%	FACW
3.	<u>Quercus nigra</u>	3	<input type="checkbox"/>	5.7%	FAC
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>26.5</u> 20% of Total Cover: <u>10.6</u>		<u>53</u>	= Total Cover		
Herb Stratum (Plot size: <u>30 m</u>)		Absolute % Cover	Dominant Species? <input type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1.		0	<input type="checkbox"/>	0.0%	
2.		0	<input type="checkbox"/>	0.0%	
3.		0	<input type="checkbox"/>	0.0%	
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
9.		0	<input type="checkbox"/>	0.0%	
10.		0	<input type="checkbox"/>	0.0%	
11.		0	<input type="checkbox"/>	0.0%	
12.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>0</u> 20% of Total Cover: <u>0</u>		<u>0</u>	= Total Cover		
Woody Vine Stratum (Plot size: <u>30 m</u>)		Absolute % Cover	Dominant Species? <input checked="" type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1.	<u>Vitis rotundifolia</u>	5	<input checked="" type="checkbox"/>	71.4%	FAC
2.	<u>Smilax rotundifolia</u>	2	<input checked="" type="checkbox"/>	28.6%	FAC
3.		0	<input type="checkbox"/>	0.0%	
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>3.5</u> 20% of Total Cover: <u>1.4</u>		<u>7</u>	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 113 Multiply by: (A)

OBL species 0 x 1 = 0

FACW species 40 x 2 = 80

FAC species 68 x 3 = 204

FACU species 5 x 4 = 20

UPL species 0 x 5 = 0

Column Totals: 113 (A) 304 (B)

Prevalence Index = B/A = 2.690

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)	4/2	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR	4/2	100						
5-16	10YR	5/3	100						

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)	<input type="checkbox"/> 1 cm Muck (A9) (LRR O)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)	<input type="checkbox"/> 2 cm Muck (A10) (LRR S)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)	<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 153B)	
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input type="checkbox"/> Marl (F10) (LRR U)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)		
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)		
<input type="checkbox"/> Sandy Muck Mineral (S1) (LRR O, S)	<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)		
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)		
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)		
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)			

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation
 City/County: Waveland - Hancock
 Sampling Date: 12-Oct-16
Applicant/Owner: NASA
 State: MS
 Sampling Point: Up - 11
Investigator(s): Lars Larson, Randy Ellis
 Section, Township, Range: S 31 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Hillside
 Local relief (concave, convex, none): convex
 Slope: 3.0 % / 1.7 °
Subregion (LRR or MLRA): LRR T
 Lat.: 30° 24' 16.645" N
 Long.: 89° 37' 26.574" W
 Datum: NAD83
Soil Map Unit Name: PoB, Poarch fine sandy loam, 2 to 5% slopes
 NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?**
 Are "Normal Circumstances" present? Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?**
 (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Hydric Soil Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	
Wetland Hydrology Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	

Remarks:
 On sideslope 30-feet up from bottom drainage area, approximately 150-feet North of Turtleskin Creek

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 11

		Dominant Species?			
Tree Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status	Dominance Test worksheet:	
1. <i>Pinus elliotii</i>	5	<input checked="" type="checkbox"/> 20.0%	FACW	Number of Dominant Species That are OBL, FACW, or FAC: <u>6</u> (A)	
2. <i>Nyssa sylvatica</i>	10	<input checked="" type="checkbox"/> 40.0%	FAC	Total Number of Dominant Species Across All Strata: <u>6</u> (B)	
3. <i>Magnolia virginiana</i>	8	<input checked="" type="checkbox"/> 32.0%	FACW	Percent of dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)	
4. <i>Quercus nigra</i>	2	<input type="checkbox"/> 8.0%	FAC		
5.	0	<input type="checkbox"/> 0.0%			
6.	0	<input type="checkbox"/> 0.0%			
7.	0	<input type="checkbox"/> 0.0%			
8.	0	<input type="checkbox"/> 0.0%			
50% of Total Cover: <u>12.5</u> 20% of Total Cover: <u>5</u> <u>25</u> = Total Cover				Prevalence Index worksheet:	
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)				Total % Cover of: Multiply by:	
1. <i>Nyssa sylvatica</i>	10	<input checked="" type="checkbox"/> 55.6%	FAC	OBL species	<u>0</u> x 1 = <u>0</u>
2. <i>Magnolia virginiana</i>	5	<input checked="" type="checkbox"/> 27.8%	FACW	FACW species	<u>49</u> x 2 = <u>98</u>
3. <i>Quercus texana</i>	1	<input type="checkbox"/> 5.6%	FACW	FAC species	<u>31</u> x 3 = <u>93</u>
4. <i>Quercus nigra</i>	2	<input type="checkbox"/> 11.1%	FAC	FACU species	<u>1</u> x 4 = <u>4</u>
5.	0	<input type="checkbox"/> 0.0%		UPL species	<u>0</u> x 5 = <u>0</u>
6.	0	<input type="checkbox"/> 0.0%		Column Totals:	<u>81</u> (A) <u>195</u> (B)
7.	0	<input type="checkbox"/> 0.0%		Prevalence Index = B/A = <u>2.407</u>	
8.	0	<input type="checkbox"/> 0.0%			
50% of Total Cover: <u>9</u> 20% of Total Cover: <u>3.6</u> <u>18</u> = Total Cover				Hydrophytic Vegetation Indicators:	
Shrub Stratum (Plot size: 30 m)				<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is > 50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	
1. <i>Ilex coriacea</i>	30	<input checked="" type="checkbox"/> 85.7%	FACW	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definition of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall. Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine - All woody vines, regardless of height.	
2. <i>Ilex vomitoria</i>	3	<input type="checkbox"/> 8.6%	FAC		
3. <i>Ilex opaca</i>	2	<input type="checkbox"/> 5.7%	FAC		
4.	0	<input type="checkbox"/> 0.0%			
5.	0	<input type="checkbox"/> 0.0%			
6.	0	<input type="checkbox"/> 0.0%			
7.	0	<input type="checkbox"/> 0.0%			
8.	0	<input type="checkbox"/> 0.0%			
50% of Total Cover: <u>17.5</u> 20% of Total Cover: <u>7</u> <u>35</u> = Total Cover					
Herb Stratum (Plot size: 30 m)				Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	
1. <i>Pteridium aquilinum</i>	1	<input type="checkbox"/> 100.0%	FACU		
2.	0	<input type="checkbox"/> 0.0%			
3.	0	<input type="checkbox"/> 0.0%			
4.	0	<input type="checkbox"/> 0.0%			
5.	0	<input type="checkbox"/> 0.0%			
6.	0	<input type="checkbox"/> 0.0%			
7.	0	<input type="checkbox"/> 0.0%			
8.	0	<input type="checkbox"/> 0.0%			
9.	0	<input type="checkbox"/> 0.0%			
10.	0	<input type="checkbox"/> 0.0%			
11.	0	<input type="checkbox"/> 0.0%			
12.	0	<input type="checkbox"/> 0.0%			
50% of Total Cover: <u>0.5</u> 20% of Total Cover: <u>0.2</u> <u>1</u> = Total Cover					
Woody Vine Stratum (Plot size: 30 m)					
1. <i>Vitis rotundifolia</i>	2	<input type="checkbox"/> 100.0%	FAC		
2.	0	<input type="checkbox"/> 0.0%			
3.	0	<input type="checkbox"/> 0.0%			
4.	0	<input type="checkbox"/> 0.0%			
5.	0	<input type="checkbox"/> 0.0%			
50% of Total Cover: <u>1</u> 20% of Total Cover: <u>0.4</u> <u>2</u> = Total Cover					

Remarks: (If observed, list morphological adaptations below).
Heavy pine straw layer...herbaceous layer almost absent.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features			Texture	Remarks
	Color (moist)	3/3	%	Color (moist)	%	Type ¹		
0-5	10YR	3/3	100				Loamy Sand	
5-16	10YR	5/6	100				Loamy Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (SB) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation City/County: Waveland - Hancock Sampling Date: 12-Oct-16
 Applicant/Owner: NASA State: MS Sampling Point: Up - 12
 Investigator(s): Lars Larson, Randy Ellis Section, Township, Range: S 20 T 7 s R 16 W
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): convex Slope: 3.0 % / 1.7 °
 Subregion (LRR or MLRA): LRR T Lat.: 30° 24' 3.051" N Long.: 89° 37' 14.079" W Datum: NAD83
 Soil Map Unit Name: At, Atmore silt loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (minimum of 2 required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)

Field Observations: Surface Water Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 12

		Dominant Species?		Indicator Status
Tree Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover		
1. <i>Pinus elliotii</i>	25	<input checked="" type="checkbox"/> 75.8%	FACW	
2. <i>Magnolia virginiana</i>	5	<input type="checkbox"/> 15.2%	FACW	
3. <i>Quercus nigra</i>	3	<input type="checkbox"/> 9.1%	FAC	
4.	0	<input type="checkbox"/> 0.0%		
5.	0	<input type="checkbox"/> 0.0%		
6.	0	<input type="checkbox"/> 0.0%		
7.	0	<input type="checkbox"/> 0.0%		
8.	0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>16.5</u> 20% of Total Cover: <u>6.6</u>		<u>33</u>	= Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)				
1. <i>Pinus elliotii</i>	30	<input checked="" type="checkbox"/> 71.4%	FACW	
2. <i>Nyssa sylvatica</i>	10	<input checked="" type="checkbox"/> 23.8%	FAC	
3. <i>Quercus nigra</i>	2	<input type="checkbox"/> 4.8%	FAC	
4.	0	<input type="checkbox"/> 0.0%		
5.	0	<input type="checkbox"/> 0.0%		
6.	0	<input type="checkbox"/> 0.0%		
7.	0	<input type="checkbox"/> 0.0%		
8.	0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>21</u> 20% of Total Cover: <u>8.4</u>		<u>42</u>	= Total Cover	
Shrub Stratum (Plot size: 30 m)				
1. <i>Ilex coriacea</i>	50	<input checked="" type="checkbox"/> 92.6%	FACW	
2. <i>Ilex opaca</i>	3	<input type="checkbox"/> 5.6%	FAC	
3. <i>Ilex vomitoria</i>	1	<input type="checkbox"/> 1.9%	FAC	
4.	0	<input type="checkbox"/> 0.0%		
5.	0	<input type="checkbox"/> 0.0%		
6.	0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>27</u> 20% of Total Cover: <u>10.8</u>		<u>54</u>	= Total Cover	
Herb Stratum (Plot size: 30 m)				
1.		<input type="checkbox"/> 0.0%		
2.	0	<input type="checkbox"/> 0.0%		
3.	0	<input type="checkbox"/> 0.0%		
4.	0	<input type="checkbox"/> 0.0%		
5.	0	<input type="checkbox"/> 0.0%		
6.	0	<input type="checkbox"/> 0.0%		
7.	0	<input type="checkbox"/> 0.0%		
8.	0	<input type="checkbox"/> 0.0%		
9.	0	<input type="checkbox"/> 0.0%		
10.	0	<input type="checkbox"/> 0.0%		
11.	0	<input type="checkbox"/> 0.0%		
12.	0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>0</u> 20% of Total Cover: <u>0</u>		<u>0</u>	= Total Cover	
Woody Vine Stratum (Plot size: 30 m)				
1.	0	<input type="checkbox"/> 0.0%		
2.	0	<input type="checkbox"/> 0.0%		
3.	0	<input type="checkbox"/> 0.0%		
4.	0	<input type="checkbox"/> 0.0%		
5.	0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>0</u> 20% of Total Cover: <u>0</u>		<u>0</u>	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>110</u>	x 2 = <u>220</u>
FAC species <u>19</u>	x 3 = <u>57</u>
FACU species <u>0</u>	x 4 = <u>0</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>129</u> (A)	<u>277</u> (B)
Prevalence Index = B/A = <u>2.147</u>	

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).
Heavy pine layer.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: U0 - 12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR	3/2	100					Loamy Sand	
5-16	10YR	4/3	97	10YR	6/8	3	C	M	Loamy Sand appears to be mottles, possibly some REDOX below

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

Soil profile is fairly bright below 5-6 inches.... Mottling is evident in the lower portion of the soil profile, but has the appearance of a sandy redox condition.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 14-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 14
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 29 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** none **Slope:** 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 10.337" N **Long.:** 89° 37' 1.097" W **Datum:** NAD83
Soil Map Unit Name: At, Atmore silt loam, 0 to 2 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:
 Terrace Upland area approximately 400 feet North of logging road in central portion of AOI south of TS Creek. Small patch area that appears to transition out of slightly wetter area to the south.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 14

Tree Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? <input checked="" type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/>	66.7%	FACW
2.	<i>Magnolia grandiflora</i>	3	<input checked="" type="checkbox"/>	20.0%	FAC
3.	<i>Magnolia virginiana</i>	2	<input type="checkbox"/>	13.3%	FACW
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>7.5</u> 20% of Total Cover: <u>3</u>		<u>15</u>	= Total Cover		
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? <input checked="" type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/>	50.0%	FACW
2.	<i>Quercus falcata</i>	1	<input type="checkbox"/>	5.0%	FACU
3.	<i>Acer rubrum</i>	5	<input checked="" type="checkbox"/>	25.0%	FAC
4.	<i>Liquidambar styraciflua</i>	4	<input checked="" type="checkbox"/>	20.0%	FAC
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>10</u> 20% of Total Cover: <u>4</u>		<u>20</u>	= Total Cover		
Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? <input checked="" type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1.	<i>Ilex coriacea</i>	30	<input checked="" type="checkbox"/>	66.7%	FACW
2.	<i>Ilex vomitoria</i>	5	<input type="checkbox"/>	11.1%	FAC
3.	<i>Ilex glabra</i>	10	<input checked="" type="checkbox"/>	22.2%	FACW
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>22.5</u> 20% of Total Cover: <u>9</u>		<u>45</u>	= Total Cover		
Herb Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? <input checked="" type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1.	<i>Ilex glabra</i>	10	<input checked="" type="checkbox"/>	66.7%	FACW
2.	<i>Ilex coriacea</i>	5	<input checked="" type="checkbox"/>	33.3%	FACW
3.		0	<input type="checkbox"/>	0.0%	
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
9.		0	<input type="checkbox"/>	0.0%	
10.		0	<input type="checkbox"/>	0.0%	
11.		0	<input type="checkbox"/>	0.0%	
12.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>7.5</u> 20% of Total Cover: <u>3</u>		<u>15</u>	= Total Cover		
Woody Vine Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? <input type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1.	<i>Smilax rotundifolia</i>	2	<input type="checkbox"/>	100.0%	FAC
2.		0	<input type="checkbox"/>	0.0%	
3.		0	<input type="checkbox"/>	0.0%	
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>1</u> 20% of Total Cover: <u>0.4</u>		<u>2</u>	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 9 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	0	x 1 = 0
FACW species	77	x 2 = 154
FAC species	19	x 3 = 57
FACU species	1	x 4 = 4
UPL species	0	x 5 = 0
Column Totals:	97 (A)	215 (B)

Prevalence Index = B/A = 2.216

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).
Heavy pine litter.... Limited herbaceous layer.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 14

Profile Description: (Describe to the depth needed to document the Indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR	3/2	100					Sandy Loam	
5-18	10YR	5/6	100					Sandy Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (Inches): _____

Hydric Soil Present? Yes No

Remarks:

Soil brightens up in color appreciably below 4-5 incher bsg. No moisture or hydric indicators.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation
 City/County: Waveland - Hancock
 Sampling Date: 14-Oct-16
Applicant/Owner: NASA
 State: MS
 Sampling Point: Up - 16
Investigator(s): Lars Larson, Randy Ellis
 Section, Township, Range: S 28 T 7 s R 16 W
Landform (hillslope, terrace, etc.):
 Local relief (concave, convex, none):
 Slope: 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T
 Lat.: 30° 24' 11.929" N
 Long.: 89° 36' 42.814" W
 Datum: NAD83
Soil Map Unit Name: EsB, Escambia loam, 2 to 5 percent slopes
 NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** Are "Normal Circumstances" present? Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:
 Area is just north of the darainage from an old settlement on the East Side of the AOI. Drinking Water Well (broken - flowing water) feeds a man made pond and then downslope into a natural wetland.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required: check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 16

		Dominant Species?		Indicator Status	
Tree Stratum	(Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover		
1.	<i>Pinus taeda</i>	10	<input checked="" type="checkbox"/> 38.5%	FAC	
2.	<i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 38.5%	FACW	
3.	<i>Quercus nigra</i>	5	<input type="checkbox"/> 19.2%	FAC	
4.	<i>Quercus virginiana</i>	1	<input type="checkbox"/> 3.8%	FACU	
5.		0	<input type="checkbox"/> 0.0%		
6.		0	<input type="checkbox"/> 0.0%		
7.		0	<input type="checkbox"/> 0.0%		
8.		0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>13</u>		20% of Total Cover: <u>5.2</u>	<u>26</u>	= Total Cover	
Sapling or Sapling/Shrub Stratum		(Plot size: 30 m)			
1.	<i>Pinus elliotii</i>	5	<input checked="" type="checkbox"/> 25.0%	FACW	
2.	<i>Pinus taeda</i>	3	<input type="checkbox"/> 15.0%	FAC	
3.	<i>Quercus nigra</i>	10	<input checked="" type="checkbox"/> 50.0%	FAC	
4.	<i>Quercus virginiana</i>	0	<input type="checkbox"/> 0.0%	FACU	
5.	<i>Magnolia virginiana</i>	2	<input type="checkbox"/> 10.0%	FACW	
6.		0	<input type="checkbox"/> 0.0%		
7.		0	<input type="checkbox"/> 0.0%		
8.		0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>10</u>		20% of Total Cover: <u>4</u>	<u>20</u>	= Total Cover	
Shrub Stratum		(Plot size: 30 m)			
1.	<i>Ilex vomitoria</i>	20	<input checked="" type="checkbox"/> 80.0%	FAC	
2.	<i>Ilex opaca</i>	5	<input checked="" type="checkbox"/> 20.0%	FAC	
3.		0	<input type="checkbox"/> 0.0%		
4.		0	<input type="checkbox"/> 0.0%		
5.		0	<input type="checkbox"/> 0.0%		
6.		0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>12.5</u>		20% of Total Cover: <u>5</u>	<u>25</u>	= Total Cover	
Herb Stratum		(Plot size: 30 m)			
1.	<i>Ilex vomitoria</i>	5	<input checked="" type="checkbox"/> 100.0%	FAC	
2.		0	<input type="checkbox"/> 0.0%		
3.		0	<input type="checkbox"/> 0.0%		
4.		0	<input type="checkbox"/> 0.0%		
5.		0	<input type="checkbox"/> 0.0%		
6.		0	<input type="checkbox"/> 0.0%		
7.		0	<input type="checkbox"/> 0.0%		
8.		0	<input type="checkbox"/> 0.0%		
9.		0	<input type="checkbox"/> 0.0%		
10.		0	<input type="checkbox"/> 0.0%		
11.		0	<input type="checkbox"/> 0.0%		
12.		0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>2.5</u>		20% of Total Cover: <u>1</u>	<u>5</u>	= Total Cover	
Woody Vine Stratum		(Plot size: 30 m)			
1.	<i>Vitis rotundifolia</i>	5	<input checked="" type="checkbox"/> 100.0%	FAC	
2.		0	<input type="checkbox"/> 0.0%		
3.		0	<input type="checkbox"/> 0.0%		
4.		0	<input type="checkbox"/> 0.0%		
5.		0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>2.5</u>		20% of Total Cover: <u>1</u>	<u>5</u>	= Total Cover	

Dominance Test worksheet:	
Number of Dominant Species That are OBL, FACW, or FAC:	<u>8</u> (A)
Total Number of Dominant Species Across All Strata:	<u>8</u> (B)
Percent of dominant Species That Are OBL, FACW, or FAC:	<u>100.0%</u> (A/B)
Prevalence Index worksheet:	
Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>17</u>	x 2 = <u>34</u>
FAC species <u>63</u>	x 3 = <u>189</u>
FACU species <u>1</u>	x 4 = <u>4</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals:	<u>81</u> (A) <u>227</u> (B)
Prevalence Index = B/A = <u>2.802</u>	
Hydrophytic Vegetation Indicators:	
<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation	
<input checked="" type="checkbox"/> 2 - Dominance Test is > 50%	
<input checked="" type="checkbox"/> 3 - Prevalence Index is ≤ 3.0 ¹	
<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
Definition of Vegetation Strata:	
Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).	
Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.	
Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.	
Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.	
Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.	
Woody vine - All woody vines, regardless of height.	
Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	

Remarks: (If observed, list morphological adaptations below).
Heavy pine litter - very little herbaceous layer.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 16

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix			Redox Features			Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹		
0-5	10YR	3/3	100				Loamy Sand	
5-16	10YR	5/6	100				Loamy Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)	<input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)	<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)	<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 153B)
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input type="checkbox"/> Marl (F10) (LRR U)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)	
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)	
<input type="checkbox"/> Sandy Muck Mineral (S1) (LRR O, S)	<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)	
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)	
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)	
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

No hydric indicators.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 14-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 17
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 33 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** none **Slope:** 1.0 % / 0.6 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 23' 44.728" N **Long.:** 89° 36' 42.219" W **Datum:** NAD83
Soil Map Unit Name: EsA, Escambia loam, 0 to 2 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	
Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	

Remarks:
Hillslope (slight angle) <2% approximately 75 feet southwest of Wet-17. This is on the side of a drained wetland. This area is dryer because of a lack of hydrology. Soils still show signs of REDOX and mottling.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry Season Water Table (C2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Water-Stained Leaves (B9)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)	

Field Observations:		Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches): _____	
Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches): _____	
Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches): _____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
some light redoximorphic features in lower portion of test hole. No hydrology.

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 17

		Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: <u>30 m</u>)					
1.	<i>Quercus nigra</i>	10	<input checked="" type="checkbox"/>	50.0%	FAC
2.	<i>Pinus elliotii</i>	5	<input checked="" type="checkbox"/>	25.0%	FACW
3.	<i>Nyssa sylvatica</i>	3	<input type="checkbox"/>	15.0%	FAC
4.	<i>Liquidambar styraciflua</i>	1	<input type="checkbox"/>	5.0%	FAC
5.		1	<input type="checkbox"/>	5.0%	
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>10</u>		20% of Total Cover: <u>4</u>	<u>20</u>	= Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size: <u>30 m</u>)					
1.	<i>Pinus elliotii</i>	3	<input type="checkbox"/>	12.5%	FACW
2.	<i>Liquidambar styraciflua</i>	5	<input checked="" type="checkbox"/>	20.8%	FAC
3.	<i>Quercus nigra</i>	10	<input checked="" type="checkbox"/>	41.7%	FAC
4.	<i>Magnolia grandiflora</i>	1	<input type="checkbox"/>	4.2%	FAC
5.	<i>Nyssa sylvatica</i>	5	<input checked="" type="checkbox"/>	20.8%	FAC
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>12</u>		20% of Total Cover: <u>4.8</u>	<u>24</u>	= Total Cover	
Shrub Stratum (Plot size: <u>30 m</u>)					
1.	<i>Ilex vomitoria</i>	10	<input checked="" type="checkbox"/>	71.4%	FAC
2.	<i>Ilex coriacea</i>	1	<input type="checkbox"/>	7.1%	FACW
3.	<i>Magnolia virginiana</i>	2	<input type="checkbox"/>	14.3%	FACW
4.	<i>Morella cerifera</i>	1	<input type="checkbox"/>	7.1%	FAC
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>7</u>		20% of Total Cover: <u>2.8</u>	<u>14</u>	= Total Cover	
Herb Stratum (Plot size: <u>30 m</u>)					
1.	<i>Arundinaria tecta</i>	5	<input checked="" type="checkbox"/>	26.3%	FACW
2.	<i>Lygodium japonicum</i>	10	<input checked="" type="checkbox"/>	52.6%	FAC
3.	<i>Pteridium aquilinum</i>	1	<input type="checkbox"/>	5.3%	FACU
4.	<i>Eupatorium capillifolium</i>	3	<input type="checkbox"/>	15.8%	FACU
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
9.		0	<input type="checkbox"/>	0.0%	
10.		0	<input type="checkbox"/>	0.0%	
11.		0	<input type="checkbox"/>	0.0%	
12.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>9.5</u>		20% of Total Cover: <u>3.8</u>	<u>19</u>	= Total Cover	
Woody Vine Stratum (Plot size: <u>30 m</u>)					
1.	<i>Vitis rotundifolia</i>	3	<input type="checkbox"/>	75.0%	FAC
2.	<i>Rubus argutus</i>	1	<input type="checkbox"/>	25.0%	FAC
3.		0	<input type="checkbox"/>	0.0%	
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>2</u>		20% of Total Cover: <u>0.8</u>	<u>4</u>	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	0	x 1 = 0
FACW species	16	x 2 = 32
FAC species	60	x 3 = 180
FACU species	4	x 4 = 16
UPL species	0	x 5 = 0
Column Totals:	80 (A)	228 (B)

Prevalence Index = B/A = 2.850

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 17

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)	3/2	%	Color (moist)	%	Type ¹	Loc ²			
0-3	10YR	3/2	100							
3-8	10YR	4/2	100						Loamy Sand	
8-16	10YR	4/3	90	10YR	5/6	10	C	M	Loamy Sand	rusty brown mottling/redox in lower section of test

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

Begin to have some mottling in lower portion of test pit (>12-inches) as clay content begins to increase.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation City/County: Waveland - Hancock Sampling Date: 18-Oct-16
 Applicant/Owner: NASA State: MS Sampling Point: Up - 18
 Investigator(s): Lars Larson, Randy Ellis Section, Township, Range: S 29 T 7 s R 16 W
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): Slope: 1.0 % / 0.6 °
 Subregion (LRR or MLRA): LRR T Lat.: 30° 24' 45.183" N Long.: 89° 37' 38.549" W Datum: NAD83
 Soil Map Unit Name: EsA, Escambia loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:
 Hillslope approximately 30 to 40 feet up from drainage way (ephemeral stream) that runs south toward Turtle Skin Creek.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 18

Tree Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 62.5%	FACW
2.	<i>Nyssa sylvatica</i>	5	<input checked="" type="checkbox"/> 31.3%	FAC
3.	<i>Quercus falcata</i>	1	<input type="checkbox"/> 6.3%	FACU
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>8</u> 20% of Total Cover: <u>3.2</u>		16	= Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 55.6%	FACW
2.	<i>Nyssa sylvatica</i>	5	<input checked="" type="checkbox"/> 27.8%	FAC
3.	<i>Magnolia virginiana</i>	2	<input type="checkbox"/> 11.1%	FACW
4.	<i>Quercus nigra</i>	1	<input type="checkbox"/> 5.6%	FAC
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>9</u> 20% of Total Cover: <u>3.6</u>		18	= Total Cover	
Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Ilex coriacea</i>	40	<input checked="" type="checkbox"/> 81.6%	FACW
2.	<i>Ilex vomitoria</i>	5	<input type="checkbox"/> 10.2%	FAC
3.	<i>Ilex opaca</i>	2	<input type="checkbox"/> 4.1%	FAC
4.	<i>Liquidambar styraciflua</i>	1	<input type="checkbox"/> 2.0%	FAC
5.	<i>Magnolia virginiana</i>	1	<input type="checkbox"/> 2.0%	FACW
6.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>24.5</u> 20% of Total Cover: <u>9.8</u>		49	= Total Cover	
Herb Stratum (Plot size:)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Ilex coriacea</i>	10	<input checked="" type="checkbox"/> 90.9%	FACW
2.	<i>Arundinaria tecta</i>	1	<input type="checkbox"/> 9.1%	FACW
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
9.		0	<input type="checkbox"/> 0.0%	
10.		0	<input type="checkbox"/> 0.0%	
11.		0	<input type="checkbox"/> 0.0%	
12.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>5.5</u> 20% of Total Cover: <u>2.2</u>		11	= Total Cover	
Woody Vine Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Smilax rotundifolia</i>	1	<input type="checkbox"/> 100.0%	FAC
2.		0	<input type="checkbox"/> 0.0%	
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>0.5</u> 20% of Total Cover: <u>0.2</u>		1	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 95 (A) Multiply by:

OBL species 0 x 1 = 0

FACW species 74 x 2 = 148

FAC species 20 x 3 = 60

FACU species 1 x 4 = 4

UPL species 0 x 5 = 0

Column Totals: 95 (A) 212 (B)

Prevalence Index = B/A = 2.232

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 18

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR	4/2	100					Loamy Sand	
4-16	10YR	5/6	100					Loamy Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)	<input type="checkbox"/> 1 cm Muck (A9) (LRR O)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)	<input type="checkbox"/> 2 cm Muck (A10) (LRR S)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)	<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)	
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 153B)	
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Marl (F10) (LRR U)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)		
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)		
<input type="checkbox"/> Sandy Muck Mineral (S1) (LRR O, S)	<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)		
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)		
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)		
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)		

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 18-Oct-16

Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 19

Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 29 T 7 s R 16 W

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** **Slope:** 2.0 % / 1.1 °

Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 42.673" N **Long.:** 89° 37' 2.692" W **Datum:** NAD83

Soil Map Unit Name: H1B, Harleston fine sandy loam, 2 to 5 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)

Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No

Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:
Sideslope of natural ridge leading up to railspur 70 to 80-feet to north.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Dominant Species?

Sampling Point: Up - 19

Tree Stratum (Plot size: 30 m)

	Absolute % Cover	Ref.Strat. Cover	Indicator Status
1. <i>Nyssa sylvatica</i>	2	<input type="checkbox"/> 15.4%	FAC
2. <i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 76.9%	FACW
3. <i>Quercus nigra</i>	1	<input type="checkbox"/> 7.7%	FAC
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 6.5 20% of Total Cover: 2.6 13 = **Total Cover**

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)

	Absolute % Cover	Ref.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	15	<input checked="" type="checkbox"/> 75.0%	FACW
2. <i>Nyssa sylvatica</i>	2	<input type="checkbox"/> 10.0%	FAC
3. <i>Acer rubrum</i>	2	<input type="checkbox"/> 10.0%	FAC
4. <i>Magnolia virginiana</i>	1	<input type="checkbox"/> 5.0%	FACW
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 10 20% of Total Cover: 4 20 = **Total Cover**

Shrub Stratum (Plot size: 30 m)

	Absolute % Cover	Ref.Strat. Cover	Indicator Status
1. <i>Ilex coriacea</i>	5	<input type="checkbox"/> 16.7%	FACW
2. <i>Ilex vomitoria</i>	20	<input checked="" type="checkbox"/> 66.7%	FAC
3. <i>Morella cerifera</i>	5	<input type="checkbox"/> 16.7%	FAC
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 15 20% of Total Cover: 6 30 = **Total Cover**

Herb Stratum (Plot size: 30 m)

	Absolute % Cover	Ref.Strat. Cover	Indicator Status
1. <i>Arundinaria tecta</i>	10	<input checked="" type="checkbox"/> 100.0%	FACW
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 5 20% of Total Cover: 2 10 = **Total Cover**

Woody Vine Stratum (Plot size: 30 m)

	Absolute % Cover	Ref.Strat. Cover	Indicator Status
1. <i>Rubus argutus</i>	2	<input checked="" type="checkbox"/> 28.6%	FAC
2. <i>Vitis rotundifolia</i>	5	<input checked="" type="checkbox"/> 71.4%	FAC
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 3.5 20% of Total Cover: 1.4 7 = **Total Cover**

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: Multiply by:

OBL species	0	x 1 =	0
FACW species	41	x 2 =	82
FAC species	39	x 3 =	117
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	80 (A)		199 (B)

Prevalence Index = B/A = 2.487

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 19

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR	4/2	100						
4-16	10YR	5/4	100						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 18-Oct-16

Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 20

Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 29 T 7 s R 16 W

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 37.542" N **Long.:** 89° 37' 2.639" W **Datum:** NAD83

Soil Map Unit Name: At, Atmore silt loam, 0 to 2 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:
This is a broad flat just south of railroad spur 150 feet.

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<u>Secondary Indicators (minimum of 2 required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Dominant Species?

Sampling Point: Up - 20

Tree Stratum (Plot size: 30 m)

	Absolute % Cover	Rel.Strat.	Indicator Status
1. <i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 83.3%	FACW
2. <i>Nyssa sylvatica</i>	1	<input type="checkbox"/> 8.3%	FAC
3. <i>Quercus nigra</i>	1	<input type="checkbox"/> 8.3%	FAC
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 6 20% of Total Cover: 2.4 12 = Total Cover

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)

	Absolute % Cover	Rel.Strat.	Indicator Status
1. <i>Pinus elliotii</i>	5	<input checked="" type="checkbox"/> 83.3%	FACW
2. <i>Quercus nigra</i>	1	<input type="checkbox"/> 16.7%	FAC
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 3 20% of Total Cover: 1.2 6 = Total Cover

Shrub Stratum (Plot size: 30 m)

	Absolute % Cover	Rel.Strat.	Indicator Status
1. <i>Ilex coriacea</i>	50	<input checked="" type="checkbox"/> 82.0%	FACW
2. <i>Ilex glabra</i>	10	<input type="checkbox"/> 16.4%	FACW
3. <i>Vaccinium elliotii</i>	1	<input type="checkbox"/> 1.6%	FACW
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 30.5 20% of Total Cover: 12.2 61 = Total Cover

Herb Stratum (Plot size: 30 m)

	Absolute % Cover	Rel.Strat.	Indicator Status
1. <i>Sabal minor</i>	1	<input type="checkbox"/> 33.3%	FACW
2. <i>Lycopodiella alopecuroides</i>	2	<input type="checkbox"/> 66.7%	OBL
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 1.5 20% of Total Cover: 0.6 3 = Total Cover

Woody Vine Stratum (Plot size: 30 m)

	Absolute % Cover	Rel.Strat.	Indicator Status
1.	0	<input type="checkbox"/> 0.0%	
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 0 20% of Total Cover: 0 0 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 6 Multiply by: 2

OBL species: 2 x 1 = 2

FACW species: 77 x 2 = 154

FAC species: 3 x 3 = 9

FACU species: 0 x 4 = 0

UPL species: 0 x 5 = 0

Column Totals: 82 (A) 165 (B)

Prevalence Index = B/A = 2.012

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 20

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²			
0-5	10YR	3/2	100						Loamy Sand	
5-12	10YR	4/3	100						Loamy Sand	
12-20	10YR	5/4	90	10YR	6/6	10	C	M	Loamy Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

some mottling and small redox concentrations below 10-12 inches.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation
City/County: Waveland - Hancock
Sampling Date: 18-Oct-16
Applicant/Owner: NASA
State: MS
Sampling Point: Up - 21
Investigator(s): Lars Larson, Randy Ellis
Section, Township, Range: S 29 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Hillside
Local relief (concave, convex, none): undulating
Slope: 2.0 % / 1.1 °
Subregion (LRR or MLRA): LRR T
Lat.: 30° 24' 24.404" N
Long.: 89° 37' 15.745" W
Datum: NAD83
Soil Map Unit Name: PoB, Poarch fine sandy loam, 2 to 5% slopes
NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?**
Are "Normal Circumstances" present? Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?**
 (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks: Hillslope just up from Plot Wet 21 approximately 50 to 60-feet.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (Includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 21

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	101	<input checked="" type="checkbox"/> 96.2%	FACW
2. <i>Magnolia virginiana</i>	3	<input type="checkbox"/> 2.9%	FACW
3. <i>Quercus nigra</i>	1	<input type="checkbox"/> 1.0%	FAC
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 52.5 20% of Total Cover: 21	105	= Total Cover	

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	5	<input checked="" type="checkbox"/> 83.3%	FACW
2. <i>Magnolia virginiana</i>	1	<input type="checkbox"/> 16.7%	FACW
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 3 20% of Total Cover: 1.2	6	= Total Cover	

Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Ilex coriacea</i>	50	<input checked="" type="checkbox"/> 83.3%	FACW
2. <i>Ilex vomitoria</i>	10	<input type="checkbox"/> 16.7%	FAC
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 30 20% of Total Cover: 12	60	= Total Cover	

Herb Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Lycopodiella alopecuroides</i>	2	<input type="checkbox"/> 66.7%	OBL
2. <i>Woodwardia areolata</i>	1	<input type="checkbox"/> 33.3%	OBL
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 1.5 20% of Total Cover: 0.6	3	= Total Cover	

Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Smlax laurifolia</i>	1	<input type="checkbox"/> 100.0%	FACW
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 0.5 20% of Total Cover: 0.2	1	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 3 Multiply by: 1

OBL species: 3 x 1 = 3

FACW species: 161 x 2 = 322

FAC species: 11 x 3 = 33

FACU species: 0 x 4 = 0

UPL species: 0 x 5 = 0

Column Totals: 175 (A) 358 (B)

Prevalence Index = B/A = 2.046

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).
Heavy pine litter on ground.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 21

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²			
0-3	10YR	3/2	100							
3-15	10YR	5/3	98	10YR	6/6	2	C	M	Sandy Loam	

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

loamy sand to sandy loam

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 18-Oct-16

Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 22

Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 29 T 7 s R 16 W

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** **Slope:** 2.0 % / 1.1 °

Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 29.094" N **Long.:** 89° 37' 9.883" W **Datum:** NAD83

Soil Map Unit Name: EuB, Escambia loamy fine sand, 2 to 5 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)

Are Vegetation **, Soil** **, or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No

Are Vegetation **, Soil** **, or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks: 900 feet (+/-) east of Up - 21.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required: check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 Side slope 60-feet (+/-) up from bottom drain area and riparian buffer zone on North side of Turtle Skin Creek.

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 22

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. Pinus elliotii	10	<input checked="" type="checkbox"/> 33.3%	FACW
2. Magnolia virginiana	15	<input checked="" type="checkbox"/> 50.0%	FACW
3. Nyssa sylvatica	5	<input type="checkbox"/> 16.7%	FAC
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 15 20% of Total Cover: 6 30 = Total Cover			
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)			
1. Pinus elliotii	5	<input checked="" type="checkbox"/> 27.8%	FACW
2. Magnolia virginiana	10	<input checked="" type="checkbox"/> 55.6%	FACW
3. Nyssa sylvatica	3	<input type="checkbox"/> 16.7%	FAC
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 9 20% of Total Cover: 3.6 18 = Total Cover			
Shrub Stratum (Plot size: 30 m)			
1. Ilex coriacea	40	<input checked="" type="checkbox"/> 88.9%	FACW
2. Ilex opaca	5	<input type="checkbox"/> 11.1%	FAC
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 22.5 20% of Total Cover: 9 45 = Total Cover			
Herb Stratum (Plot size: 30 m)			
1. Sarracenia alabamensis	2	<input type="checkbox"/> 66.7%	OBL
2. Lycopodiella alopecuroides	1	<input type="checkbox"/> 33.3%	OBL
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 1.5 20% of Total Cover: 0.6 3 = Total Cover			
Woody Vine Stratum (Plot size: 30 m)			
1. Smilax laurifolia	0	<input type="checkbox"/> 0.0%	FACW
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 0 20% of Total Cover: 0 0 = Total Cover			

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 96 (A) Multiply by: 2.104

OBL species: 3 x 1 = 3

FACW species: 80 x 2 = 160

FAC species: 13 x 3 = 39

FACU species: 0 x 4 = 0

UPL species: 0 x 5 = 0

Column Totals: 96 (A) 202 (B)

Prevalence Index = B/A = 2.104

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).
transitional area just up from obvious wetland boundary. Gallberry understory thickens appreciably within 30 feet of this plot.

SOIL

Sampling Point: Up - 22

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)	%		Color (moist)	%	Type ¹	Loc ²		
0-4	10YR	3/2	100					Loamy Sand	
4-16	10YR	5/4	100					Loamy Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 19-Oct-16

Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 23

Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 29 T 7 s R 16 W

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** rolling **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 25.737" N **Long.:** 89° 37' 21.949" W **Datum:** NAD83

Soil Map Unit Name: EuB, Escambia loamy fine sand, 2 to 5 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:
Area along drainage way (North to south) on the west side of the railspur access road - Western AOI.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 23

		Dominant Species?		Indicator Status	
Tree Stratum	(Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover		
1.	<i>Pinus elliotii</i>	5	<input checked="" type="checkbox"/> 22.7%	FACW	
2.	<i>Pinus taeda</i>	5	<input checked="" type="checkbox"/> 22.7%	FAC	
3.	<i>Acer rubrum</i>	2	<input type="checkbox"/> 9.1%	FAC	
4.	<i>Quercus falcata</i>	10	<input checked="" type="checkbox"/> 45.5%	FACU	
5.			<input type="checkbox"/> 0.0%		
6.		0	<input type="checkbox"/> 0.0%		
7.		0	<input type="checkbox"/> 0.0%		
8.		0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>11</u> 20% of Total Cover: <u>4.4</u>		<u>22</u>	= Total Cover		
Sapling or Sapling/Shrub Stratum		(Plot size: 30 m)			
1.	<i>Quercus nigra</i>	15	<input checked="" type="checkbox"/> 93.8%	FAC	
2.	<i>Quercus muehlenbergii</i>	1	<input type="checkbox"/> 6.3%	UPL	
3.		0	<input type="checkbox"/> 0.0%		
4.		0	<input type="checkbox"/> 0.0%		
5.		0	<input type="checkbox"/> 0.0%		
6.		0	<input type="checkbox"/> 0.0%		
7.		0	<input type="checkbox"/> 0.0%		
8.		0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>8</u> 20% of Total Cover: <u>3.2</u>		<u>16</u>	= Total Cover		
Shrub Stratum		(Plot size: 30 m)			
1.	<i>Ilex vomitoria</i>	25	<input checked="" type="checkbox"/> 55.6%	FAC	
2.	<i>Ilex coriacea</i>	15	<input checked="" type="checkbox"/> 33.3%	FACW	
3.	<i>Quercus nigra</i>	5	<input type="checkbox"/> 11.1%	FAC	
4.		0	<input type="checkbox"/> 0.0%		
5.		0	<input type="checkbox"/> 0.0%		
6.		0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>22.5</u> 20% of Total Cover: <u>9</u>		<u>45</u>	= Total Cover		
Herb Stratum		(Plot size: 30 m)			
1.	<i>Quercus falcata</i>	2	<input checked="" type="checkbox"/> 28.6%	FACU	
2.	<i>Ilex coriacea</i>	5	<input checked="" type="checkbox"/> 71.4%	FACW	
3.		0	<input type="checkbox"/> 0.0%		
4.		0	<input type="checkbox"/> 0.0%		
5.		0	<input type="checkbox"/> 0.0%		
6.		0	<input type="checkbox"/> 0.0%		
7.		0	<input type="checkbox"/> 0.0%		
8.		0	<input type="checkbox"/> 0.0%		
9.		0	<input type="checkbox"/> 0.0%		
10.		0	<input type="checkbox"/> 0.0%		
11.		0	<input type="checkbox"/> 0.0%		
12.		0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>3.5</u> 20% of Total Cover: <u>1.4</u>		<u>7</u>	= Total Cover		
Woody Vine Stratum		(Plot size: 30 m)			
1.	<i>Smilax rotundifolia</i>	30	<input checked="" type="checkbox"/> 93.8%	FAC	
2.	<i>Vitis rotundifolia</i>	1	<input type="checkbox"/> 3.1%	FAC	
3.	<i>Smilax bona-nox</i>	1	<input type="checkbox"/> 3.1%	FAC	
4.		0	<input type="checkbox"/> 0.0%		
5.		0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>16</u> 20% of Total Cover: <u>6.4</u>		<u>32</u>	= Total Cover		

Dominance Test worksheet:			
Number of Dominant Species That are OBL, FACW, or FAC:	<u>7</u>	(A)	
Total Number of Dominant Species Across All Strata:	<u>9</u>	(B)	
Percent of dominant Species That Are OBL, FACW, or FAC:	<u>77.8%</u>	(A/B)	
Prevalence Index worksheet:			
Total % Cover of:		Multiply by:	
OBL species	<u>0</u>	x 1 =	<u>0</u>
FACW species	<u>25</u>	x 2 =	<u>50</u>
FAC species	<u>84</u>	x 3 =	<u>252</u>
FACU species	<u>12</u>	x 4 =	<u>48</u>
UPL species	<u>1</u>	x 5 =	<u>5</u>
Column Totals:	<u>122</u>	(A)	<u>355</u> (B)
Prevalence Index = B/A =		<u>2.910</u>	
Hydrophytic Vegetation Indicators:			
<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation			
<input checked="" type="checkbox"/> 2 - Dominance Test is > 50%			
<input checked="" type="checkbox"/> 3 - Prevalence Index is ≤ 3.0 ¹			
<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)			
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.			
Definition of Vegetation Strata:			
Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).			
Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.			
Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.			
Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.			
Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.			
Woody vine - All woody vines, regardless of height.			
Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>			

Remarks: (If observed, list morphological adaptations below).
Heavy pine needle litter within understory.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **Up - 23**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features			Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹		
0-5	10YR	4/2	100				Loamy Sand	
5-16	10YR	6/4	100				Loamy Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)	<input type="checkbox"/> 1 cm Muck (A9) (LRR O)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)	<input type="checkbox"/> 2 cm Muck (A10) (LRR S)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)	<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 153B)	
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Marl (F10) (LRR U)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)		
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)		
<input type="checkbox"/> Sandy Muck Mineral (S1) (LRR O, S)	<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)		
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)		
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)		
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)		

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:
 No hydric indicators observed.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 19-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 24
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 29 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** **Slope:** 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 33.540" N **Long.:** 89° 37' 22.840" W **Datum:** NAD83
Soil Map Unit Name: At, Atmore silt loam, 0 to 2 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:
 Transitional area 400-500 feet west of access road in old Ammunition Plant area. There is a prevalence of hydrophytic vegetation, BUT, soils are borderline wet/up and no significant hydrological indicators are present.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 No significant hydrology indicators in soil or area except for FAC Neutral test. Only true wetlands appear to be areas disturbed by heavy equipment usage in the past.

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 24

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	8	<input checked="" type="checkbox"/> 80.0%	FACW
2. <i>Pinus taeda</i>	2	<input checked="" type="checkbox"/> 20.0%	FAC
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	5	20% of Total Cover: 2	10 = Total Cover
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	5	<input checked="" type="checkbox"/> 71.4%	FACW
2. <i>Magnolia virginiana</i>	2	<input checked="" type="checkbox"/> 28.6%	FACW
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	3.5	20% of Total Cover: 1.4	7 = Total Cover
Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Ilex coriacea</i>	50	<input checked="" type="checkbox"/> 83.3%	FACW
2. <i>Ilex glabra</i>	10	<input type="checkbox"/> 16.7%	FACW
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	30	20% of Total Cover: 12	60 = Total Cover
Herb Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Lycopodiella alopecuroides</i>	2	<input type="checkbox"/> 50.0%	OBL
2. <i>Andropogon glomeratus</i>	2	<input type="checkbox"/> 50.0%	FACW
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	2	20% of Total Cover: 0.8	4 = Total Cover
Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Smilax rotundifolia</i>	2	<input type="checkbox"/> 100.0%	FAC
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	1	20% of Total Cover: 0.4	2 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 83 (A) Multiply by:

OBL species 2 x 1 = 2

FACW species 77 x 2 = 154

FAC species 4 x 3 = 12

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 83 (A) 168 (B)

Prevalence Index = B/A = 2.024

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 24

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²			
0-5	10YR	3/2	100						Loamy Sand	
5-15	10YR	4/3	99	10YR	6/8	1	C	M	Loamy Sand	

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 19-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 25
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 29 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** undulating **Slope:** 2.0 % / 1.1 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 38.668" N **Long.:** 89° 37' 31.839" W **Datum:** NAD83
Soil Map Unit Name: EsA, Escambia loam, 0 to 2 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks: Upland plot approximatley 50-60 feet up from lower riparian drainage area.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (minimum of 2 required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (Includes capillary fringe)		Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 		
Remarks: 		

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 25

		Dominant Species?		Indicator Status
Tree Stratum (Plot size: 30 m)	Absolute % Cover	Rel. Strat. Cover		
1. <i>Pinus ellottii</i>	10	<input checked="" type="checkbox"/> 55.6%	FACW	
2. <i>Nyssa sylvatica</i>	3	<input type="checkbox"/> 16.7%	FAC	
3. <i>Magnolia virginiana</i>	5	<input checked="" type="checkbox"/> 27.8%	FACW	
4.	0	<input type="checkbox"/> 0.0%		
5.	0	<input type="checkbox"/> 0.0%		
6.	0	<input type="checkbox"/> 0.0%		
7.	0	<input type="checkbox"/> 0.0%		
8.	0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>9</u> 20% of Total Cover: <u>3.6</u>		<u>18</u>	= Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel. Strat. Cover		
1. <i>Nyssa sylvatica</i>	10	<input checked="" type="checkbox"/> 45.5%	FAC	
2. <i>Pinus ellottii</i>	10	<input checked="" type="checkbox"/> 45.5%	FACW	
3. <i>Quercus nigra</i>	2	<input type="checkbox"/> 9.1%	FAC	
4.	0	<input type="checkbox"/> 0.0%		
5.	0	<input type="checkbox"/> 0.0%		
6.	0	<input type="checkbox"/> 0.0%		
7.	0	<input type="checkbox"/> 0.0%		
8.	0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>11</u> 20% of Total Cover: <u>4.4</u>		<u>22</u>	= Total Cover	
Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel. Strat. Cover		
1. <i>Ilex coriacea</i>	40	<input checked="" type="checkbox"/> 81.6%	FACW	
2. <i>Magnolia grandiflora</i>	1	<input type="checkbox"/> 2.0%	FAC	
3. <i>Ilex vomitoria</i>	5	<input type="checkbox"/> 10.2%	FAC	
4. <i>Ilex glabra</i>	3	<input type="checkbox"/> 6.1%	FACW	
5.	0	<input type="checkbox"/> 0.0%		
6.	0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>24.5</u> 20% of Total Cover: <u>9.8</u>		<u>49</u>	= Total Cover	
Herb Stratum (Plot size: 30 m)	Absolute % Cover	Rel. Strat. Cover		
1. <i>Ilex coriacea</i>	10	<input checked="" type="checkbox"/> 66.7%	FACW	
2. <i>Ilex glabra</i>	5	<input checked="" type="checkbox"/> 33.3%	FACW	
3.	0	<input type="checkbox"/> 0.0%		
4.	0	<input type="checkbox"/> 0.0%		
5.	0	<input type="checkbox"/> 0.0%		
6.	0	<input type="checkbox"/> 0.0%		
7.	0	<input type="checkbox"/> 0.0%		
8.	0	<input type="checkbox"/> 0.0%		
9.	0	<input type="checkbox"/> 0.0%		
10.	0	<input type="checkbox"/> 0.0%		
11.	0	<input type="checkbox"/> 0.0%		
12.	0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>7.5</u> 20% of Total Cover: <u>3</u>		<u>15</u>	= Total Cover	
Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Rel. Strat. Cover		
1. <i>Vitis rotundifolia</i>	3	<input type="checkbox"/> 75.0%	FAC	
2. <i>Smilax rotundifolia</i>	1	<input type="checkbox"/> 25.0%	FAC	
3.	0	<input type="checkbox"/> 0.0%		
4.	0	<input type="checkbox"/> 0.0%		
5.	0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>2</u> 20% of Total Cover: <u>0.8</u>		<u>4</u>	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 108 (A) Multiply by: 21 (B)

OBL species 0 x 1 = 0

FACW species 83 x 2 = 166

FAC species 25 x 3 = 75

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 108 (A) 241 (B)

Prevalence Index = B/A = 2.231

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 25

Profile Description: (Describe to the depth needed to document the Indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)	%	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR	4/2	100						
5-16	10YR	5/4	100						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation
 City/County: Waveland - Hancock
 Sampling Date: 19-Oct-16
Applicant/Owner: NASA
 State: MS
 Sampling Point: Up - 26
Investigator(s): Lars Larson, Randy Ellis
 Section, Township, Range: S 29 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Hillside
 Local relief (concave, convex, none): undulating
 Slope: 3.0 % / 1.7°
Subregion (LRR or MLRA): LRR T
 Lat.: 30° 24' 34.961" N
 Long.: 89° 37' 43.663" W
 Datum: NAD83
Soil Map Unit Name: SaC, Saudier fine sandy loam, 5 to 8 percent slopes
 NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** Are "Normal Circumstances" present? Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:
 Area is just inside railbed approximately 200-250-feet, in western-northern portion of AOI.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (Includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 26

Tree Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	5	<input checked="" type="checkbox"/> 38.5%	FACW
2.	<i>Pinus taeda</i>	2	<input type="checkbox"/> 15.4%	FAC
3.	<i>Magnolia virginiana</i>	3	<input checked="" type="checkbox"/> 23.1%	FACW
4.	<i>Liriodendron tulipifera</i>	3	<input checked="" type="checkbox"/> 23.1%	FACU
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 6.5 20% of Total Cover: 2.6 13 = Total Cover

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Nyssa sylvatica</i>	5	<input checked="" type="checkbox"/> 21.7%	FAC
2.	<i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 43.5%	FACW
3.	<i>Quercus falcata</i>	5	<input checked="" type="checkbox"/> 21.7%	FACU
4.	<i>Quercus nigra</i>	3	<input type="checkbox"/> 13.0%	FAC
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 11.5 20% of Total Cover: 4.6 23 = Total Cover

Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Ilex coriacea</i>	50	<input checked="" type="checkbox"/> 89.3%	FACW
2.	<i>Quercus nigra</i>	5	<input type="checkbox"/> 8.9%	FAC
3.	<i>Quercus falcata</i>	1	<input type="checkbox"/> 1.8%	FACU
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 28 20% of Total Cover: 11.2 56 = Total Cover

Herb Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Ilex coriacea</i>	10	<input checked="" type="checkbox"/> 100.0%	FACW
2.		0	<input type="checkbox"/> 0.0%	
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
9.		0	<input type="checkbox"/> 0.0%	
10.		0	<input type="checkbox"/> 0.0%	
11.		0	<input type="checkbox"/> 0.0%	
12.		0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 5 20% of Total Cover: 2 10 = Total Cover

Woody Vine Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Smilax rotundifolia</i>	2	<input type="checkbox"/> 100.0%	FAC
2.		0	<input type="checkbox"/> 0.0%	
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 1 20% of Total Cover: 0.4 2 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)
 Total Number of Dominant Species Across All Strata: 8 (B)
 Percent of dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: Multiply by:
 OBL species 0 x 1 = 0
 FACW species 78 x 2 = 156
 FAC species 17 x 3 = 51
 FACU species 9 x 4 = 36
 UPL species 0 x 5 = 0
 Column Totals: 104 (A) 243 (B)
 Prevalence Index = B/A = 2.337

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is > 50%
- 3 - Prevalence Index is ≤ 3.0¹
- Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **Up - 26**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix			Redox Features			Texture	Remarks
	Color (moist)	%	%	Color (moist)	%	Type ¹		
0-5	10YR	4/2	100				Sandy Loam	
5-15	10YR	5/4	100				Loamy Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation
 City/County: Waveland - Hancock
 Sampling Date: 19-Oct-16
Applicant/Owner: NASA
 State: MS
 Sampling Point: Up - 27
Investigator(s): Lars Larson, Randy Ellis
 Section, Township, Range: S 29 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Hillside
 Local relief (concave, convex, none):
 Slope: 1.0 % / 0.6 °
Subregion (LRR or MLRA): LRR T
 Lat.: 30° 24' 26.719" N
 Long.: 89° 37' 36.739" W
 Datum: NAD83
Soil Map Unit Name: EsA, Escambia loam, 0 to 2 percent slopes
 NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?**
 Are "Normal Circumstances" present? Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?**
 (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:
 Plot is in area west of RR Spur about 400 to 500 feet in NW area of AOI.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 27

		Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: <u>30 m</u>)					
1.	<i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/>	41.7%	FACW
2.	<i>Pinus taeda</i>	5	<input checked="" type="checkbox"/>	20.8%	FAC
3.	<i>Nyssa sylvatica</i>	5	<input checked="" type="checkbox"/>	20.8%	FAC
4.	<i>Liquidambar styraciflua</i>	3	<input type="checkbox"/>	12.5%	FAC
5.	<i>Quercus falcata</i>	1	<input type="checkbox"/>	4.2%	FACU
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>12</u> 20% of Total Cover: <u>4.8</u>		<u>24</u>	= Total Cover		
Sapling or Sapling/Shrub Stratum (Plot size: <u>30 m</u>)					
1.	<i>Pinus elliotii</i>	25	<input checked="" type="checkbox"/>	62.5%	FACW
2.	<i>Pinus taeda</i>	5	<input type="checkbox"/>	12.5%	FAC
3.	<i>Liquidambar styraciflua</i>	5	<input type="checkbox"/>	12.5%	FAC
4.	<i>Magnolia virginiana</i>	2	<input type="checkbox"/>	5.0%	FACW
5.	<i>Nyssa sylvatica</i>	3	<input type="checkbox"/>	7.5%	FAC
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>20</u> 20% of Total Cover: <u>8</u>		<u>40</u>	= Total Cover		
Shrub Stratum (Plot size: <u>30 m</u>)					
1.	<i>Ilex coriacea</i>	35	<input checked="" type="checkbox"/>	74.5%	FACW
2.	<i>Ilex vomitoria</i>	10	<input checked="" type="checkbox"/>	21.3%	FAC
3.	<i>Acer rubrum</i>	2	<input type="checkbox"/>	4.3%	FAC
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>23.5</u> 20% of Total Cover: <u>9.4</u>		<u>47</u>	= Total Cover		
Herb Stratum (Plot size: <u>30 m</u>)					
1.	<i>Lygodium japonicum</i>	5	<input checked="" type="checkbox"/>	100.0%	FAC
2.		0	<input type="checkbox"/>	0.0%	
3.		0	<input type="checkbox"/>	0.0%	
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
9.		0	<input type="checkbox"/>	0.0%	
10.		0	<input type="checkbox"/>	0.0%	
11.		0	<input type="checkbox"/>	0.0%	
12.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>2.5</u> 20% of Total Cover: <u>1</u>		<u>5</u>	= Total Cover		
Woody Vine Stratum (Plot size: <u>30 m</u>)					
1.	<i>Vitis rotundifolia</i>	3	<input type="checkbox"/>	100.0%	FAC
2.		0	<input type="checkbox"/>	0.0%	
3.		0	<input type="checkbox"/>	0.0%	
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>1.5</u> 20% of Total Cover: <u>0.6</u>		<u>3</u>	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:		
OBL species	0	x 1 =	0
FACW species	72	x 2 =	144
FAC species	46	x 3 =	138
FACU species	1	x 4 =	4
UPL species	0	x 5 =	0
Column Totals:	119 (A)		286 (B)

Prevalence Index = B/A = 2.403

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0 ¹
 - Problematic Hydrophytic Vegetation ¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 27

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR	3/2	100						
4-16	10YR	6/4	100						

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation
 City/County: Waveland - Hancock
 Sampling Date: 19-Oct-16
Applicant/Owner: NASA
 State: MS
 Sampling Point: Up -28
Investigator(s): Lars Larson, Randy Ellis
 Section, Township, Range: S 29 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Terrace
 Local relief (concave, convex, none): flat
 Slope: 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T
 Lat.: 30° 24' 33.408" N
 Long.: 89° 37' 40.343" W
 Datum: NAD83
Soil Map Unit Name: EsA, Escambia loam, 0 to 2 percent slopes
 NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?**
 Are "Normal Circumstances" present? Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?**
 (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks: Terrace area located in NW part of AOI. Site is near an ephemeral channel that displays evidence of hydric soils.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up -28

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	15	<input checked="" type="checkbox"/> 78.9%	FACW
2. <i>Nyssa sylvatica</i>	3	<input type="checkbox"/> 15.8%	FAC
3. <i>Magnolia grandiflora</i>	1	<input type="checkbox"/> 5.3%	FAC
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	9.5	20% of Total Cover: 3.8	19 = Total Cover

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	5	<input checked="" type="checkbox"/> 50.0%	FACW
2. <i>Magnolia virginiana</i>	3	<input checked="" type="checkbox"/> 30.0%	FACW
3. <i>Liquidambar styraciflua</i>	2	<input checked="" type="checkbox"/> 20.0%	FAC
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	5	20% of Total Cover: 2	10 = Total Cover

Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Ilex coriacea</i>	60	<input checked="" type="checkbox"/> 85.7%	FACW
2. <i>Ilex vomitoria</i>	10	<input type="checkbox"/> 14.3%	FAC
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	35	20% of Total Cover: 14	70 = Total Cover

Herb Stratum (Plot size: 33)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	0	<input type="checkbox"/> 0.0%	
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	0	20% of Total Cover: 0	0 = Total Cover

Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Vitis rotundifolia</i>	2	<input type="checkbox"/> 100.0%	FAC
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	1	20% of Total Cover: 0.4	2 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 19 Multiply by: 5

OBL species 0 x 1 = 0

FACW species 83 x 2 = 166

FAC species 18 x 3 = 54

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 101 (A) 220 (B)

Prevalence Index = B/A = 2.178

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up -28

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Loc ²	Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹				
0-5	10YR	4/2	100						Loamy Sand	
5-16	10YR	5/4	95	10YR	7/6	5	C	PL	Loamy Sand	

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

Evidence of mottling in lower portion of soil profile > 12 inches. No strong redoximorphic features in upper part of soil profile.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 21-Oct-16

Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 29

Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 31 T 7 s R 16 W

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** undulating **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 24.071" N **Long.:** 89° 37' 49.856" W **Datum:** NAD83

Soil Map Unit Name: ScD, Saucier-Susquehanna complex, 5 to 12 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)

Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No

Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:
Hillslope approximately 60-feet south ofr E-W Property line fenceline in Western part of the AOI.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 29

		Dominant Species?		Indicator Status		Dominance Test worksheet:	
Tree Stratum	(Plot size: 30 m)	Absolute % Cover	Rel. Strat. Cover				
1.	<i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 50.0%	FACW	Number of Dominant Species That are OBL, FACW, or FAC: <u>5</u> (A)		
2.	<i>Quercus nigra</i>	5	<input checked="" type="checkbox"/> 25.0%	FAC	Total Number of Dominant Species Across All Strata: <u>5</u> (B)		
3.	<i>Acer rubrum</i>	2	<input type="checkbox"/> 10.0%	FAC	Percent of dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)		
4.	<i>Magnolia grandiflora</i>	1	<input type="checkbox"/> 5.0%	FAC			
5.	<i>Nyssa sylvatica</i>	2	<input type="checkbox"/> 10.0%	FAC			
6.		0	<input type="checkbox"/> 0.0%				
7.		0	<input type="checkbox"/> 0.0%				
8.		0	<input type="checkbox"/> 0.0%				
50% of Total Cover: <u>10</u>		20% of Total Cover: <u>4</u>	<u>20</u>	= Total Cover			
Sapling or Sapling/Shrub Stratum		(Plot size: 30 m)				Prevalence Index worksheet:	
1.	<i>Pinus elliotii</i>	2	<input type="checkbox"/> 12.5%	FACW	Total % Cover of: <u>0</u> Multiply by: <u>1</u> = <u>0</u>		
2.	<i>Quercus nigra</i>	10	<input checked="" type="checkbox"/> 62.5%	FAC	OBL species <u>0</u> x <u>1</u> = <u>0</u>		
3.	<i>Magnolia virginiana</i>	3	<input type="checkbox"/> 18.8%	FACW	FACW species <u>50</u> x <u>2</u> = <u>100</u>		
4.	<i>Acer rubrum</i>	1	<input type="checkbox"/> 6.3%	FAC	FAC species <u>31</u> x <u>3</u> = <u>93</u>		
5.		0	<input type="checkbox"/> 0.0%		FACU species <u>1</u> x <u>4</u> = <u>4</u>		
6.		0	<input type="checkbox"/> 0.0%		UPL species <u>0</u> x <u>5</u> = <u>0</u>		
7.		0	<input type="checkbox"/> 0.0%		Column Totals: <u>82</u> (A) <u>197</u> (B)		
8.		0	<input type="checkbox"/> 0.0%		Prevalence Index = B/A = <u>2,402</u>		
50% of Total Cover: <u>8</u>		20% of Total Cover: <u>3.2</u>	<u>16</u>	= Total Cover			
Shrub Stratum		(Plot size: 30 m)				Hydrophytic Vegetation Indicators:	
1.	<i>Ilex coriacea</i>	30	<input checked="" type="checkbox"/> 81.1%	FACW	<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation		
2.	<i>Ilex vomitoria</i>	5	<input type="checkbox"/> 13.5%	FAC	<input checked="" type="checkbox"/> 2 - Dominance Test is > 50%		
3.	<i>Quercus nigra</i>	2	<input type="checkbox"/> 5.4%	FAC	<input checked="" type="checkbox"/> 3 - Prevalence Index is ≤ 3.0 ¹		
4.		0	<input type="checkbox"/> 0.0%		<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)		
5.		0	<input type="checkbox"/> 0.0%		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.		
6.		0	<input type="checkbox"/> 0.0%				
50% of Total Cover: <u>18.5</u>		20% of Total Cover: <u>7.4</u>	<u>37</u>	= Total Cover			
Herb Stratum		(Plot size: 30 m)				Definition of Vegetation Strata:	
1.	<i>Arundinaria tecta</i>	5	<input checked="" type="checkbox"/> 83.3%	FACW	Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).		
2.	<i>Toxicodendron quercifolia</i>	1	<input type="checkbox"/> 16.7%	FACU	Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.		
3.		0	<input type="checkbox"/> 0.0%		Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.		
4.		0	<input type="checkbox"/> 0.0%		Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.		
5.		0	<input type="checkbox"/> 0.0%		Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.		
6.		0	<input type="checkbox"/> 0.0%		Woody vine - All woody vines, regardless of height.		
7.		0	<input type="checkbox"/> 0.0%				
8.		0	<input type="checkbox"/> 0.0%				
9.		0	<input type="checkbox"/> 0.0%				
10.		0	<input type="checkbox"/> 0.0%				
11.		0	<input type="checkbox"/> 0.0%				
12.		0	<input type="checkbox"/> 0.0%				
50% of Total Cover: <u>3</u>		20% of Total Cover: <u>1.2</u>	<u>6</u>	= Total Cover			
Woody Vine Stratum		(Plot size: 30 m)				Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	
1.	<i>Vitis rotundifolia</i>	1	<input type="checkbox"/> 33.3%	FAC			
2.	<i>Smlax rotundifolia</i>	2	<input type="checkbox"/> 66.7%	FAC			
3.		0	<input type="checkbox"/> 0.0%				
4.		0	<input type="checkbox"/> 0.0%				
5.		0	<input type="checkbox"/> 0.0%				
50% of Total Cover: <u>1.5</u>		20% of Total Cover: <u>0.6</u>	<u>3</u>	= Total Cover			

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 29

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix			Redox Features			Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹		
0-5	10YR	3/2	100				Loamy Sand	
5-16	10YR	5/4	100				Loamy Sand	

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other: (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation
 City/County: Waveland - Hancock
 Sampling Date: 21-Oct-16
Applicant/Owner: NASA
 State: MS
 Sampling Point: Up - 30
Investigator(s): Lars Larson, Randy Ellis
 Section, Township, Range: S 31 T 7 S R 16 W
Landform (hillslope, terrace, etc.): Terrace
 Local relief (concave, convex, none): undulating
 Slope: 2.0 % / 1.1 °
Subregion (LRR or MLRA): LRR T
 Lat.: 30° 24' 21.456" N
 Long.: 89° 37' 40.757" W
 Datum: NAD83
Soil Map Unit Name: EsA, Escambia loam, 0 to 2 percent slopes
 NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?**
 Are "Normal Circumstances" present? Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?**
 (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:
 Terrace/slight hillside area just above riparian buffer along north side of Turtle Skin Creek West of rail spur 300 feet (+/-).

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 30

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. Pinus elliotii	10	<input checked="" type="checkbox"/> 47.6%	FACW
2. Magnolia virginiana	5	<input checked="" type="checkbox"/> 23.8%	FACW
3. Acer rubrum	3	<input type="checkbox"/> 14.3%	FAC
4. Quercus nigra	2	<input type="checkbox"/> 9.5%	FAC
5. Magnolia grandiflora	1	<input type="checkbox"/> 4.8%	FAC
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	10.5	20% of Total Cover: 4.2	21 = Total Cover
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. Pinus elliotii	3	<input checked="" type="checkbox"/> 21.4%	FACW
2. Quercus nigra	5	<input checked="" type="checkbox"/> 35.7%	FAC
3. Nyssa sylvatica	3	<input checked="" type="checkbox"/> 21.4%	FAC
4. Acer rubrum	2	<input type="checkbox"/> 14.3%	FAC
5. Ilex opaca	1	<input type="checkbox"/> 7.1%	FAC
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	7	20% of Total Cover: 2.8	14 = Total Cover
Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. Ilex coriacea	15	<input checked="" type="checkbox"/> 60.0%	FACW
2. Ilex opaca	2	<input type="checkbox"/> 8.0%	FAC
3. Ilex vomitoria	5	<input checked="" type="checkbox"/> 20.0%	FAC
4. Cyrilla racemiflora	3	<input type="checkbox"/> 12.0%	FACW
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	12.5	20% of Total Cover: 5	25 = Total Cover
Herb Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. Woodwardia areolata	1	<input type="checkbox"/> 33.3%	OBL
2. Ilex coriacea	2	<input type="checkbox"/> 66.7%	FACW
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	1.5	20% of Total Cover: 0.6	3 = Total Cover
Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. Vitis rotundifolia	5	<input checked="" type="checkbox"/> 100.0%	FAC
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	2.5	20% of Total Cover: 1	5 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 68 Multiply by: (A)

OBL species 1 x 1 = 1

FACW species 38 x 2 = 76

FAC species 29 x 3 = 87

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 68 (A) 164 (B)

Prevalence Index = B/A = 2.412

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 30

Profile Description: (Describe to the depth needed to document the Indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features			Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹		
0-6	10YR	3/2	100				Sandy Loam	
6-16	10YR	5/4	100				Loamy Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (Inches): _____

Hydric Soil Present? Yes No

Remarks:

No hydric indicators.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 21-Oct-16

Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 31

Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 31 T 7 s R 16 W

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 1.397" N **Long.:** 89° 37' 23.528" W **Datum:** NAD83

Soil Map Unit Name: PoB, Poarch fine sandy loam, 2 to 5% slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)

Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No

Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (minimum of 2 required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____		Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: No strong evidence of hydrology.		

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 31

		Dominant Species?				
Tree Stratum (Plot size: 30 m)		Absolute % Cover	Rel.Strat. Cover	Indicator Status	Dominance Test worksheet:	
1.	<i>Pinus elliotii</i>	20	<input checked="" type="checkbox"/> 66.7%	FACW	Number of Dominant Species That are OBL, FACW, or FAC: <u>5</u> (A)	
2.	<i>Pinus taeda</i>	5	<input type="checkbox"/> 16.7%	FAC	Total Number of Dominant Species Across All Strata: <u>5</u> (B)	
3.	<i>Magnolia grandiflora</i>	2	<input type="checkbox"/> 6.7%	FAC	Percent of dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)	
4.	<i>Acer rubrum</i>	3	<input type="checkbox"/> 10.0%	FAC		
5.		0	<input type="checkbox"/> 0.0%			
6.		0	<input type="checkbox"/> 0.0%			
7.		0	<input type="checkbox"/> 0.0%			
8.		0	<input type="checkbox"/> 0.0%			
50% of Total Cover: <u>15</u> 20% of Total Cover: <u>6</u>		<u>30</u>	= Total Cover		Prevalence Index worksheet:	
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)				Total % Cover of: Multiply by:		
1.	<i>Pinus elliotii</i>	15	<input checked="" type="checkbox"/> 65.2%	FACW	OBL species	<u>0</u> x 1 = <u>0</u>
2.	<i>Morella cerifera</i>	5	<input checked="" type="checkbox"/> 21.7%	FAC	FACW species	<u>40</u> x 2 = <u>80</u>
3.	<i>Acer rubrum</i>	3	<input type="checkbox"/> 13.0%	FAC	FAC species	<u>35</u> x 3 = <u>105</u>
4.		0	<input type="checkbox"/> 0.0%		FACU species	<u>0</u> x 4 = <u>0</u>
5.		0	<input type="checkbox"/> 0.0%		UPL species	<u>0</u> x 5 = <u>0</u>
6.		0	<input type="checkbox"/> 0.0%		Column Totals:	<u>75</u> (A) <u>185</u> (B)
7.		0	<input type="checkbox"/> 0.0%		Prevalence Index = B/A = <u>2.467</u>	
8.		0	<input type="checkbox"/> 0.0%		Hydrophytic Vegetation Indicators:	
50% of Total Cover: <u>11.5</u> 20% of Total Cover: <u>4.6</u>		<u>23</u>	= Total Cover		<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is > 50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	
Shrub Stratum (Plot size: 30 m)				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.		
1.	<i>Morella cerifera</i>	15	<input checked="" type="checkbox"/> 75.0%	FAC	Definition of Vegetation Strata:	
2.	<i>Ilex coriacea</i>	5	<input checked="" type="checkbox"/> 25.0%	FACW	Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).	
3.		0	<input type="checkbox"/> 0.0%		Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.	
4.		0	<input type="checkbox"/> 0.0%		Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.	
5.		0	<input type="checkbox"/> 0.0%		Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.	
6.		0	<input type="checkbox"/> 0.0%		Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.	
50% of Total Cover: <u>10</u> 20% of Total Cover: <u>4</u>		<u>20</u>	= Total Cover		Woody vine - All woody vines, regardless of height.	
Herb Stratum (Plot size: 30 m)						
1.		0	<input type="checkbox"/> 0.0%			
2.		0	<input type="checkbox"/> 0.0%			
3.		0	<input type="checkbox"/> 0.0%			
4.		0	<input type="checkbox"/> 0.0%			
5.		0	<input type="checkbox"/> 0.0%			
6.		0	<input type="checkbox"/> 0.0%			
7.		0	<input type="checkbox"/> 0.0%			
8.		0	<input type="checkbox"/> 0.0%			
9.		0	<input type="checkbox"/> 0.0%			
10.		0	<input type="checkbox"/> 0.0%			
11.		0	<input type="checkbox"/> 0.0%			
12.		0	<input type="checkbox"/> 0.0%			
50% of Total Cover: <u>0</u> 20% of Total Cover: <u>0</u>		<u>0</u>	= Total Cover		Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	
Woody Vine Stratum (Plot size: 30 m)						
1.	<i>Smilax rotundifolia</i>	2	<input type="checkbox"/> 100.0%	FAC		
2.		0	<input type="checkbox"/> 0.0%			
3.		0	<input type="checkbox"/> 0.0%			
4.		0	<input type="checkbox"/> 0.0%			
5.		0	<input type="checkbox"/> 0.0%			
50% of Total Cover: <u>1</u> 20% of Total Cover: <u>0.4</u>		<u>2</u>	= Total Cover			

Remarks: (If observed, list morphological adaptations below).
Heavy pine layer on ground. Not much of a herbaceous layer.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 31

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR	4/2	100					Loamy Sand	
5-16	10YR	6/3	100					Loamy Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 21-Oct-16

Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 32

Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 31 T 7 s R 16 W

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** undulating **Slope:** 2.0 % / 1.1 °

Subregion (LRR or MLRA): LRR T **Lat.:** 30° 23' 56.796" N **Long.:** 89° 37' 24.843" W **Datum:** NAD83

Soil Map Unit Name: HIB, Harleston fine sandy loam, 2 to 5 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	
Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	

Remarks:
 This location is approximately 600 feet south of the logging road through center of AOI. This is part of a N-S transect to identify wet-up boundary in this area.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry Season Water Table (C2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Water-Stained Leaves (B9)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)	

Field Observations:		Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches): _____	
Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches): _____	
Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches): _____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Dominant Species?

Sampling Point: Up - 32

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	15	<input checked="" type="checkbox"/> 62.5%	FACW
2. <i>Pinus taeda</i>	2	<input type="checkbox"/> 8.3%	FAC
3. <i>Magnolia grandiflora</i>	5	<input checked="" type="checkbox"/> 20.8%	FAC
4. <i>Liquidambar styraciflua</i>	2	<input type="checkbox"/> 8.3%	FAC
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	12	20% of Total Cover: 4.8	24 = Total Cover

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	15	<input checked="" type="checkbox"/> 45.5%	FACW
2. <i>Quercus nigra</i>	1	<input type="checkbox"/> 3.0%	FAC
3. <i>Nyssa sylvatica</i>	2	<input type="checkbox"/> 6.1%	FAC
4. <i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 30.3%	FACW
5. <i>Liquidambar styraciflua</i>	5	<input type="checkbox"/> 15.2%	FAC
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	16.5	20% of Total Cover: 6.6	33 = Total Cover

Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Vaccinium elliotii</i>	5	<input type="checkbox"/> 10.0%	FACW
2. <i>Ilex coriacea</i>	40	<input checked="" type="checkbox"/> 80.0%	FACW
3. <i>Ilex glabra</i>	5	<input type="checkbox"/> 10.0%	FACW
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	25	20% of Total Cover: 10	50 = Total Cover

Herb Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Lycopodiella alopecuroides</i>	1	<input type="checkbox"/> 50.0%	OBL
2. <i>Pteridium aquilinum</i>	1	<input type="checkbox"/> 50.0%	FACU
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	1	20% of Total Cover: 0.4	2 = Total Cover

Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Vitis rotundifolia</i>	2	<input type="checkbox"/> 100.0%	FAC
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	1	20% of Total Cover: 0.4	2 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 12 Multiply by: 20

OBL species 1 x 1 = 1

FACW species 90 x 2 = 180

FAC species 19 x 3 = 57

FACU species 1 x 4 = 4

UPL species 0 x 5 = 0

Column Totals: 111 (A) 242 (B)

Prevalence Index = B/A = 2.180

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 32

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR	3/2	100					Loamy Sand	
5-12	10YR	4/3	100					Loamy Sand	
12-22	10YR	5/3	100					Loamy Sand	

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

- | | | |
|--|---|---|
| Hydric Soil Indicators: | | Indicators for Problematic Hydric Soils³: |
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) | <input type="checkbox"/> 1 cm Muck (A9) (LRR O) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) | <input type="checkbox"/> 2 cm Muck (A10) (LRR S) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) | <input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 153B) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) | |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) | |
| <input type="checkbox"/> Sandy Muck Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) | |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) | |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) | |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | | |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

Bulk of the soil profile has a chroma > 2. Not by much.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 21-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 33
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 32 T 7 S R 16 W
Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** undulating **Slope:** 2.0 % / 1.1 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 23' 58.665" N **Long.:** 89° 37' 9.508" W **Datum:** NAD83
Soil Map Unit Name: HIB, Harleston fine sandy loam, 2 to 5 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks: Approximately 80-feet north of Wet 33.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Dominant Species?

Sampling Point: Up - 33

Tree Stratum (Plot size: 30 m)		Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	20	<input checked="" type="checkbox"/> 54.1%	FACW
2.	<i>Quercus nigra</i>	10	<input checked="" type="checkbox"/> 27.0%	FAC
3.	<i>Nyssa sylvatica</i>	5	<input type="checkbox"/> 13.5%	FAC
4.	<i>Magnolia virginiana</i>	2	<input type="checkbox"/> 5.4%	FACW
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 18.5		20% of Total Cover: 7.4	37	= Total Cover
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 58.8%	FACW
2.	<i>Nyssa sylvatica</i>	5	<input checked="" type="checkbox"/> 29.4%	FAC
3.	<i>Magnolia virginiana</i>	2	<input type="checkbox"/> 11.8%	FACW
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 8.5		20% of Total Cover: 3.4	17	= Total Cover
Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Ilex coriacea</i>	40	<input checked="" type="checkbox"/> 75.5%	FACW
2.	<i>Ilex glabra</i>	10	<input type="checkbox"/> 18.9%	FACW
3.	<i>Vaccinium elliotii</i>	3	<input type="checkbox"/> 5.7%	FACW
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 26.5		20% of Total Cover: 10.6	53	= Total Cover
Herb Stratum (Plot size: 30 m)		Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Ilex coriacea</i>	5	<input checked="" type="checkbox"/> 71.4%	FACW
2.	<i>Lycopodiella alopecuroides</i>	2	<input checked="" type="checkbox"/> 28.6%	OBL
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
9.		0	<input type="checkbox"/> 0.0%	
10.		0	<input type="checkbox"/> 0.0%	
11.		0	<input type="checkbox"/> 0.0%	
12.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 3.5		20% of Total Cover: 1.4	7	= Total Cover
Woody Vine Stratum (Plot size: 30 m)		Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.		0	<input type="checkbox"/> 0.0%	
2.		0	<input type="checkbox"/> 0.0%	
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 0		20% of Total Cover: 0	0	= Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 114 Multiply by: (A)

OBL species 2 x 1 = 2

FACW species 92 x 2 = 184

FAC species 20 x 3 = 60

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 114 (A) 246 (B)

Prevalence Index = B/A = 2.158

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 33

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features			Texture	Remarks
	Color (moist)	%	%	Color (moist)	%	Type ¹		
0-4	10YR	3/2	100					
4-16	10YR	5/4	100					

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation
 City/County: Waveland - Hancock
 Sampling Date: 24-Oct-16
Applicant/Owner: NASA
 State: MS
 Sampling Point: Up - 34
Investigator(s): Lars Larson, Randy Ellis
 Section, Township, Range: S 29 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Terrace
 Local relief (concave, convex, none): flat
 Slope: 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T
 Lat.: 30° 24' 3.767" N
 Long.: 89° 37' 1.217" W
 Datum: NAD83
Soil Map Unit Name: EsB, Escambia loam, 2 to 5 percent slopes
 NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** Are "Normal Circumstances" present? Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks: Transitional area back to an Upland. 100-feet (+/-) from Wet-34.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required: check all that apply)		Secondary Indicators (minimum of 2 required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 34

		Dominant Species?			
Tree Stratum (Plot size: 30 m)	Absolute % Cover	<input type="checkbox"/>	Rel.Strat. Cover	<input type="checkbox"/>	Indicator Status
1. <i>Pinus elliotii</i>	20	<input checked="" type="checkbox"/>	54.1%	<input type="checkbox"/>	FACW
2. <i>Pinus taeda</i>	10	<input checked="" type="checkbox"/>	27.0%	<input type="checkbox"/>	FAC
3. <i>Magnolia virginiana</i>	5	<input type="checkbox"/>	13.5%	<input type="checkbox"/>	FACW
4. <i>Liquidambar styraciflua</i>	2	<input type="checkbox"/>	5.4%	<input type="checkbox"/>	FAC
5.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
6.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
7.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
8.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
50% of Total Cover: <u>18.5</u> 20% of Total Cover: <u>7.4</u>		<u>37</u>	= Total Cover		
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	<input type="checkbox"/>	Rel.Strat. Cover	<input type="checkbox"/>	Indicator Status
1. <i>Pinus elliotii</i>	15	<input checked="" type="checkbox"/>	68.2%	<input type="checkbox"/>	FACW
2. <i>Pinus taeda</i>	5	<input checked="" type="checkbox"/>	22.7%	<input type="checkbox"/>	FAC
3. <i>Magnolia virginiana</i>	2	<input type="checkbox"/>	9.1%	<input type="checkbox"/>	FACW
4.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
5.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
6.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
7.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
8.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
50% of Total Cover: <u>11</u> 20% of Total Cover: <u>4.4</u>		<u>22</u>	= Total Cover		
Shrub Stratum (Plot size: 30 m)	Absolute % Cover	<input type="checkbox"/>	Rel.Strat. Cover	<input type="checkbox"/>	Indicator Status
1. <i>Ilex coriacea</i>	30	<input checked="" type="checkbox"/>	71.4%	<input type="checkbox"/>	FACW
2. <i>Ilex opaca</i>	5	<input type="checkbox"/>	11.9%	<input type="checkbox"/>	FAC
3. <i>Vaccinium elliotii</i>	2	<input type="checkbox"/>	4.8%	<input type="checkbox"/>	FACW
4. <i>Morella cerifera</i>	5	<input type="checkbox"/>	11.9%	<input type="checkbox"/>	FAC
5.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
6.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
50% of Total Cover: <u>21</u> 20% of Total Cover: <u>8.4</u>		<u>42</u>	= Total Cover		
Herb Stratum (Plot size: 30 m)	Absolute % Cover	<input type="checkbox"/>	Rel.Strat. Cover	<input type="checkbox"/>	Indicator Status
1. <i>Lygodium japonicum</i>	5	<input checked="" type="checkbox"/>	100.0%	<input type="checkbox"/>	FAC
2.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
3.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
4.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
5.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
6.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
7.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
8.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
9.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
10.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
11.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
12.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
50% of Total Cover: <u>2.5</u> 20% of Total Cover: <u>1</u>		<u>5</u>	= Total Cover		
Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	<input type="checkbox"/>	Rel.Strat. Cover	<input type="checkbox"/>	Indicator Status
1. <i>Vitis rotundifolia</i>	3	<input type="checkbox"/>	75.0%	<input type="checkbox"/>	FAC
2. <i>Smilax rotundifolia</i>	1	<input type="checkbox"/>	25.0%	<input type="checkbox"/>	FAC
3.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
4.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
5.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
50% of Total Cover: <u>2</u> 20% of Total Cover: <u>0.8</u>		<u>4</u>	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 110 (A) Multiply by: 2.327 (B)

OBL species 0 x 1 = 0

FACW species 74 x 2 = 148

FAC species 36 x 3 = 108

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 110 (A) 256 (B)

Prevalence Index = B/A = 2.327

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test Is > 50%

3 - Prevalence Index is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 34

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR	6/2	100					Loamy Sand	
5-15	10YR	5/6	100					Loamy Sand	

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (Inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 24-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 35
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 29 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** flat **Slope:** 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 3.834" N **Long.:** 89° 36' 56.966" W **Datum:** NAD83
Soil Map Unit Name: At, Atmore silt loam, 0 to 2 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:
 Transitional area back into an Upland - approximately 100 feet north of Wet-35.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 35

Tree Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? <input checked="" type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/>	62.5%	FACW
2.	<i>Magnolia virginiana</i>	5	<input checked="" type="checkbox"/>	31.3%	FACW
3.	<i>Liquidambar styraciflua</i>	1	<input type="checkbox"/>	6.3%	FAC
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>8</u> 20% of Total Cover: <u>3.2</u>		<u>16</u>	= Total Cover		
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? <input checked="" type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	25	<input checked="" type="checkbox"/>	78.1%	FACW
2.	<i>Magnolia virginiana</i>	5	<input type="checkbox"/>	15.6%	FACW
3.	<i>Liquidambar styraciflua</i>	2	<input type="checkbox"/>	6.3%	FAC
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>16</u> 20% of Total Cover: <u>6.4</u>		<u>32</u>	= Total Cover		
Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? <input checked="" type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1.	<i>Ilex coriacea</i>	40	<input checked="" type="checkbox"/>	80.0%	FACW
2.	<i>Ilex glabra</i>	10	<input checked="" type="checkbox"/>	20.0%	FACW
3.		0	<input type="checkbox"/>	0.0%	
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>25</u> 20% of Total Cover: <u>10</u>		<u>50</u>	= Total Cover		
Herb Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? <input type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1.	<i>Lycopodiella alopecuroides</i>	1	<input type="checkbox"/>	100.0%	OBL
2.		0	<input type="checkbox"/>	0.0%	
3.		0	<input type="checkbox"/>	0.0%	
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
9.		0	<input type="checkbox"/>	0.0%	
10.		0	<input type="checkbox"/>	0.0%	
11.		0	<input type="checkbox"/>	0.0%	
12.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>0.5</u> 20% of Total Cover: <u>0.2</u>		<u>1</u>	= Total Cover		
Woody Vine Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? <input type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1.	<i>Smilax rotundifolia</i>	1	<input type="checkbox"/>	100.0%	FAC
2.		0	<input type="checkbox"/>	0.0%	
3.		0	<input type="checkbox"/>	0.0%	
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>0.5</u> 20% of Total Cover: <u>0.2</u>		<u>1</u>	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>1</u>	x 1 = <u>1</u>
FACW species <u>95</u>	x 2 = <u>190</u>
FAC species <u>4</u>	x 3 = <u>12</u>
FACU species <u>0</u>	x 4 = <u>0</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>100</u> (A)	<u>203</u> (B)

Prevalence Index = B/A = 2.030

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 35

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-4	10YR	3/2	100			Loamy Sand	
4-15	10YR	5/4	100			Loamy Sand	

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)	<input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)	<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)	<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 153B)
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input type="checkbox"/> Marl (F10) (LRR U)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)	
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)	
<input type="checkbox"/> Sandy Muck Mineral (S1) (LRR O, S)	<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)	
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)	
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)	
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation
 City/County: Waveland - Hancock
 Sampling Date: 24-Oct-16
Applicant/Owner: NASA
 State: MS
 Sampling Point: Up - 36
Investigator(s): Lars Larson, Randy Ellis
 Section, Township, Range: S 29 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Terrace
 Local relief (concave, convex, none): none
 Slope: 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T
 Lat.: 30° 24' 4.173" N
 Long.: 89° 36' 44.961" W
 Datum: NAD83
Soil Map Unit Name: EsB, Escambia loam, 2 to 5 percent slopes
 NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?**
 Are "Normal Circumstances" present? Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?**
 (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:
 Upland Area approximately 100 feet west of access road along eastern side of AOI.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (Inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Dominant Species?

Sampling Point: Up - 36

Tree Stratum (Plot size: 30 m)		Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	20	<input checked="" type="checkbox"/> 69.0%	FACW
2.	<i>Magnolia virginiana</i>	5	<input type="checkbox"/> 17.2%	FACW
3.	<i>Liquidambar styraciflua</i>	3	<input type="checkbox"/> 10.3%	FAC
4.	<i>Nyssa sylvatica</i>	1	<input type="checkbox"/> 3.4%	FAC
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 14.5		20% of Total Cover: 5.8	29 = Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 58.8%	FACW
2.	<i>Magnolia virginiana</i>	5	<input checked="" type="checkbox"/> 29.4%	FACW
3.	<i>Liquidambar styraciflua</i>	2	<input type="checkbox"/> 11.8%	FAC
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 8.5		20% of Total Cover: 3.4	17 = Total Cover	
Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Ilex coriacea</i>	15	<input checked="" type="checkbox"/> 41.7%	FACW
2.	<i>Ilex glabra</i>	15	<input checked="" type="checkbox"/> 41.7%	FACW
3.	<i>Ilex vomitoria</i>	5	<input type="checkbox"/> 13.9%	FAC
4.	<i>Cyrilla racemiflora</i>	1	<input type="checkbox"/> 2.8%	FACW
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 18		20% of Total Cover: 7.2	36 = Total Cover	
Herb Stratum (Plot size: 30 m)		Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Ilex coriacea</i>	10	<input checked="" type="checkbox"/> 50.0%	FACW
2.	<i>Ilex glabra</i>	10	<input checked="" type="checkbox"/> 50.0%	FACW
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
9.		0	<input type="checkbox"/> 0.0%	
10.		0	<input type="checkbox"/> 0.0%	
11.		0	<input type="checkbox"/> 0.0%	
12.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 10		20% of Total Cover: 4	20 = Total Cover	
Woody Vine Stratum (Plot size: 30 m)		Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Smilax rotundifolia</i>	2	<input type="checkbox"/> 100.0%	FAC
2.		0	<input type="checkbox"/> 0.0%	
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 1		20% of Total Cover: 0.4	2 = Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 104 (A) Multiply by:

OBL species	<u>0</u>	x 1 =	<u>0</u>
FACW species	<u>91</u>	x 2 =	<u>182</u>
FAC species	<u>13</u>	x 3 =	<u>39</u>
FACU species	<u>0</u>	x 4 =	<u>0</u>
UPL species	<u>0</u>	x 5 =	<u>0</u>
Column Totals:	<u>104</u> (A)		<u>221</u> (B)

Prevalence Index = B/A = 2.125

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0 ¹

Problematic Hydrophytic Vegetation ¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 36

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR	4/2	100						
4-15	10YR	5/6	100						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)	<input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)	<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)	<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 153B)
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input type="checkbox"/> Marl (F10) (LRR U)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)	
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)	
<input type="checkbox"/> Sandy Muck Mineral (S1) (LRR O, S)	<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)	
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)	
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)	
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):	Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
Type: _____	
Depth (inches): _____	

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation
 City/County: Waveland - Hancock
 Sampling Date: 24-Oct-16
Applicant/Owner: NASA
 State: MS
 Sampling Point: Up - 37
Investigator(s): Lars Larson, Randy Ellis
 Section, Township, Range: S 29 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Terrace
 Local relief (concave, convex, none): none
 Slope: 1.0 % / 0.6 °
Subregion (LRR or MLRA): LRR T
 Lat: 30° 24' 0.295" N
 Long.: 89° 36' 55.827" W
 Datum: NAD83
Soil Map Unit Name: EsB, Escambia loam, 2 to 5 percent slopes
 NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?**
 Are "Normal Circumstances" present? Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?**
 (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (minimum of 2 required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Dominant Species?

Sampling Point: Up - 37

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 76.9%	FACW
2. <i>Quercus nigra</i>	2	<input type="checkbox"/> 15.4%	FAC
3. <i>Quercus falcata</i>	1	<input type="checkbox"/> 7.7%	FACU
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 6.5 20% of Total Cover: 2.6 13 = Total Cover

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 83.3%	FACW
2. <i>Nyssa sylvatica</i>	2	<input type="checkbox"/> 16.7%	FAC
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 6 20% of Total Cover: 2.4 12 = Total Cover

Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Ilex coriacea</i>	70	<input checked="" type="checkbox"/> 100.0%	FACW
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 35 20% of Total Cover: 14 70 = Total Cover

Herb Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Lycopodiella alopecuroides</i>	1	<input type="checkbox"/> 50.0%	OBL
2. <i>Arundinaria tecta</i>	1	<input type="checkbox"/> 50.0%	FACW
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 1 20% of Total Cover: 0.4 2 = Total Cover

Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	0	<input type="checkbox"/> 0.0%	
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 0 20% of Total Cover: 0 0 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)
 Total Number of Dominant Species Across All Strata: 3 (B)
 Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: Multiply by:
 OBL species 1 x 1 = 1
 FACW species 91 x 2 = 182
 FAC species 4 x 3 = 12
 FACU species 1 x 4 = 4
 UPL species 0 x 5 = 0
 Column Totals: 97 (A) 199 (B)
 Prevalence Index = B/A = 2.052

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is > 50%
- 3 - Prevalence Index is ≤ 3.0¹
- Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).
 Heavy layer of pine litter.... Not much of a herbaceous layer.

¹ Indicator suffix = National status or professional dedslon assigned because Regional status not defined by FWS.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR	4/2	100					Loamy Sand	
6-16	10YR	5/4	100					Loamy Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 24-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 38
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 32 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** undulating **Slope:** 1.0 % / 0.6 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 23' 52.876" N **Long.:** 89° 37' 1.236" W **Datum:** NAD83
Soil Map Unit Name: EsB, Escambia loam, 2 to 5 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:
 Terrace (slight slope) approximately 130 feet up from main drainage way near Wet 37.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (Inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 38

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	15	<input checked="" type="checkbox"/> 60.0%	FACW
2. <i>Nyssa sylvatica</i>	3	<input type="checkbox"/> 12.0%	FAC
3. <i>Quercus virginiana</i>	5	<input checked="" type="checkbox"/> 20.0%	FACU
4. <i>Quercus falcata</i>	1	<input type="checkbox"/> 4.0%	FACU
5. <i>Quercus nigra</i>	1	<input type="checkbox"/> 4.0%	FAC
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	12.5	20% of Total Cover: 5	25 = Total Cover
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)			
1. <i>Pinus elliotii</i>	5	<input checked="" type="checkbox"/> 31.3%	FACW
2. <i>Nyssa sylvatica</i>	3	<input type="checkbox"/> 18.8%	FAC
3. <i>Liquidambar styraciflua</i>	5	<input checked="" type="checkbox"/> 31.3%	FAC
4. <i>Quercus virginiana</i>	2	<input type="checkbox"/> 12.5%	FACU
5. <i>Quercus falcata</i>	1	<input type="checkbox"/> 6.3%	FACU
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	8	20% of Total Cover: 3.2	16 = Total Cover
Shrub Stratum (Plot size: 30 m)			
1. <i>Ilex coriacea</i>	30	<input checked="" type="checkbox"/> 68.2%	FACW
2. <i>Ilex glabra</i>	10	<input checked="" type="checkbox"/> 22.7%	FACW
3. <i>Quercus nigra</i>	3	<input type="checkbox"/> 6.8%	FAC
4. <i>Magnolia virginiana</i>	1	<input type="checkbox"/> 2.3%	FACW
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	22	20% of Total Cover: 8.8	44 = Total Cover
Herb Stratum (Plot size: 30 m)			
1. <i>Lycopodiella alopecuroides</i>	3	<input type="checkbox"/> 100.0%	OBL
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	1.5	20% of Total Cover: 0.6	3 = Total Cover
Woody Vine Stratum (Plot size: 30 m)			
1. <i>Vitis rotundifolia</i>	3	<input type="checkbox"/> 75.0%	FAC
2. <i>Smilax rotundifolia</i>	1	<input type="checkbox"/> 25.0%	FAC
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	2	20% of Total Cover: 0.8	4 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 83.3% (A/B)

Prevalence Index worksheet:

Total % Cover of: 92 Multiply by:

OBL species 3 x 1 = 3

FACW species 61 x 2 = 122

FAC species 19 x 3 = 57

FACU species 9 x 4 = 36

UPL species 0 x 5 = 0

Column Totals: 92 (A) 218 (B)

Prevalence Index = B/A = 2.370

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test Is > 50%

3 - Prevalence Index is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 38

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR	4/2	100						
4-16	10YR	5/6	100						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 24-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 39
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 32 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** undulating **Slope:** 2.0 % / 1.1 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 23' 48.113" N **Long.:** 89° 37' 7.209" W **Datum:** NAD83
Soil Map Unit Name: PoB, Poarch fine sandy loam, 2 to 5% slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks: Plot is 100 feet east - NE of plot Wet - 19 on slight ridge above wetland drainage way.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 39

Tree Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	5	<input checked="" type="checkbox"/> 31.3%	FACW
2.	<i>Pinus taeda</i>	5	<input checked="" type="checkbox"/> 31.3%	FAC
3.	<i>Nyssa sylvatica</i>	3	<input type="checkbox"/> 18.8%	FAC
4.	<i>Quercus nigra</i>	2	<input type="checkbox"/> 12.5%	FAC
5.	<i>Quercus falcata</i>	1	<input type="checkbox"/> 6.3%	FACU
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>8</u> 20% of Total Cover: <u>3.2</u>		<u>16</u>	= Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Pinus taeda</i>	5	<input checked="" type="checkbox"/> 50.0%	FAC
2.	<i>Quercus nigra</i>	3	<input checked="" type="checkbox"/> 30.0%	FAC
3.	<i>Magnolia virginiana</i>	2	<input checked="" type="checkbox"/> 20.0%	FACW
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>5</u> 20% of Total Cover: <u>2</u>		<u>10</u>	= Total Cover	
Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Ilex coriacea</i>	3	<input type="checkbox"/> 4.4%	FACW
2.	<i>Ilex glabra</i>	40	<input checked="" type="checkbox"/> 58.8%	FACW
3.	<i>Ilex vomitoria</i>	20	<input checked="" type="checkbox"/> 29.4%	FAC
4.	<i>Vaccinium elliotii</i>	5	<input type="checkbox"/> 7.4%	FACW
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>34</u> 20% of Total Cover: <u>13.6</u>		<u>68</u>	= Total Cover	
Herb Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Ilex glabra</i>	5	<input checked="" type="checkbox"/> 50.0%	FACW
2.	<i>Ilex coriacea</i>	5	<input checked="" type="checkbox"/> 50.0%	FACW
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
9.		0	<input type="checkbox"/> 0.0%	
10.		0	<input type="checkbox"/> 0.0%	
11.		0	<input type="checkbox"/> 0.0%	
12.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>5</u> 20% of Total Cover: <u>2</u>		<u>10</u>	= Total Cover	
Woody Vine Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Smilax rotundifolia</i>	3	<input checked="" type="checkbox"/> 60.0%	FAC
2.	<i>Vitis rotundifolia</i>	2	<input checked="" type="checkbox"/> 40.0%	FAC
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>2.5</u> 20% of Total Cover: <u>1</u>		<u>5</u>	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 11 (A)

Total Number of Dominant Species Across All Strata: 11 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	0	x 1 = 0
FACW species	65	x 2 = 130
FAC species	43	x 3 = 129
FACU species	1	x 4 = 4
UPL species	0	x 5 = 0
Column Totals:	109 (A)	263 (B)
Prevalence Index = B/A =		<u>2.413</u>

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0 ¹

Problematic Hydrophytic Vegetation ¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **Up - 39**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix			Redox Features			Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹		
0-5	10YR	3/2	100					
5-16	10YR	5/6	100					

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

No hydric indicators observed.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 25-Oct-16

Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 40

Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 32 T 7s R 16 W

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** none **Slope:** 2.0 % / 1.1 °

Subregion (LRR or MLRA): LRR T **Lat.:** 30° 23' 42.761" N **Long.:** 89° 36' 50.066" W **Datum:** NAD83

Soil Map Unit Name: H1B, Harleston fine sandy loam, 2 to 5 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks: Side slope - step up edge approximately 25-30 feet of wet drainage area - ephemeral drain.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (minimum of 2 required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____		Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 40

Tree Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Quercus nigra</i>	25	<input checked="" type="checkbox"/> 67.6%	FAC
2.	<i>Acer rubrum</i>	2	<input type="checkbox"/> 5.4%	FAC
3.	<i>Nyssa sylvatica</i>	10	<input checked="" type="checkbox"/> 27.0%	FAC
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 18.5		20% of Total Cover: 7.4	37	= Total Cover
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Quercus nigra</i>	20	<input checked="" type="checkbox"/> 54.1%	FAC
2.	<i>Liquidambar styraciflua</i>	10	<input checked="" type="checkbox"/> 27.0%	FAC
3.	<i>Acer rubrum</i>	5	<input type="checkbox"/> 13.5%	FAC
4.	<i>Nyssa sylvatica</i>	2	<input type="checkbox"/> 5.4%	FAC
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 18.5		20% of Total Cover: 7.4	37	= Total Cover
Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Quercus nigra</i>	5	<input checked="" type="checkbox"/> 25.0%	FAC
2.	<i>Ilex vomitoria</i>	10	<input checked="" type="checkbox"/> 50.0%	FAC
3.	<i>Ilex opaca</i>	2	<input type="checkbox"/> 10.0%	FAC
4.	<i>Vaccinium ellottii</i>	3	<input type="checkbox"/> 15.0%	FACW
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 10		20% of Total Cover: 4	20	= Total Cover
Herb Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Arundinaria tecta</i>	5	<input checked="" type="checkbox"/> 71.4%	FACW
2.	<i>Rubus argutus</i>	2	<input checked="" type="checkbox"/> 28.6%	FAC
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
9.		0	<input type="checkbox"/> 0.0%	
10.		0	<input type="checkbox"/> 0.0%	
11.		0	<input type="checkbox"/> 0.0%	
12.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 3.5		20% of Total Cover: 1.4	7	= Total Cover
Woody Vine Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Vitis rotundifolia</i>	2	<input type="checkbox"/> 100.0%	FAC
2.		0	<input type="checkbox"/> 0.0%	
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 1		20% of Total Cover: 0.4	2	= Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 103 (A) Multiply by:

OBL species 0 x 1 = 0

FACW species 8 x 2 = 16

FAC species 95 x 3 = 285

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 103 (A) 301 (B)

Prevalence Index = B/A = 2.922

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 40

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR	4/2	100				Loamy Sand	
6-16	10YR	5/3	100				Loamy Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 25-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 41
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 32 T 7 S R 16 W
Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** **Slope:** 1.0 % / 0.6 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 23' 47.331" N **Long.:** 89° 36' 56.907" W **Datum:** NAD83
Soil Map Unit Name: EsB, Escambia loam, 2 to 5 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<u>Secondary Indicators (minimum of 2 required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 41

Tree Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 41.7%	FACW
2.	<i>Magnolia virginiana</i>	7	<input checked="" type="checkbox"/> 29.2%	FACW
3.	<i>Nyssa sylvatica</i>	5	<input checked="" type="checkbox"/> 20.8%	FAC
4.	<i>Acer rubrum</i>	2	<input type="checkbox"/> 8.3%	FAC
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 12		20% of Total Cover: 4.8	24 = Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 45.5%	FACW
2.	<i>Magnolia virginiana</i>	5	<input checked="" type="checkbox"/> 22.7%	FACW
3.	<i>Liquidambar styraciflua</i>	3	<input type="checkbox"/> 13.6%	FAC
4.	<i>Acer rubrum</i>	2	<input type="checkbox"/> 9.1%	FAC
5.	<i>Nyssa sylvatica</i>	2	<input type="checkbox"/> 9.1%	FAC
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 11		20% of Total Cover: 4.4	22 = Total Cover	
Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Ilex glabra</i>	20	<input checked="" type="checkbox"/> 54.1%	FACW
2.	<i>Ilex coriacea</i>	5	<input type="checkbox"/> 13.5%	FACW
3.	<i>Ilex vomitoria</i>	10	<input checked="" type="checkbox"/> 27.0%	FAC
4.	<i>Persea palustris</i>	2	<input type="checkbox"/> 5.4%	FACW
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 18.5		20% of Total Cover: 7.4	37 = Total Cover	
Herb Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Arundinaria tecta</i>	15	<input checked="" type="checkbox"/> 93.8%	FACW
2.	<i>Lycopodiella alopecuroides</i>	1	<input type="checkbox"/> 6.3%	OBL
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
9.		0	<input type="checkbox"/> 0.0%	
10.		0	<input type="checkbox"/> 0.0%	
11.		0	<input type="checkbox"/> 0.0%	
12.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 8		20% of Total Cover: 3.2	16 = Total Cover	
Woody Vine Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Smilax rotundifolia</i>	2	<input type="checkbox"/> 50.0%	FAC
2.	<i>Vitis rotundifolia</i>	2	<input type="checkbox"/> 50.0%	FAC
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 2		20% of Total Cover: 0.8	4 = Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>1</u>	x 1 = <u>1</u>
FACW species <u>74</u>	x 2 = <u>148</u>
FAC species <u>28</u>	x 3 = <u>84</u>
FACU species <u>0</u>	x 4 = <u>0</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>103</u> (A)	<u>233</u> (B)
Prevalence Index = B/A = <u>2.262</u>	

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 41

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)	3/2	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR	3/2	100						
5-15	10YR	5/4	100						

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

No hydric indicators

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation
 City/County: Waveland - Hancock
 Sampling Date: 25-Oct-16
Applicant/Owner: NASA
 State: MS
 Sampling Point: Up - 42
Investigator(s): Lars Larson, Randy Ellis
 Section, Township, Range: S 32 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Hillside
 Local relief (concave, convex, none):
 Slope: 1.0 % / 0.6 °
Subregion (LRR or MLRA): LRR T
 Lat: 30° 23' 44.711" N
 Long.: 89° 37' 11.723" W
 Datum: NAD83
Soil Map Unit Name: EsA, Escambia loam, 0 to 2 percent slopes
 NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** Are "Normal Circumstances" present? Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks: NO Wet 42	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<u>Secondary Indicators (minimum of 2 required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 42

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species?		Indicator Status
		Rel.Strat. Cover		
1. <i>Pinus elliotii</i>	15	<input checked="" type="checkbox"/>	40.5%	FACW
2. <i>Nyssa sylvatica</i>	10	<input checked="" type="checkbox"/>	27.0%	FAC
3. <i>Quercus nigra</i>	5	<input type="checkbox"/>	13.5%	FAC
4. <i>Magnolia grandiflora</i>	2	<input type="checkbox"/>	5.4%	FAC
5. <i>Pinus taeda</i>	5	<input type="checkbox"/>	13.5%	FAC
6.	0	<input type="checkbox"/>	0.0%	
7.	0	<input type="checkbox"/>	0.0%	
8.	0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>18.5</u>	20% of Total Cover: <u>7.4</u>	<u>37</u>	= Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)				
1. <i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/>	41.7%	FACW
2. <i>Nyssa sylvatica</i>	7	<input checked="" type="checkbox"/>	29.2%	FAC
3. <i>Magnolia virginiana</i>	5	<input checked="" type="checkbox"/>	20.8%	FACW
4. <i>Acer rubrum</i>	2	<input type="checkbox"/>	8.3%	FAC
5.	0	<input type="checkbox"/>	0.0%	
6.	0	<input type="checkbox"/>	0.0%	
7.	0	<input type="checkbox"/>	0.0%	
8.	0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>12</u>	20% of Total Cover: <u>4.8</u>	<u>24</u>	= Total Cover	
Shrub Stratum (Plot size: 30 m)				
1. <i>Ilex coriacea</i>	50	<input checked="" type="checkbox"/>	83.3%	FACW
2. <i>Ilex vomitoria</i>	10	<input type="checkbox"/>	16.7%	FAC
3.	0	<input type="checkbox"/>	0.0%	
4.	0	<input type="checkbox"/>	0.0%	
5.	0	<input type="checkbox"/>	0.0%	
6.	0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>30</u>	20% of Total Cover: <u>12</u>	<u>60</u>	= Total Cover	
Herb Stratum (Plot size: 30 m)				
1. <i>Ilex coriacea</i>	10	<input checked="" type="checkbox"/>	83.3%	FACW
2. <i>Arundinaria tecta</i>	2	<input type="checkbox"/>	16.7%	FACW
3.	0	<input type="checkbox"/>	0.0%	
4.	0	<input type="checkbox"/>	0.0%	
5.	0	<input type="checkbox"/>	0.0%	
6.	0	<input type="checkbox"/>	0.0%	
7.	0	<input type="checkbox"/>	0.0%	
8.	0	<input type="checkbox"/>	0.0%	
9.	0	<input type="checkbox"/>	0.0%	
10.	0	<input type="checkbox"/>	0.0%	
11.	0	<input type="checkbox"/>	0.0%	
12.	0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>6</u>	20% of Total Cover: <u>2.4</u>	<u>12</u>	= Total Cover	
Woody Vine Stratum (Plot size: 30 m)				
1. <i>Vitis rotundifolia</i>	1	<input type="checkbox"/>	100.0%	FAC
2.	0	<input type="checkbox"/>	0.0%	
3.	0	<input type="checkbox"/>	0.0%	
4.	0	<input type="checkbox"/>	0.0%	
5.	0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>0.5</u>	20% of Total Cover: <u>0.2</u>	<u>1</u>	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 134 (A) Multiply by:

OBL species 0 x 1 = 0

FACW species 92 x 2 = 184

FAC species 42 x 3 = 126

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 134 (A) 310 (B)

Prevalence Index = B/A = 2.313

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 42

Profile Description: (Describe to the depth needed to document the Indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR	3/2	100						
5-15	10YR	5/3	100						

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

Soil chroma appears to be borderline 2 - 3.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1.100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 25-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 43
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 32 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** **Slope:** 1.0 % / 0.6 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 23' 51.321" N **Long.:** 89° 37' 18.476" W **Datum:** NAD83
Soil Map Unit Name: EsB, Escambia loam, 2 to 5 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:
 Plot is about 75 feet south-southeast of Wet-43 on side slope just up from the drainage area.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Dominant Species?

Sampling Point: Up - 43

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 66.7%	FACW
2. <i>Magnolia virginiana</i>	3	<input checked="" type="checkbox"/> 20.0%	FACW
3. <i>Nyssa sylvatica</i>	0	<input type="checkbox"/> 0.0%	FAC
4. <i>Pinus taeda</i>	2	<input type="checkbox"/> 13.3%	FAC
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 7.5 20% of Total Cover: 3 15 = Total Cover

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	15	<input checked="" type="checkbox"/> 68.2%	FACW
2. <i>Magnolia virginiana</i>	5	<input checked="" type="checkbox"/> 22.7%	FACW
3. <i>Magnolia grandiflora</i>	1	<input type="checkbox"/> 4.5%	FAC
4. <i>Liquidambar styraciflua</i>	1	<input type="checkbox"/> 4.5%	FAC
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 11 20% of Total Cover: 4.4 22 = Total Cover

Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Ilex coriacea</i>	10	<input checked="" type="checkbox"/> 21.7%	FACW
2. <i>Ilex glabra</i>	30	<input checked="" type="checkbox"/> 65.2%	FACW
3. <i>Liquidambar styraciflua</i>	5	<input type="checkbox"/> 10.9%	FAC
4. <i>Persea palustris</i>	1	<input type="checkbox"/> 2.2%	FACW
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 23 20% of Total Cover: 9.2 46 = Total Cover

Herb Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Lycopodiella alopecuroides</i>	1	<input type="checkbox"/> 4.8%	OBL
2. <i>Ilex glabra</i>	20	<input checked="" type="checkbox"/> 95.2%	FACW
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 10.5 20% of Total Cover: 4.2 21 = Total Cover

Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Smlax rotundifolia</i>	1	<input type="checkbox"/> 50.0%	FAC
2. <i>Vitis rotundifolia</i>	1	<input type="checkbox"/> 50.0%	FAC
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 1 20% of Total Cover: 0.4 2 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 1 Multiply by: 1

OBL species 1 x 1 = 1

FACW species 94 x 2 = 188

FAC species 11 x 3 = 33

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 106 (A) 222 (B)

Prevalence Index = B/A = 2.094

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 43

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features			Texture	Remarks
	Color (moist)	3/2	%	Color (moist)	%	Type ¹		
0-4	10YR	3/2	100	4-15			Loamy Sand	
4-15	10YR	5/3	100				Loamy Sand	

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 25-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 44
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 37 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** none **Slope:** 1.0 % / 0.6 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 23' 47.297" N **Long.:** 89° 37' 20.892" W **Datum:** NAD83
Soil Map Unit Name: EsB, Escambia loam, 2 to 5 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
--	--

Remarks:
 Transect between Northwest-Southeast trending site road within the SW portion of the overall AOI.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Dominant Species?

Sampling Point: Up - 44

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Ref. Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	20	<input checked="" type="checkbox"/> 51.3%	FACW
2. <i>Pinus taeda</i>	5	<input type="checkbox"/> 12.8%	FAC
3. <i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 25.6%	FACW
4. <i>Magnolia grandiflora</i>	3	<input type="checkbox"/> 7.7%	FAC
5. <i>Nyssa sylvatica</i>	1	<input type="checkbox"/> 2.6%	FAC
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	19.5	20% of Total Cover: 7.8	39 = Total Cover

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Ref. Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	15	<input checked="" type="checkbox"/> 62.5%	FACW
2. <i>Magnolia virginiana</i>	5	<input checked="" type="checkbox"/> 20.8%	FACW
3. <i>Liquidambar styraciflua</i>	3	<input type="checkbox"/> 12.5%	FAC
4. <i>Nyssa sylvatica</i>	1	<input type="checkbox"/> 4.2%	FAC
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	12	20% of Total Cover: 4.8	24 = Total Cover

Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Ref. Strat. Cover	Indicator Status
1. <i>Ilex coriacea</i>	20	<input checked="" type="checkbox"/> 52.6%	FACW
2. <i>Ilex vomitoria</i>	10	<input checked="" type="checkbox"/> 26.3%	FAC
3. <i>Vaccinium ellottii</i>	5	<input type="checkbox"/> 13.2%	FACW
4. <i>Ilex glabra</i>	3	<input type="checkbox"/> 7.9%	FACW
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	19	20% of Total Cover: 7.6	38 = Total Cover

Herb Stratum (Plot size: 30 m)	Absolute % Cover	Ref. Strat. Cover	Indicator Status
1. <i>Ilex glabra</i>	5	<input checked="" type="checkbox"/> 100.0%	FACW
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	2.5	20% of Total Cover: 1	5 = Total Cover

Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Ref. Strat. Cover	Indicator Status
1. <i>Vitis rotundifolia</i>	2	<input type="checkbox"/> 100.0%	FAC
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	1	20% of Total Cover: 0.4	2 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 108 (A) Multiply by:

OBL species 0 x 1 = 0

FACW species 83 x 2 = 166

FAC species 25 x 3 = 75

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 108 (A) 241 (B)

Prevalence Index = B/A = 2.231

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).
Heavy pine litter on ground.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **Up - 44**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features			Texture	Remarks
	Color (moist)	%	%	Color (moist)	%	Type ¹		
0-5	10YR	4/2	100				Loamy Sand	
5-16	10YR	5/3	100				Loamy Sand	

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 25-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 45
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 37 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** none **Slope:** 1.0 % / 0.6 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 23' 44.917" N **Long.:** 89° 37' 23.042" W **Datum:** NAD83
Soil Map Unit Name: EsB, Escambia loam, 2 to 5 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:
 plot is near disturbed area previously impacted by (apparently) heavy equipment use.

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<u>Secondary Indicators (minimum of 2 required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 45

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species?		Indicator Status
		Rel.Strat. Cover		
1. <i>Pinus elliotii</i>	15	<input checked="" type="checkbox"/>	55.6%	FACW
2. <i>Nyssa sylvatica</i>	5	<input type="checkbox"/>	18.5%	FAC
3. <i>Magnolia virginiana</i>	5	<input type="checkbox"/>	18.5%	FACW
4. <i>Magnolia grandiflora</i>	2	<input type="checkbox"/>	7.4%	FAC
5.	0	<input type="checkbox"/>	0.0%	
6.	0	<input type="checkbox"/>	0.0%	
7.	0	<input type="checkbox"/>	0.0%	
8.	0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>13.5</u>	20% of Total Cover: <u>5.4</u>	<u>27</u>	= Total Cover	

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)				
	Absolute % Cover	Rel.Strat. Cover		Indicator Status
1. <i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/>	52.6%	FACW
2. <i>Nyssa sylvatica</i>	5	<input checked="" type="checkbox"/>	26.3%	FAC
3. <i>Magnolia virginiana</i>	3	<input type="checkbox"/>	15.8%	FACW
4. <i>Liquidambar styraciflua</i>	1	<input type="checkbox"/>	5.3%	FAC
5.	0	<input type="checkbox"/>	0.0%	
6.	0	<input type="checkbox"/>	0.0%	
7.	0	<input type="checkbox"/>	0.0%	
8.	0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>9.5</u>	20% of Total Cover: <u>3.8</u>	<u>19</u>	= Total Cover	

Shrub Stratum (Plot size: 30 m)				
	Absolute % Cover	Rel.Strat. Cover		Indicator Status
1. <i>Ilex coriacea</i>	15	<input checked="" type="checkbox"/>	42.9%	FACW
2. <i>Ilex glabra</i>	10	<input checked="" type="checkbox"/>	28.6%	FACW
3. <i>Ilex vomitoria</i>	5	<input type="checkbox"/>	14.3%	FAC
4. <i>Ilex opaca</i>	2	<input type="checkbox"/>	5.7%	FAC
5. <i>Liquidambar styraciflua</i>	3	<input type="checkbox"/>	8.6%	FAC
6.	0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>17.5</u>	20% of Total Cover: <u>7</u>	<u>35</u>	= Total Cover	

Herb Stratum (Plot size: 30 m)				
	Absolute % Cover	Rel.Strat. Cover		Indicator Status
1. <i>Hypericum bistifolium</i>	1	<input type="checkbox"/>	50.0%	FACW
2. <i>Lycopodiella alopecuroides</i>	1	<input type="checkbox"/>	50.0%	OBL
3.	0	<input type="checkbox"/>	0.0%	
4.	0	<input type="checkbox"/>	0.0%	
5.	0	<input type="checkbox"/>	0.0%	
6.	0	<input type="checkbox"/>	0.0%	
7.	0	<input type="checkbox"/>	0.0%	
8.	0	<input type="checkbox"/>	0.0%	
9.	0	<input type="checkbox"/>	0.0%	
10.	0	<input type="checkbox"/>	0.0%	
11.	0	<input type="checkbox"/>	0.0%	
12.	0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>1</u>	20% of Total Cover: <u>0.4</u>	<u>2</u>	= Total Cover	

Woody Vine Stratum (Plot size: 30 m)				
	Absolute % Cover	Rel.Strat. Cover		Indicator Status
1. <i>Vitis rotundifolia</i>	1	<input type="checkbox"/>	100.0%	FAC
2.	0	<input type="checkbox"/>	0.0%	
3.	0	<input type="checkbox"/>	0.0%	
4.	0	<input type="checkbox"/>	0.0%	
5.	0	<input type="checkbox"/>	0.0%	
50% of Total Cover: <u>0.5</u>	20% of Total Cover: <u>0.2</u>	<u>1</u>	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 1 Multiply by: 1

OBL species 1 x 1 = 1

FACW species 59 x 2 = 118

FAC species 24 x 3 = 72

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 84 (A) 191 (B)

Prevalence Index = B/A = 2.274

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test Is > 50%
 - 3 - Prevalence Index is ≤ 3.0 ¹
 - Problematic Hydrophytic Vegetation ¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 45

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist) ¹	%	Type ¹	Loc ²		
0-5	10YR	4/2	100					Loamy Sand	
5-15	10YR	5/4	100					Loamy Sand	

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation
 City/County: Waveland - Hancock
 Sampling Date: 26-Oct-16
Applicant/Owner: NASA
 State: MS
 Sampling Point: Up - 47
Investigator(s): Lars Larson, Randy Ellis
 Section, Township, Range: S 31 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Hillside
 Local relief (concave, convex, none): undulating
 Slope: 2.0 % / 1.1 °
Subregion (LRR or MLRA): LRR T
 Lat.: 30° 24' 14.486" N
 Long.: 89° 37' 44.011" W
 Datum: NAD83
Soil Map Unit Name: EuB, Escambia loamy fine sand, 2 to 5 percent slopes
 NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?**
 Are "Normal Circumstances" present? Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?**
 (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:
 Sideslope approximately 60-70 feet up from Wet - 47.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 47

Tree Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? <input type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/>	62.5%	FACW
2.	<i>Nyssa sylvatica</i>	5	<input checked="" type="checkbox"/>	31.3%	FAC
3.	<i>Magnolia grandiflora</i>	1	<input type="checkbox"/>	6.3%	FAC
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: 8		20% of Total Cover: 3.2	16	= Total Cover	

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? <input type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	1	<input type="checkbox"/>	7.1%	FACW
2.	<i>Nyssa sylvatica</i>	3	<input checked="" type="checkbox"/>	21.4%	FAC
3.	<i>Ilex opaca</i>	5	<input checked="" type="checkbox"/>	35.7%	FAC
4.	<i>Magnolia grandiflora</i>	5	<input checked="" type="checkbox"/>	35.7%	FAC
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: 7		20% of Total Cover: 2.8	14	= Total Cover	

Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? <input type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1.	<i>Ilex vomitoria</i>	50	<input checked="" type="checkbox"/>	79.4%	FAC
2.	<i>Ilex coriacea</i>	10	<input type="checkbox"/>	15.9%	FACW
3.	<i>Vaccinium elliotii</i>	2	<input type="checkbox"/>	3.2%	FACW
4.	<i>Quercus nigra</i>	1	<input type="checkbox"/>	1.6%	FAC
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: 31.5		20% of Total Cover: 12.6	63	= Total Cover	

Herb Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? <input type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1.	<i>Ilex coriacea</i>	5	<input checked="" type="checkbox"/>	100.0%	FACW
2.		0	<input type="checkbox"/>	0.0%	
3.		0	<input type="checkbox"/>	0.0%	
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
6.		0	<input type="checkbox"/>	0.0%	
7.		0	<input type="checkbox"/>	0.0%	
8.		0	<input type="checkbox"/>	0.0%	
9.		0	<input type="checkbox"/>	0.0%	
10.		0	<input type="checkbox"/>	0.0%	
11.		0	<input type="checkbox"/>	0.0%	
12.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: 2.5		20% of Total Cover: 1	5	= Total Cover	

Woody Vine Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? <input type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1.	<i>Lygodium japonicum</i>	5	<input checked="" type="checkbox"/>	83.3%	FAC
2.	<i>Vitis rotundifolia</i>	1	<input type="checkbox"/>	16.7%	FAC
3.		0	<input type="checkbox"/>	0.0%	
4.		0	<input type="checkbox"/>	0.0%	
5.		0	<input type="checkbox"/>	0.0%	
50% of Total Cover: 3		20% of Total Cover: 1.2	6	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 104 (A) Multiply by: 284 (B)

OBL species: 0 x 1 = 0

FACW species: 28 x 2 = 56

FAC species: 76 x 3 = 228

FACU species: 0 x 4 = 0

UPL species: 0 x 5 = 0

Column Totals: 104 (A) 284 (B)

Prevalence Index = B/A = 2.731

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 47

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)	4/2	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR	4/2	100						
5-15	10YR	6/4	100						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)	<input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)	<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)	<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 153B)
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input type="checkbox"/> Marl (F10) (LRR U)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)	
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)	
<input type="checkbox"/> Sandy Muck Mineral (S1) (LRR O, S)	<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)	
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)	
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)	
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation
 City/County: Waveland - Hancock
 Sampling Date: 26-Oct-16
Applicant/Owner: NASA
 State: MS
 Sampling Point: Up - 48
Investigator(s): Lars Larson, Randy Ellis
 Section, Township, Range: S 20 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Terrace
 Local relief (concave, convex, none): flat
 Slope: 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T
 Lat.: 30° 25' 1.579" N
 Long.: 89° 37' 6.912" W
 Datum: NAD83
Soil Map Unit Name: At, Atmore silt loam, 0 to 2 percent slopes
 NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?**
 Are "Normal Circumstances" present? Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?**
 (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (minimum of 2 required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: No real hydrology indicators in this plot... primary or secondary. Soil has slight evidence of REDOX, but chroma brightens slightly with depth.		

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 48

		Dominant Species?		Indicator Status
Tree Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover		
1. <i>Pinus elliotii</i>	15	<input checked="" type="checkbox"/> 75.0%	FACW	
2. <i>Magnolia virginiana</i>	5	<input checked="" type="checkbox"/> 25.0%	FACW	
3.	0	<input type="checkbox"/> 0.0%		
4.	0	<input type="checkbox"/> 0.0%		
5.	0	<input type="checkbox"/> 0.0%		
6.	0	<input type="checkbox"/> 0.0%		
7.	0	<input type="checkbox"/> 0.0%		
8.	0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>10</u> 20% of Total Cover: <u>4</u>		<u>20</u>	= Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover		
1. <i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 50.0%	FACW	
2. <i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 50.0%	FACW	
3.	0	<input type="checkbox"/> 0.0%		
4.	0	<input type="checkbox"/> 0.0%		
5.	0	<input type="checkbox"/> 0.0%		
6.	0	<input type="checkbox"/> 0.0%		
7.	0	<input type="checkbox"/> 0.0%		
8.	0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>10</u> 20% of Total Cover: <u>4</u>		<u>20</u>	= Total Cover	
Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover		
1. <i>Ilex coriacea</i>	60	<input checked="" type="checkbox"/> 85.7%	FACW	
2. <i>Ilex vomitoria</i>	10	<input type="checkbox"/> 14.3%	FAC	
3.	0	<input type="checkbox"/> 0.0%		
4.	0	<input type="checkbox"/> 0.0%		
5.	0	<input type="checkbox"/> 0.0%		
6.	0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>35</u> 20% of Total Cover: <u>14</u>		<u>70</u>	= Total Cover	
Herb Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover		
1. <i>Ilex glabra</i>	10	<input checked="" type="checkbox"/> 100.0%	FACW	
2.	0	<input type="checkbox"/> 0.0%		
3.	0	<input type="checkbox"/> 0.0%		
4.	0	<input type="checkbox"/> 0.0%		
5.	0	<input type="checkbox"/> 0.0%		
6.	0	<input type="checkbox"/> 0.0%		
7.	0	<input type="checkbox"/> 0.0%		
8.	0	<input type="checkbox"/> 0.0%		
9.	0	<input type="checkbox"/> 0.0%		
10.	0	<input type="checkbox"/> 0.0%		
11.	0	<input type="checkbox"/> 0.0%		
12.	0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>5</u> 20% of Total Cover: <u>2</u>		<u>10</u>	= Total Cover	
Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover		
1.	0	<input type="checkbox"/> 0.0%		
2.	0	<input type="checkbox"/> 0.0%		
3.	0	<input type="checkbox"/> 0.0%		
4.	0	<input type="checkbox"/> 0.0%		
5.	0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>0</u> 20% of Total Cover: <u>0</u>		<u>0</u>	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: Multiply by:

OBL species 0 x 1 = 0

FACW species 110 x 2 = 220

FAC species 10 x 3 = 30

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 120 (A) 250 (B)

Prevalence Index = B/A = 2.083

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 48

Profile Description: (Describe to the depth needed to document the Indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²			
0-3	10YR	3/2	100						Loamy Sand	
3-11	10YR	4/2	99	10YR	6/6	1	C	M	Loamy Sand	
11-20	10YR	5/3	99	10YR	6/6	1	C	M	Loamy Sand	

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

Some minor redox present below 10-inches. Low chroma soil (<2), but begins to brighten slightly with depth.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation
 City/County: Waveland - Hancock
 Sampling Date: 26-Oct-16
Applicant/Owner: NASA
 State: MS
 Sampling Point: Up - 49
Investigator(s): Lars Larson, Randy Ellis
 Section, Township, Range: S 20 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Terrace
 Local relief (concave, convex, none): none
 Slope: 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T
 Lat.: 30° 25' 1.706" N
 Long.: 89° 37' 1.780" W
 Datum: NAD83
Soil Map Unit Name: At, Atmore silt loam, 0 to 2 percent slopes
 NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?**
 Are "Normal Circumstances" present? Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?**
 (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks: East to west Transect point approximately 500-600 feet south of access path along northeast property fenceline.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (minimum of 2 required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 49

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. Pinus elliotii	15	<input checked="" type="checkbox"/> 65.2%	FACW
2. Magnolia virginiana	5	<input checked="" type="checkbox"/> 21.7%	FACW
3. Acer rubrum	2	<input type="checkbox"/> 8.7%	FAC
4. Quercus nigra	1	<input type="checkbox"/> 4.3%	FAC
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	11.5	20% of Total Cover: 4.6	23 = Total Cover
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)			
1. Pinus elliotii	5	<input type="checkbox"/> 18.5%	FACW
2. Magnolia virginiana	10	<input checked="" type="checkbox"/> 37.0%	FACW
3. Acer rubrum	7	<input checked="" type="checkbox"/> 25.9%	FAC
4. Quercus nigra	5	<input type="checkbox"/> 18.5%	FAC
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	13.5	20% of Total Cover: 5.4	27 = Total Cover
Shrub Stratum (Plot size: 30 m)			
1. Ilex coriacea	50	<input checked="" type="checkbox"/> 90.9%	FACW
2. Ilex vomitoria	5	<input type="checkbox"/> 9.1%	FAC
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	27.5	20% of Total Cover: 11	55 = Total Cover
Herb Stratum (Plot size: 30 m)			
1. Ilex coriacea	5	<input checked="" type="checkbox"/> 100.0%	FACW
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	2.5	20% of Total Cover: 1	5 = Total Cover
Woody Vine Stratum (Plot size: 30 m)			
1. Smilax laurifolia	1	<input type="checkbox"/> 100.0%	FACW
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	0.5	20% of Total Cover: 0.2	1 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	0 x 1 = 0
FACW species	91 x 2 = 182
FAC species	20 x 3 = 60
FACU species	0 x 4 = 0
UPL species	0 x 5 = 0
Column Totals:	111 (A) 242 (B)
Prevalence Index = B/A =	2.180

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test Is > 50%

3 - Prevalence Index is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).
Heavy pine litter... no herbaceous stratum.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 49

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR	3/2	100					Loamy Sand	
3-12	10YR	4/2	99	10YR	6/2	1	D M	Loamy Sand	
12-20	10YR	5/3	99	10YR	6/2	1	D M	Loamy Sand	

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input type="checkbox"/> Marl (F10) (LRR U)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)
<input type="checkbox"/> Sandy Muck Mineral (S1) (LRR O, S)	<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)
<input checked="" type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)	

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)
<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 153B)
<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

Very sandy - loamy soil, dry, crumbly texture - seems to have good draining capacity. Some slight evidence of redox, but not much.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 26-Oct-16

Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 50

Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 21 T 7 s R 16 W

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** none **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 59.955" N **Long.:** 89° 36' 38.830" W **Datum:** NAD83

Soil Map Unit Name: EsA, Escambia loam, 0 to 2 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	
Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	

Remarks:
 Upland plot within a transect in NE AOI. This is near an old logging channell/drainage cut that was made apparently to drain/convey surface water away (to the south) from the upland flat for logging puporses.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)
Primary Indicators (minimum of one required; check all that apply)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)

Field Observations:	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	
Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	
Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Dominant Species?

Sampling Point: Up - 50

Tree Stratum	(Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	20	<input checked="" type="checkbox"/> 74.1%	FACW
2.	<i>Nyssa sylvatica</i>	3	<input type="checkbox"/> 11.1%	FAC
3.	<i>Magnolia virginiana</i>	2	<input type="checkbox"/> 7.4%	FACW
4.	<i>Quercus virginiana</i>	2	<input type="checkbox"/> 7.4%	FACU
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>13.5</u>		20% of Total Cover: <u>5.4</u>	<u>27</u>	= Total Cover

Sapling or Sapling/Shrub Stratum	(Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	2	<input type="checkbox"/> 13.3%	FACW
2.	<i>Magnolia virginiana</i>	5	<input checked="" type="checkbox"/> 33.3%	FACW
3.	<i>Nyssa sylvatica</i>	5	<input checked="" type="checkbox"/> 33.3%	FAC
4.	<i>Quercus nigra</i>	3	<input checked="" type="checkbox"/> 20.0%	FAC
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>7.5</u>		20% of Total Cover: <u>3</u>	<u>15</u>	= Total Cover

Shrub Stratum	(Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Ilex vomitoria</i>	30	<input checked="" type="checkbox"/> 73.2%	FAC
2.	<i>Ilex coriacea</i>	10	<input checked="" type="checkbox"/> 24.4%	FACW
3.	<i>Ilex cassine</i>	1	<input type="checkbox"/> 2.4%	FACW
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>20.5</u>		20% of Total Cover: <u>8.2</u>	<u>41</u>	= Total Cover

Herb Stratum	(Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Ilex coriacea</i>	10	<input checked="" type="checkbox"/> 100.0%	FACW
2.		0	<input type="checkbox"/> 0.0%	
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
9.		0	<input type="checkbox"/> 0.0%	
10.		0	<input type="checkbox"/> 0.0%	
11.		0	<input type="checkbox"/> 0.0%	
12.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>5</u>		20% of Total Cover: <u>2</u>	<u>10</u>	= Total Cover

Woody Vine Stratum	(Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Smilax rotundifolia</i>	1	<input type="checkbox"/> 100.0%	FAC
2.		0	<input type="checkbox"/> 0.0%	
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>0.5</u>		20% of Total Cover: <u>0.2</u>	<u>1</u>	= Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 94 (A) Multiply by: 234 (B)

OBL species: 0 x 1 = 0

FACW species: 50 x 2 = 100

FAC species: 42 x 3 = 126

FACU species: 2 x 4 = 8

UPL species: 0 x 5 = 0

Column Totals: 94 (A) 234 (B)

Prevalence Index = B/A = 2.489

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).
heavy pine layer.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 50

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR	5/2	100					Loamy Sand	
4-16	10YR	5/6	100					Loamy Sand	

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation
 City/County: Waveland - Hancock
 Sampling Date: 26-Oct-16
Applicant/Owner: NASA
 State: MS
 Sampling Point: Up - 51
Investigator(s): Lars Larson, Randy Ellis
 Section, Township, Range: S 21 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Terrace
 Local relief (concave, convex, none): flat
 Slope: 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T
 Lat.: 30° 25' 2.517" N
 Long.: 89° 36' 38.172" W
 Datum: NAD83
Soil Map Unit Name: EsA, Escambia loam, 0 to 2 percent slopes
 NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year?
 Yes No
 (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?**
 Are "Normal Circumstances" present?
 Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?**
 (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:
 This plot is approximately 50-feet to the west of an man-made logging drain in the NE part of the AOI. There is hydrophytic vegetation, some low chroma soil colors but NO evidence of hydrology except for the application of the FAC neutral test.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
---	--

Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Dominant Species?

Sampling Point: Up - 51

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	25	<input checked="" type="checkbox"/> 65.8%	FACW
2. <i>Nyssa sylvatica</i>	10	<input checked="" type="checkbox"/> 26.3%	FAC
3. <i>Magnolia virginiana</i>	3	<input type="checkbox"/> 7.9%	FACW
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	19	20% of Total Cover: 7.6	38 = Total Cover

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	2	<input type="checkbox"/> 16.7%	FACW
2. <i>Nyssa sylvatica</i>	5	<input checked="" type="checkbox"/> 41.7%	FAC
3. <i>Magnolia virginiana</i>	5	<input checked="" type="checkbox"/> 41.7%	FACW
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	6	20% of Total Cover: 2.4	12 = Total Cover

Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Ilex coriacea</i>	50	<input checked="" type="checkbox"/> 82.0%	FACW
2. <i>Ilex glabra</i>	10	<input type="checkbox"/> 16.4%	FACW
3. <i>Persea palustris</i>	1	<input type="checkbox"/> 1.6%	FACW
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	30.5	20% of Total Cover: 12.2	61 = Total Cover

Herb Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Lycopodiella alopecuroides</i>	1	<input type="checkbox"/> 16.7%	OBL
2. <i>Ilex coriacea</i>	5	<input checked="" type="checkbox"/> 83.3%	FACW
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	3	20% of Total Cover: 1.2	6 = Total Cover

Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Smlax rotundifolia</i>	0	<input type="checkbox"/> 0.0%	FAC
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	0	20% of Total Cover: 0	0 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 117 (A) Multiply by: 248 (B)

OBL species 1 x 1 = 1

FACW species 101 x 2 = 202

FAC species 15 x 3 = 45

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 117 (A) 248 (B)

Prevalence Index = B/A = 2.120

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **UP - 51**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR	3/2	100						
4-11	10YR	4/2	100						
11-20	10YR	5/4	100						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

Soil chroma begins to change to a lighter 3-4 below 11-12 inches.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 26-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 52
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 21 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** none **Slope:** 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 25' 2.571" N **Long.:** 89° 36' 31.359" W **Datum:** NAD83
Soil Map Unit Name: H1A, Harleston fine sandy loam, 0 to 2 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks: Upland area approximately 300-feet south of fence line in NE AOI. Along N-S transect.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <table style="width:100%; border: none;"> <tr> <td style="width:50%; border: none;"><input type="checkbox"/> Surface Water (A1)</td> <td style="width:50%; border: none;"><input type="checkbox"/> Aquatic Fauna (B13)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> High Water Table (A2)</td> <td style="border: none;"><input type="checkbox"/> Marl Deposits (B15) (LRR U)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Saturation (A3)</td> <td style="border: none;"><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Water Marks (B1)</td> <td style="border: none;"><input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Sediment Deposits (B2)</td> <td style="border: none;"><input type="checkbox"/> Presence of Reduced Iron (C4)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Drift Deposits (B3)</td> <td style="border: none;"><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Algal Mat or Crust (B4)</td> <td style="border: none;"><input type="checkbox"/> Thin Muck Surface (C7)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Iron Deposits (B5)</td> <td style="border: none;"><input type="checkbox"/> Other (Explain in Remarks)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</td> <td></td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Water-Stained Leaves (B9)</td> <td></td> </tr> </table>	<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Water-Stained Leaves (B9)		Secondary Indicators (minimum of 2 required) <table style="width:100%; border: none;"> <tr><td style="border: none;"><input type="checkbox"/> Surface Soil Cracks (B6)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Drainage Patterns (B10)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Moss Trim Lines (B16)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Dry Season Water Table (C2)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Crayfish Burrows (C8)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Geomorphic Position (D2)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Shallow Aquitard (D3)</td></tr> <tr><td style="border: none;"><input checked="" type="checkbox"/> FAC-Neutral Test (D5)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)</td></tr> </table>	<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Moss Trim Lines (B16)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	<input type="checkbox"/> Geomorphic Position (D2)	<input type="checkbox"/> Shallow Aquitard (D3)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	<input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)																															
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)																															
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)																															
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)																															
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)																															
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)																															
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)																															
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)																															
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)																																
<input type="checkbox"/> Water-Stained Leaves (B9)																																
<input type="checkbox"/> Surface Soil Cracks (B6)																																
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<input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)																																

Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Dominant Species?

Sampling Point: Up - 52

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	15	<input checked="" type="checkbox"/> 60.0%	FACW
2. <i>Magnolia virginiana</i>	5	<input checked="" type="checkbox"/> 20.0%	FACW
3. <i>Quercus nigra</i>	2	<input type="checkbox"/> 8.0%	FAC
4. <i>Magnolia grandiflora</i>	3	<input type="checkbox"/> 12.0%	FAC
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>12.5</u> 20% of Total Cover: <u>5</u> 25 = Total Cover			

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	3	<input checked="" type="checkbox"/> 25.0%	FACW
2. <i>Magnolia virginiana</i>	5	<input checked="" type="checkbox"/> 41.7%	FACW
3. <i>Quercus nigra</i>	3	<input checked="" type="checkbox"/> 25.0%	FAC
4. <i>Ilex opaca</i>	1	<input type="checkbox"/> 8.3%	FAC
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>6</u> 20% of Total Cover: <u>2.4</u> 12 = Total Cover			

Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Ilex coriacea</i>	50	<input checked="" type="checkbox"/> 92.6%	FACW
2. <i>Ilex vomitoria</i>	3	<input type="checkbox"/> 5.6%	FAC
3. <i>Ilex opaca</i>	1	<input type="checkbox"/> 1.9%	FAC
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>27</u> 20% of Total Cover: <u>10.8</u> 54 = Total Cover			

Herb Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Ilex coriacea</i>	5	<input checked="" type="checkbox"/> 100.0%	FACW
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>2.5</u> 20% of Total Cover: <u>1</u> 5 = Total Cover			

Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Vitis rotundifolia</i>	1	<input type="checkbox"/> 100.0%	FAC
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>0.5</u> 20% of Total Cover: <u>0.2</u> 1 = Total Cover			

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 97 Multiply by: (A)

OBL species 0 x 1 = 0

FACW species 83 x 2 = 166

FAC species 14 x 3 = 42

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 97 (A) 208 (B)

Prevalence Index = B/A = 2.144

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0 ¹
 - Problematic Hydrophytic Vegetation ¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **Up - 52**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features			Texture	Remarks
	Color (moist)	%		Color (moist)	%	Type ¹		
0-5	10YR	4/2	100					
5-16	10YR	5/6	100					

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

N

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 31-Oct-16

Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 53

Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 21 T 7 s R 16 W

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** flat **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR T **Lat.:** 30° 25' 2.412" N **Long.:** 89° 36' 15.101" W **Datum:** NAD83

Soil Map Unit Name: At, Atmore silt loam, 0 to 2 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:
Upland transect approximately 150-feet east of Wet - 53 to the south of the access road in the NE AOI.

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<u>Secondary Indicators (minimum of 2 required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (Inches): _____	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Dominant Species?

Sampling Point: Up - 53

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Rel. Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 76.9%	FACW
2. <i>Magnolia virginiana</i>	2	<input type="checkbox"/> 15.4%	FACW
3. <i>Nyssa sylvatica</i>	1	<input type="checkbox"/> 7.7%	FAC
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	6.5	20% of Total Cover: 2.6	13 = Total Cover

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel. Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	20	<input checked="" type="checkbox"/> 71.4%	FACW
2. <i>Magnolia virginiana</i>	5	<input type="checkbox"/> 17.9%	FACW
3. <i>Nyssa sylvatica</i>	3	<input type="checkbox"/> 10.7%	FAC
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	14	20% of Total Cover: 5.6	28 = Total Cover

Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel. Strat. Cover	Indicator Status
1. <i>Ilex coriacea</i>	75	<input checked="" type="checkbox"/> 100.0%	FACW
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	37.5	20% of Total Cover: 15	75 = Total Cover

Herb Stratum (Plot size: 30 m)	Absolute % Cover	Rel. Strat. Cover	Indicator Status
1. <i>Ilex coriacea</i>	10	<input checked="" type="checkbox"/> 100.0%	FACW
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	5	20% of Total Cover: 2	10 = Total Cover

Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Rel. Strat. Cover	Indicator Status
1.	0	<input type="checkbox"/> 0.0%	
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	0	20% of Total Cover: 0	0 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 13 Multiply by: 20

OBL species 0 x 1 = 0

FACW species 122 x 2 = 244

FAC species 4 x 3 = 12

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 126 (A) 256 (B)

Prevalence Index = B/A = 2.032

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 53

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²			
0-4	10YR	4/1	100						Loamy Sand	
4-16	10YR	5/2	98	10YR	7/2	20	C	M	Loamy Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

Very small amount of sandy redox.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 14-Oct-16

Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 13

Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 29 T 7 s R 16 W

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** flat **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 8.736" N **Long.:** 89° 37' 10.576" W **Datum:** NAD83

Soil Map Unit Name: At, Atmore silt loam, 0 to 2 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 13

Tree Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	15	<input checked="" type="checkbox"/> 71.4%	FACW
2.	<i>Quercus virginiana</i>	5	<input checked="" type="checkbox"/> 23.8%	FACU
3.	<i>Quercus nigra</i>	1	<input type="checkbox"/> 4.8%	FAC
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 10.5		20% of Total Cover: 4.2	21	= Total Cover
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	5	<input checked="" type="checkbox"/> 20.0%	FACW
2.	<i>Quercus nigra</i>	15	<input checked="" type="checkbox"/> 60.0%	FAC
3.	<i>Quercus virginiana</i>	3	<input type="checkbox"/> 12.0%	FACU
4.	<i>Magnolia virginiana</i>	2	<input type="checkbox"/> 8.0%	FACW
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 12.5		20% of Total Cover: 5	25	= Total Cover
Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Ilex coriacea</i>	25	<input checked="" type="checkbox"/> 71.4%	FACW
2.	<i>Ilex vomitoria</i>	10	<input checked="" type="checkbox"/> 28.6%	FAC
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 17.5		20% of Total Cover: 7	35	= Total Cover
Herb Stratum (Plot size: 33)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Ilex coriacea</i>	5	<input checked="" type="checkbox"/> 100.0%	FACW
2.		0	<input type="checkbox"/> 0.0%	
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
9.		0	<input type="checkbox"/> 0.0%	
10.		0	<input type="checkbox"/> 0.0%	
11.		0	<input type="checkbox"/> 0.0%	
12.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 2.5		20% of Total Cover: 1	5	= Total Cover
Woody Vine Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Smilax rotundifolia</i>	1	<input type="checkbox"/> 100.0%	FAC
2.		0	<input type="checkbox"/> 0.0%	
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 0.5		20% of Total Cover: 0.2	1	= Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 85.7% (A/B)

Prevalence Index worksheet:

Total % Cover of: Multiply by:

OBL species 0 x 1 = 0

FACW species 52 x 2 = 104

FAC species 27 x 3 = 81

FACU species 8 x 4 = 32

UPL species 0 x 5 = 0

Column Totals: 87 (A) 217 (B)

Prevalence Index = B/A = 2.494

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Up - 13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix			Redox Features			Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹		
0-5	10YR	3/2	100				Loamy Sand	
5-18	10YR	5/4	100				Loamy Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 14-Oct-16

Applicant/Owner: NASA **State:** MS **Sampling Point:** Up - 15

Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 29 T 7 s R 16 W

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** none **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 19.571" N **Long.:** 89° 36' 50.740" W **Datum:** NAD83

Soil Map Unit Name: EsB, Escambia loam, 2 to 5 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)

Are Vegetation **, Soil** **, or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No

Are Vegetation **, Soil** **, or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:
Lower end of up-wet transition line approximately 700 feet south of Turtleskin Creek. Roughly 1,200 feet north of logging road.

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<u>Secondary Indicators (minimum of 2 required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Up - 15

Tree Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	15	<input checked="" type="checkbox"/> 65.2%	FACW
2.	<i>Magnolia virginiana</i>	2	<input type="checkbox"/> 8.7%	FACW
3.	<i>Liquidambar styraciflua</i>	5	<input checked="" type="checkbox"/> 21.7%	FAC
4.	<i>Quercus texana</i>	1	<input type="checkbox"/> 4.3%	FACW
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 11.5		20% of Total Cover: 4.6	23 = Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	20	<input checked="" type="checkbox"/> 71.4%	FACW
2.	<i>Magnolia virginiana</i>	5	<input type="checkbox"/> 17.9%	FACW
3.	<i>Quercus nigra</i>	2	<input type="checkbox"/> 7.1%	FAC
4.	<i>Persea palustris</i>	1	<input type="checkbox"/> 3.6%	FACW
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 14		20% of Total Cover: 5.6	28 = Total Cover	
Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Ilex coriacea</i>	30	<input checked="" type="checkbox"/> 65.2%	FACW
2.	<i>Ilex vomitoria</i>	5	<input type="checkbox"/> 10.9%	FAC
3.	<i>Ilex glabra</i>	10	<input checked="" type="checkbox"/> 21.7%	FACW
4.	<i>Sabal minor</i>	1	<input type="checkbox"/> 2.2%	FACW
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 23		20% of Total Cover: 9.2	46 = Total Cover	
Herb Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Ilex glabra</i>	10	<input checked="" type="checkbox"/> 100.0%	FACW
2.		0	<input type="checkbox"/> 0.0%	
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
9.		0	<input type="checkbox"/> 0.0%	
10.		0	<input type="checkbox"/> 0.0%	
11.		0	<input type="checkbox"/> 0.0%	
12.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 5		20% of Total Cover: 2	10 = Total Cover	
Woody Vine Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Smilax rotundifolia</i>	0	<input type="checkbox"/> 0.0%	FAC
2.		0	<input type="checkbox"/> 0.0%	
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 0		20% of Total Cover: 0	0 = Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 107 Multiply by: (A)

OBL species 0 x 1 = 0

FACW species 95 x 2 = 190

FAC species 12 x 3 = 36

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 107 (A) 226 (B)

Prevalence Index = B/A = 2.112

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).
Fairly thick gallberry understory.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation
 City/County: Waveland - Hancock
 Sampling Date: 07-Oct-16
Applicant/Owner: NASA
 State: MS
 Sampling Point: Wet - 1
Investigator(s): Lars Larson, Randy Ellis
 Section, Township, Range: S 20 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Flat
 Local relief (concave, convex, none): flat
 Slope: 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T
 Lat.: 30° 25' 1.091" N
 Long.: 89° 37' 13.129" W
 Datum: NAD83
Soil Map Unit Name: At, Atmore silt loam, 0 to 2 percent slopes
 NWI classification: PFO 1/4 C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?**
 Are "Normal Circumstances" present? Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?**
 (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks: Low drainage area approximately 60 feet from a topographic rise that transitions up toward Upland Plot #1.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input checked="" type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 No strong primary hydrology indicators, but it is clear that this is drainage area that conveys water from the hillslope above to the riparian buffer next to Turtleskin Creek below.

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Dominant Species?

Sampling Point: **Wet - 1**

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	5	<input checked="" type="checkbox"/> 23.8%	FACW
2. <i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 47.6%	FACW
3. <i>Nyssa sylvatica</i>	5	<input checked="" type="checkbox"/> 23.8%	FAC
4. <i>Taxodium ascendens</i>	1	<input type="checkbox"/> 4.8%	OBL
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	10.5	20% of Total Cover: 4.2	21 = Total Cover

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Magnolia virginiana</i>	15	<input checked="" type="checkbox"/> 50.0%	FACW
2. <i>Nyssa sylvatica</i>	10	<input checked="" type="checkbox"/> 33.3%	FAC
3. <i>Cyrilla racemiflora</i>	3	<input type="checkbox"/> 10.0%	FACW
4. <i>Acer rubrum</i>	2	<input type="checkbox"/> 6.7%	FAC
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	15	20% of Total Cover: 6	30 = Total Cover

Shrub Stratum (Plot size: 30m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Cyrilla racemiflora</i>	10	<input checked="" type="checkbox"/> 31.3%	FACW
2. <i>Ilex coriacea</i>	15	<input checked="" type="checkbox"/> 46.9%	FACW
3. <i>Ilex glabra</i>	5	<input type="checkbox"/> 15.6%	FACW
4. <i>Acer rubrum</i>	2	<input type="checkbox"/> 6.3%	FAC
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	16	20% of Total Cover: 6.4	32 = Total Cover

Herb Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Woodwardia areolata</i>	5	<input checked="" type="checkbox"/> 62.5%	OBL
2. <i>Woodwardia virginica</i>	3	<input checked="" type="checkbox"/> 37.5%	OBL
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	4	20% of Total Cover: 1.6	8 = Total Cover

Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	0	<input type="checkbox"/> 0.0%	
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	0	20% of Total Cover: 0	0 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 9 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 91 (A) Multiply by:

OBL species	<u>9</u>	x 1 =	<u>9</u>
FACW species	<u>63</u>	x 2 =	<u>126</u>
FAC species	<u>19</u>	x 3 =	<u>57</u>
FACU species	<u>0</u>	x 4 =	<u>0</u>
UPL species	<u>0</u>	x 5 =	<u>0</u>
Column Totals:	<u>91</u>	(A)	<u>192</u> (B)

Prevalence Index = B/A = 2.110

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Wet - 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²			
0-3	10YR	3/2							Loamy Sand	
3-16	10YR	5/2	95	10YR	7/2	5	C	M	Sandy Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

Stripped depleted matrix lower in soil column > 4 inches with some small redox concentrations.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 07-Oct-16

Applicant/Owner: NASA **State:** MS **Sampling Point:** Wet - 2

Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 20 T 7 S R 16 W

Landform (hillslope, terrace, etc.): Floodplain **Local relief (concave, convex, none):** flat **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 53.385" N **Long.:** 89° 36' 51.572" W **Datum:** NAD83

Soil Map Unit Name: At, Atmore silt loam, 0 to 2 percent slopes **NWI classification:** PFO 1/4 C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)

Are Vegetation **, Soil** **, or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No

Are Vegetation **, Soil** **, or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <table style="width:100%; border: none;"> <tr> <td style="width:50%; border: none;"> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) </td> <td style="width:50%; border: none;"> <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks) </td> </tr> </table>	<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	Secondary Indicators (minimum of 2 required) <table style="width:100%; border: none;"> <tr> <td style="border: none;"> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input checked="" type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U) </td> </tr> </table>	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input checked="" type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)			
<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input checked="" type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)				

Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Depth (inches): 12	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 Saturation begins to develop around 10 to 12 inches below ground surface. However, numerous other hydrology indicators are evident.

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Wet - 2

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Dominant Species?	Indicator Status
1. <i>Magnolia virginiana</i>	15	<input checked="" type="checkbox"/>	48.4%	FACW
2. <i>Nyssa sylvatica</i>	10	<input checked="" type="checkbox"/>	32.3%	FAC
3. <i>Pinus elliotii</i>	5	<input type="checkbox"/>	16.1%	FACW
4. <i>Taxodium ascendens</i>	1	<input type="checkbox"/>	3.2%	OBL
5.	0	<input type="checkbox"/>	0.0%	
6.	0	<input type="checkbox"/>	0.0%	
7.	0	<input type="checkbox"/>	0.0%	
8.	0	<input type="checkbox"/>	0.0%	
50% of Total Cover:	15.5	20% of Total Cover:	6.2	31 = Total Cover

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Dominant Species?	Indicator Status
1. <i>Magnolia virginiana</i>	25	<input checked="" type="checkbox"/>	59.5%	FACW
2. <i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/>	23.8%	FACW
3. <i>Nyssa sylvatica</i>	5	<input type="checkbox"/>	11.9%	FAC
4. <i>Acer rubrum</i>	2	<input type="checkbox"/>	4.8%	FAC
5.	0	<input type="checkbox"/>	0.0%	
6.	0	<input type="checkbox"/>	0.0%	
7.	0	<input type="checkbox"/>	0.0%	
8.	0	<input type="checkbox"/>	0.0%	
50% of Total Cover:	21	20% of Total Cover:	8.4	42 = Total Cover

Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Dominant Species?	Indicator Status
1. <i>Cyrilla racemiflora</i>	20	<input checked="" type="checkbox"/>	71.4%	FACW
2. <i>Magnolia virginiana</i>	5	<input type="checkbox"/>	17.9%	FACW
3. <i>Acer rubrum</i>	3	<input type="checkbox"/>	10.7%	FAC
4.	0	<input type="checkbox"/>	0.0%	
5.	0	<input type="checkbox"/>	0.0%	
6.	0	<input type="checkbox"/>	0.0%	
50% of Total Cover:	14	20% of Total Cover:	5.6	28 = Total Cover

Herb Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Dominant Species?	Indicator Status
1. <i>Arundinaria tecta</i>	5	<input checked="" type="checkbox"/>	62.5%	FACW
2. <i>Woodwardia areolata</i>	3	<input checked="" type="checkbox"/>	37.5%	OBL
3.	0	<input type="checkbox"/>	0.0%	
4.	0	<input type="checkbox"/>	0.0%	
5.	0	<input type="checkbox"/>	0.0%	
6.	0	<input type="checkbox"/>	0.0%	
7.	0	<input type="checkbox"/>	0.0%	
8.	0	<input type="checkbox"/>	0.0%	
9.	0	<input type="checkbox"/>	0.0%	
10.	0	<input type="checkbox"/>	0.0%	
11.	0	<input type="checkbox"/>	0.0%	
12.	0	<input type="checkbox"/>	0.0%	
50% of Total Cover:	4	20% of Total Cover:	1.6	8 = Total Cover

Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Dominant Species?	Indicator Status
1. <i>Vitis rotundifolia</i>	5	<input checked="" type="checkbox"/>	100.0%	FAC
2.	0	<input type="checkbox"/>	0.0%	
3.	0	<input type="checkbox"/>	0.0%	
4.	0	<input type="checkbox"/>	0.0%	
5.	0	<input type="checkbox"/>	0.0%	
50% of Total Cover:	2.5	20% of Total Cover:	1	5 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: Multiply by:

OBL species	4	x 1 =	4
FACW species	85	x 2 =	170
FAC species	25	x 3 =	75
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	114	(A)	249 (B)

Prevalence Index = B/A = 2.184

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **Wet - 2**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²			
0-4	10YR	3/1	100							
4-20	10YR	4/2	95	10YR	6/2	5	D	M	Sandy Loam	Very fine grained

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (Inches): _____

Hydric Soil Present? Yes No

Remarks:

Depletions in lower soil column appear to be scattered throughout the primary matrix. Very light, but not dominant.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1.100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 11-Oct-16

Applicant/Owner: NASA **State:** MS **Sampling Point:** Wet - 5

Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 28 T 7 s R 16 W

Landform (hillslope, terrace, etc.): Swale-drainage **Local relief (concave, convex, none):** **Slope:** 2.0 % / 1.1 °

Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 42.445" N **Long.:** 89° 36' 41.842" W **Datum:** NAD83

Soil Map Unit Name: Su, Smithton fine sandy loam, frequently flooded **NWI classification:** PFO 1/4 C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)

Are Vegetation **, Soil** **, or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No

Are Vegetation **, Soil** **, or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)
<u>Primary Indicators (minimum of one required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input checked="" type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)

Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input checked="" type="radio"/> No <input type="radio"/> Depth (inches): 12	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Wet - 5

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Magnolia virginiana</i>	15	<input checked="" type="checkbox"/> 45.5%	FACW
2. <i>Nyssa sylvatica</i>	15	<input checked="" type="checkbox"/> 45.5%	FAC
3. <i>Quercus nigra</i>	3	<input type="checkbox"/> 9.1%	FAC
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>16.5</u> 20% of Total Cover: <u>6.6</u> <u>33</u> = Total Cover			
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Magnolia virginiana</i>	20	<input checked="" type="checkbox"/> 52.6%	FACW
2. <i>Quercus nigra</i>	10	<input checked="" type="checkbox"/> 26.3%	FAC
3. <i>Acer rubrum</i>	5	<input type="checkbox"/> 13.2%	FAC
4. <i>Cyrilla racemiflora</i>	3	<input type="checkbox"/> 7.9%	FACW
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>19</u> 20% of Total Cover: <u>7.6</u> <u>38</u> = Total Cover			
Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Cyrilla racemiflora</i>	20	<input checked="" type="checkbox"/> 57.1%	FACW
2. <i>Ilex coriacea</i>	10	<input checked="" type="checkbox"/> 28.6%	FACW
3. <i>Magnolia virginiana</i>	5	<input type="checkbox"/> 14.3%	FACW
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>17.5</u> 20% of Total Cover: <u>7</u> <u>35</u> = Total Cover			
Herb Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Arundinaria tecta</i>	5	<input checked="" type="checkbox"/> 33.3%	FACW
2. <i>Woodwardia areolata</i>	10	<input checked="" type="checkbox"/> 66.7%	OBL
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>7.5</u> 20% of Total Cover: <u>3</u> <u>15</u> = Total Cover			
Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Vitis rotundifolia</i>	5	<input checked="" type="checkbox"/> 100.0%	FAC
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: <u>2.5</u> 20% of Total Cover: <u>1</u> <u>5</u> = Total Cover			

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 9 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 10 Multiply by: 1

OBL species 10 x 1 = 10

FACW species 78 x 2 = 156

FAC species 38 x 3 = 114

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 126 (A) 280 (B)

Prevalence Index = B/A = 2.222

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Wet - 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR	3/1	95	10YR	6/6	5	C	M	Sandy Loam
5-22	10YR	3/2	90	10YR	6/2	10	D	M	Sandy Loam

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

Spotty areas with lighter coloring that appear stripped of darker organic material.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 11-Oct-16

Applicant/Owner: NASA **State:** MS **Sampling Point:** Wet- 6

Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 28 T 7 s R 16 W

Landform (hillslope, terrace, etc.): Floodplain **Local relief (concave, convex, none):** undulating **Slope:** 1.0 % / 0.6 °

Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 40.727" N **Long.:** 89° 36' 31.790" W **Datum:** NAD83

Soil Map Unit Name: Atmore **NWI classification:** PFO 1/4 C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Remarks:
 Low bottom-drainge area approximately 60-70 feet from UP-6 within riparian flood plain of Turtleskin Creek.

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<u>Secondary Indicators (minimum of 2 required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input checked="" type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 Drainage patterns, low bottom area with numerous buttressed trees.

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Wet-6

Tree Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Nyssa sylvatica</i>	15	<input checked="" type="checkbox"/> 55.6%	FAC
2.	<i>Quercus nigra</i>	10	<input checked="" type="checkbox"/> 37.0%	FAC
3.	<i>Pinus elliotii</i>	2	<input type="checkbox"/> 7.4%	FACW
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 13.5		20% of Total Cover: 5.4	27	= Total Cover
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Nyssa sylvatica</i>	10	<input checked="" type="checkbox"/> 50.0%	FAC
2.	<i>Quercus nigra</i>	5	<input checked="" type="checkbox"/> 25.0%	FAC
3.	<i>Cyrilla racemiflora</i>	3	<input type="checkbox"/> 15.0%	FACW
4.	<i>Magnolia virginiana</i>	2	<input type="checkbox"/> 10.0%	FACW
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 10		20% of Total Cover: 4	20	= Total Cover
Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 58.8%	FACW
2.	<i>Acer rubrum</i>	5	<input checked="" type="checkbox"/> 29.4%	FAC
3.	<i>Pinus elliotii</i>	2	<input type="checkbox"/> 11.8%	FACW
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 8.5		20% of Total Cover: 3.4	17	= Total Cover
Herb Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Woodwardia areolata</i>	10	<input checked="" type="checkbox"/> 66.7%	OBL
2.	<i>Arundinaria tecta</i>	3	<input checked="" type="checkbox"/> 20.0%	FACW
3.	<i>Woodwardia virginica</i>	2	<input type="checkbox"/> 13.3%	OBL
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
9.		0	<input type="checkbox"/> 0.0%	
10.		0	<input type="checkbox"/> 0.0%	
11.		0	<input type="checkbox"/> 0.0%	
12.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 7.5		20% of Total Cover: 3	15	= Total Cover
Woody Vine Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.		0	<input type="checkbox"/> 0.0%	
2.		0	<input type="checkbox"/> 0.0%	
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 0		20% of Total Cover: 0	0	= Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 79 (A) Multiply by: 191 (B)

OBL species 12 x 1 = 12

FACW species 22 x 2 = 44

FAC species 45 x 3 = 135

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 79 (A) 191 (B)

Prevalence Index = B/A = 2.418

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Wet-6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Loc ²	Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹				
0-5	10YR	3/1	100							
5-16	10YR	3/2	90	10YR	7/2	10	C	M	Sandy Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 11-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Wet - 7
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 28 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** none **Slope:** 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 46.797" N **Long.:** 89° 36' 26.603" W **Datum:** NAD83
Soil Map Unit Name: At, Atmore silt loam, 0 to 2 percent slopes **NWI classification:** PFO 1/4 C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks: Terrace area within 100 feet of power line ROW. Area seems possibly disturbed with a mix of vegetative species... just north of heavy pine overstory.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<u>Secondary Indicators (minimum of 2 required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Wet - 7

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 52.6%	FACW
2. <i>Nyssa sylvatica</i>	5	<input checked="" type="checkbox"/> 26.3%	FAC
3. <i>Quercus nigra</i>	3	<input type="checkbox"/> 15.8%	FAC
4. <i>Magnolia virginiana</i>	1	<input type="checkbox"/> 5.3%	FACW
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	9.5	20% of Total Cover: 3.8	19 = Total Cover
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)			
1. <i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 55.6%	FACW
2. <i>Magnolia virginiana</i>	5	<input checked="" type="checkbox"/> 27.8%	FACW
3. <i>Acer rubrum</i>	3	<input type="checkbox"/> 16.7%	FAC
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	9	20% of Total Cover: 3.6	18 = Total Cover
Shrub Stratum (Plot size: 30 m)			
1. <i>Morella cerifera</i>	10	<input checked="" type="checkbox"/> 40.0%	FAC
2. <i>Acer rubrum</i>	7	<input checked="" type="checkbox"/> 28.0%	FAC
3. <i>Nyssa sylvatica</i>	5	<input checked="" type="checkbox"/> 20.0%	FAC
4. <i>Persea palustris</i>	3	<input type="checkbox"/> 12.0%	FACW
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	12.5	20% of Total Cover: 5	25 = Total Cover
Herb Stratum (Plot size: 30 m)			
1. <i>Woodwardia areolata</i>	5	<input checked="" type="checkbox"/> 71.4%	OBL
2. <i>Woodwardia virginica</i>	2	<input checked="" type="checkbox"/> 28.6%	OBL
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	3.5	20% of Total Cover: 1.4	7 = Total Cover
Woody Vine Stratum (Plot size: 30 m)			
1. <i>Vitis rotundifolia</i>	10	<input checked="" type="checkbox"/> 90.9%	FAC
2. <i>Rubus argutus</i>	1	<input type="checkbox"/> 9.1%	FAC
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	5.5	20% of Total Cover: 2.2	11 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 10 (A)

Total Number of Dominant Species Across All Strata: 10 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 7 Multiply by: 1

OBL species 7 x 1 = 7

FACW species 29 x 2 = 58

FAC species 44 x 3 = 132

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 80 (A) 197 (B)

Prevalence Index = B/A = 2.463

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0 ¹

Problematic Hydrophytic Vegetation ¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Wet - 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR	3/1	100						
6-16	10YR	4/2	90	10YR	7/2	10	D	M	Loamy Sand

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 11-Oct-16

Applicant/Owner: NASA **State:** MS **Sampling Point:** Wet - 8

Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 28 T 7 s R 16 W

Landform (hillslope, terrace, etc.): **Local relief (concave, convex, none):** **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 39.246" N **Long.:** 89° 36' 46.299" W **Datum:** NAD83

Soil Map Unit Name: Su, Smithton fine sandy loam, frequently flooded **NWI classification:** PFO 1/4 C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks: Low drainage area.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<u>Secondary Indicators (minimum of 2 required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input checked="" type="checkbox"/> Crazyfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Dominant Species?

Sampling Point: Wet - 8

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 50.0%	FACW
2. <i>Nyssa aquatica</i>	5	<input checked="" type="checkbox"/> 25.0%	OBL
3. <i>Quercus virginiana</i>	5	<input checked="" type="checkbox"/> 25.0%	FACU
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 10 20% of Total Cover: 4 20 = Total Cover

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Liquidambar styraciflua</i>	5	<input checked="" type="checkbox"/> 35.7%	FAC
2. <i>Pinus elliotii</i>	5	<input checked="" type="checkbox"/> 35.7%	FACW
3. <i>Quercus virginiana</i>	2	<input type="checkbox"/> 14.3%	FACU
4. <i>Acer rubrum</i>	2	<input type="checkbox"/> 14.3%	FAC
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 7 20% of Total Cover: 2.8 14 = Total Cover

Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Cyrilla racemiflora</i>	15	<input checked="" type="checkbox"/> 28.8%	FACW
2. <i>Ilex coriacea</i>	25	<input checked="" type="checkbox"/> 48.1%	FACW
3. <i>Ilex opaca</i>	10	<input type="checkbox"/> 19.2%	FAC
4. <i>Morella cerifera</i>	2	<input type="checkbox"/> 3.8%	FAC
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 26 20% of Total Cover: 10.4 52 = Total Cover

Herb Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Woodwardia virginica</i>	10	<input checked="" type="checkbox"/> 27.8%	OBL
2. <i>Woodwardia areolata</i>	10	<input checked="" type="checkbox"/> 27.8%	OBL
3. <i>Arundinaria tecta</i>	8	<input checked="" type="checkbox"/> 22.2%	FACW
4. <i>Hypericum cistifolium</i>	5	<input type="checkbox"/> 13.9%	FACW
5. <i>Dichantherium scabriusculum</i>	3	<input type="checkbox"/> 8.3%	OBL
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 18 20% of Total Cover: 7.2 36 = Total Cover

Woody Vine Stratum (Plot size:)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	0	<input type="checkbox"/> 0.0%	
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 0 20% of Total Cover: 0 0 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 9 (A)

Total Number of Dominant Species Across All Strata: 10 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 90.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 122 Multiply by: (A)

OBL species 28 x 1 = 28

FACW species 68 x 2 = 136

FAC species 19 x 3 = 57

FACU species 7 x 4 = 28

UPL species 0 x 5 = 0

Column Totals: 122 (A) 249 (B)

Prevalence Index = B/A = 2.041

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0 ¹
 - Problematic Hydrophytic Vegetation ¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **Wet - 8**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-7	10YR	2/1	90					Clay Loam	
7-16	10YR	4/1	80	10YR	3/1	20			

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 11-Oct-16

Applicant/Owner: NASA **State:** MS **Sampling Point:** Wet - 9

Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** 5 28 T 7 s R 16 W

Landform (hillslope, terrace, etc.): **Local relief (concave, convex, none):** **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 29.150" N **Long.:** 89° 36' 46.346" W **Datum:** NAD83

Soil Map Unit Name: HIB, Harleston fine sandy loam, 2 to 5 percent slopes **NWI classification:** PFO 1/4 C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (Inches): _____ Saturation Present? (includes capillary fringe) Yes <input checked="" type="radio"/> No <input type="radio"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Dominant Species?

Sampling Point: **Wet - 9**

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Magnolia virginiana</i>	25	<input checked="" type="checkbox"/> 62.5%	FACW
2. <i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 25.0%	FACW
3. <i>Nyssa sylvatica</i>	5	<input type="checkbox"/> 12.5%	FAC
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	20	20% of Total Cover: 8	40 = Total Cover

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Magnolia virginiana</i>	20	<input checked="" type="checkbox"/> 44.4%	FACW
2. <i>Cyrilla racemiflora</i>	15	<input checked="" type="checkbox"/> 33.3%	FACW
3. <i>Morella cerifera</i>	10	<input checked="" type="checkbox"/> 22.2%	FAC
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	22.5	20% of Total Cover: 9	45 = Total Cover

Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Ilex coriacea</i>	20	<input checked="" type="checkbox"/> 43.5%	FACW
2. <i>Cyrilla racemiflora</i>	15	<input checked="" type="checkbox"/> 32.6%	FACW
3. <i>Ilex vomitoria</i>	10	<input checked="" type="checkbox"/> 21.7%	FAC
4. <i>Morella cerifera</i>	1	<input type="checkbox"/> 2.2%	FAC
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	23	20% of Total Cover: 9.2	46 = Total Cover

Herb Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Dichanthelium scabrusculum</i>	50	<input checked="" type="checkbox"/> 87.7%	OBL
2. <i>Hypericum cistifolium</i>	5	<input type="checkbox"/> 8.8%	FACW
3. <i>Eriocaulon decangulare</i>	2	<input type="checkbox"/> 3.5%	OBL
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	28.5	20% of Total Cover: 11.4	57 = Total Cover

Woody Vine Stratum (Plot size:)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Smilax laurifolia</i>	5	<input checked="" type="checkbox"/> 50.0%	FACW
2. <i>Rubus trivialis</i>	5	<input checked="" type="checkbox"/> 50.0%	FACU
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	5	20% of Total Cover: 2	10 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	10	(A)
Total Number of Dominant Species Across All Strata:	11	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	90.9%	(A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	52	x 1 = 52
FACW species	115	x 2 = 230
FAC species	26	x 3 = 78
FACU species	5	x 4 = 20
UPL species	0	x 5 = 0
Column Totals:	198 (A)	380 (B)
Prevalence Index = B/A =	1.919	

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is > 50%
- 3 - Prevalence Index is ≤ 3.0¹
- Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present?

Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Wet - 9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features			Texture	Remarks
	Color (moist)	3/1	%	Color (moist)	%	Type ¹		
0-5	10YR	3/1	90	10YR	2/1	10		
5-18	10YR	3/2	80	10YR	2/1	20		

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

Stripped/depleted matrix below 5 inches

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation
 City/County: Waveland - Hancock
 Sampling Date: 12-Oct-16
Applicant/Owner: NASA
 State: MS
 Sampling Point: Wet -10
Investigator(s): Lars Larson, Randy Ellis
 Section, Township, Range: S 31 T 7 S R 16 W
Landform (hillslope, terrace, etc.): Swale
 Local relief (concave, convex, none): concave
 Slope: 2.0 % / 1.1 °
Subregion (LRR or MLRA): LRR T
 Lat.: 30° 24' 8.987" N
 Long.: 89° 37' 35.144" W
 Datum: NAD83
Soil Map Unit Name: At, Atmore silt loam, 0 to 2 percent slopes
 NWI classification: PFO 1/4 C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?**
 Are "Normal Circumstances" present? Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?**
 (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks: Natural drain to ephemeral stream approximately 30-40 feet west of access path.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (minimum of 2 required)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)	
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Depth (inches): 9		Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Wet -10

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Magnolia virginiana</i>	5	<input type="checkbox"/> 16.7%	FACW
2. <i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 33.3%	FACW
3. <i>Nyssa sylvatica</i>	15	<input checked="" type="checkbox"/> 50.0%	FAC
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 15 20% of Total Cover: 6 30 = Total Cover			
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 37.0%	FACW
2. <i>Nyssa sylvatica</i>	10	<input checked="" type="checkbox"/> 37.0%	FAC
3. <i>Cyrilla racemiflora</i>	5	<input type="checkbox"/> 18.5%	FACW
4. <i>Pinus elliotii</i>	2	<input type="checkbox"/> 7.4%	FACW
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 13.5 20% of Total Cover: 5.4 27 = Total Cover			
Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Magnolia virginiana</i>	5	<input checked="" type="checkbox"/> 22.7%	FACW
2. <i>Cyrilla racemiflora</i>	10	<input checked="" type="checkbox"/> 45.5%	FACW
3. <i>Morella cerifera</i>	5	<input checked="" type="checkbox"/> 22.7%	FAC
4. <i>Ilex vomitoria</i>	2	<input type="checkbox"/> 9.1%	FAC
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 11 20% of Total Cover: 4.4 22 = Total Cover			
Herb Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Woodwardia areolata</i>	5	<input checked="" type="checkbox"/> 62.5%	OBL
2. <i>Hypericum cistifolium</i>	2	<input checked="" type="checkbox"/> 25.0%	FACW
3. <i>Osmunda regalis</i>	1	<input type="checkbox"/> 12.5%	OBL
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 4 20% of Total Cover: 1.6 8 = Total Cover			
Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Smilax laurifolia</i>	3	<input type="checkbox"/> 100.0%	FACW
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 1.5 20% of Total Cover: 0.6 3 = Total Cover			

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 9 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 6 Multiply by: 37

OBL species: 6 x 1 = 6

FACW species: 52 x 2 = 104

FAC species: 32 x 3 = 96

FACU species: 0 x 4 = 0

UPL species: 0 x 5 = 0

Column Totals: 90 (A) 206 (B)

Prevalence Index = B/A = 2.289

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Wet -10

Profile Description: (Describe to the depth needed to document the Indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR	3/1	100					Muck	
4-16	10YR	3/2	100		5	D	M	Muck	wet-saturated 8-9-inches

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

Muck to sandy mucky mineral. Solid dark gray to brown all the way to base of shovel. Muck at top with more silty clay material toward base of shovel sample.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 12-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Wet - 11
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 31 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Floodplain **Local relief (concave, convex, none):** flat **Slope:** 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 16.775" N **Long.:** 89° 37' 26.844" W **Datum:** NAD83
Soil Map Unit Name: At, Atmore silt loam, 0 to 2 percent slopes **NWI classification:** PFO 1/4 C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Remarks:
 Bottom riparian floodplain area approximately 40 feet from Up-11.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (minimum of 2 required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input checked="" type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)

Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Depth (inches): 11 (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Wet - 11

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Dominant Species?	Indicator Status
1. <i>Pinus elliotii</i>	10	47.6%	<input checked="" type="checkbox"/>	FACW
2. <i>Magnolia virginiana</i>	7	33.3%	<input checked="" type="checkbox"/>	FACW
3. <i>Nyssa sylvatica</i>	3	14.3%	<input type="checkbox"/>	FAC
4. <i>Liquidambar styraciflua</i>	1	4.8%	<input type="checkbox"/>	FAC
5.	0	0.0%	<input type="checkbox"/>	
6.	0	0.0%	<input type="checkbox"/>	
7.	0	0.0%	<input type="checkbox"/>	
8.	0	0.0%	<input type="checkbox"/>	
50% of Total Cover: 10.5	20% of Total Cover: 4.2	21	= Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Dominant Species?	Indicator Status
1. <i>Pinus elliotii</i>	2	9.1%	<input type="checkbox"/>	FACW
2. <i>Magnolia virginiana</i>	5	22.7%	<input checked="" type="checkbox"/>	FACW
3. <i>Liquidambar styraciflua</i>	5	22.7%	<input checked="" type="checkbox"/>	FAC
4. <i>Cyrilla racemiflora</i>	10	45.5%	<input checked="" type="checkbox"/>	FACW
5.	0	0.0%	<input type="checkbox"/>	
6.	0	0.0%	<input type="checkbox"/>	
7.	0	0.0%	<input type="checkbox"/>	
8.	0	0.0%	<input type="checkbox"/>	
50% of Total Cover: 11	20% of Total Cover: 4.4	22	= Total Cover	
Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Dominant Species?	Indicator Status
1. <i>Ilex coriacea</i>	20	40.0%	<input checked="" type="checkbox"/>	FACW
2. <i>Cyrilla racemiflora</i>	30	60.0%	<input checked="" type="checkbox"/>	FACW
3.	0	0.0%	<input type="checkbox"/>	
4.	0	0.0%	<input type="checkbox"/>	
5.	0	0.0%	<input type="checkbox"/>	
6.	0	0.0%	<input type="checkbox"/>	
50% of Total Cover: 25	20% of Total Cover: 10	50	= Total Cover	
Herb Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Dominant Species?	Indicator Status
1. <i>Hypericum cistifolium</i>	3	18.8%	<input type="checkbox"/>	FACW
2. <i>Woodwardia areolata</i>	8	50.0%	<input checked="" type="checkbox"/>	OBL
3. <i>Woodwardia virginica</i>	5	31.3%	<input checked="" type="checkbox"/>	OBL
4.	0	0.0%	<input type="checkbox"/>	
5.	0	0.0%	<input type="checkbox"/>	
6.	0	0.0%	<input type="checkbox"/>	
7.	0	0.0%	<input type="checkbox"/>	
8.	0	0.0%	<input type="checkbox"/>	
9.	0	0.0%	<input type="checkbox"/>	
10.	0	0.0%	<input type="checkbox"/>	
11.	0	0.0%	<input type="checkbox"/>	
12.	0	0.0%	<input type="checkbox"/>	
50% of Total Cover: 8	20% of Total Cover: 3.2	16	= Total Cover	
Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Dominant Species?	Indicator Status
1. <i>Vitis rotundifolia</i>	5	83.3%	<input checked="" type="checkbox"/>	FAC
2. <i>Smilax laurifolia</i>	1	16.7%	<input type="checkbox"/>	FACW
3.	0	0.0%	<input type="checkbox"/>	
4.	0	0.0%	<input type="checkbox"/>	
5.	0	0.0%	<input type="checkbox"/>	
50% of Total Cover: 3	20% of Total Cover: 1.2	6	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 10 (A)

Total Number of Dominant Species Across All Strata: 10 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 115 Multiply by: 2

OBL species 13 x 1 = 13

FACW species 88 x 2 = 176

FAC species 14 x 3 = 42

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 115 (A) 231 (B)

Prevalence Index = B/A = 2.009

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **Wet - 11**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²			
0-4	10YR	3/1	100						Sandy Loam	
4-16	10YR	4/2	90	10YR	6/2	10	D	M	Loamy Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histic Epipedon (A2)	<input checked="" type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)	<input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)	<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)	<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 153B)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Marl (F10) (LRR U)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)	
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)	
<input type="checkbox"/> Sandy Muck Mineral (S1) (LRR O, S)	<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)	
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)	
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)	
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 12-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Wet - 12
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 29 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** flat **Slope:** 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 3.450" N **Long.:** 89° 37' 14.246" W **Datum:** NAD83
Soil Map Unit Name: At, Atmore silt loam, 0 to 2 percent slopes **NWI classification:** PSS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks: This plot is within a Palustrine Scrub-Shrub habitat (low area) roughly 200 feet north of old E-W logging road in middle of AOI.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 Area is dry - normal for this time of year. This is a low flat area that appears to drain north through culver under logging road into ephemeral drain that flows down slope (north) toward Turtleskin Creek riparian buffer.

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Dominant Species?

Sampling Point: Wet - 12

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 40.0%	FACW
2. <i>Nyssa sylvatica</i>	15	<input checked="" type="checkbox"/> 60.0%	FAC
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 12.5 20% of Total Cover: 5 25 = Total Cover			

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	5	<input type="checkbox"/> 14.3%	FACW
2. <i>Nyssa sylvatica</i>	15	<input checked="" type="checkbox"/> 42.9%	FAC
3. <i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 28.6%	FACW
4. <i>Cyrilla racemiflora</i>	5	<input type="checkbox"/> 14.3%	FACW
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 17.5 20% of Total Cover: 7 35 = Total Cover			

Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Cyrilla racemiflora</i>	10	<input checked="" type="checkbox"/> 55.6%	FACW
2. <i>Ilex coriacea</i>	5	<input checked="" type="checkbox"/> 27.8%	FACW
3. <i>Magnolia virginiana</i>	3	<input type="checkbox"/> 16.7%	FACW
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 9 20% of Total Cover: 3.6 18 = Total Cover			

Herb Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Lycopodiella alopecuroides</i>	40	<input checked="" type="checkbox"/> 88.9%	OBL
2. <i>Sarracenia alata</i>	5	<input type="checkbox"/> 11.1%	OBL
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 22.5 20% of Total Cover: 9 45 = Total Cover			

Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	0	<input type="checkbox"/> 0.0%	
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 0 20% of Total Cover: 0 0 = Total Cover			

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 123 (A) Multiply by: 231 (B)

OBL species: 45 x 1 = 45

FACW species: 48 x 2 = 96

FAC species: 30 x 3 = 90

FACU species: 0 x 4 = 0

UPL species: 0 x 5 = 0

Column Totals: 123 (A) 231 (B)

Prevalence Index = B/A = 1.878

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (if observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Wet - 12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²			
0-4	10YR	3/1	100						Loamy Sand	
4-16	10YR	3/2	90	10YR	7/2	10	D	M	Loamy Sand	very fine grained

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 14-Oct-16

Applicant/Owner: NASA **State:** MS **Sampling Point:** Wet - 13

Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 29 T 7 s R 16 W

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 7.308" N **Long.:** 89° 37' 9.843" W **Datum:** NAD83

Soil Map Unit Name: Su, Smithton fine sandy loam, frequently flooded **NWI classification:** PSS 1/4

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks: Hydrology is marginal..... We are in a dry period... last measurable precipitation has been approximately 2 weeks ago.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (minimum of 2 required)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)	
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 			
Remarks: Very little evidence of hydrology.			

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Dominant Species?

Sampling Point: Wet - 13

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 83.3%	FACW
2. <i>Magnolia virginiana</i>	2	<input type="checkbox"/> 16.7%	FACW
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 6	20% of Total Cover: 2.4	12	= Total Cover

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	15	<input checked="" type="checkbox"/> 44.1%	FACW
2. <i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 29.4%	FACW
3. <i>Liquidambar styraciflua</i>	5	<input type="checkbox"/> 14.7%	FAC
4. <i>Persea palustris</i>	1	<input type="checkbox"/> 2.9%	FACW
5. <i>Nyssa sylvatica</i>	3	<input type="checkbox"/> 8.8%	FAC
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 17	20% of Total Cover: 6.8	34	= Total Cover

Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Ilex coriacea</i>	50	<input checked="" type="checkbox"/> 96.2%	FACW
2. <i>Acer rubrum</i>	2	<input type="checkbox"/> 3.8%	FAC
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 26	20% of Total Cover: 10.4	52	= Total Cover

Herb Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Hypericum cistifolium</i>	2	<input checked="" type="checkbox"/> 20.0%	FACW
2. <i>Eriocaulon decangulare</i>	3	<input checked="" type="checkbox"/> 30.0%	OBL
3. <i>Andropogon glomeratus</i>	5	<input checked="" type="checkbox"/> 50.0%	FACW
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 5	20% of Total Cover: 2	10	= Total Cover

Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Smilax rotundifolia</i>	3	<input type="checkbox"/> 75.0%	FAC
2. <i>Smilax laurifolia</i>	1	<input type="checkbox"/> 25.0%	FACW
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 2	20% of Total Cover: 0.8	4	= Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: Multiply by:

OBL species 3 x 1 = 3

FACW species 96 x 2 = 192

FAC species 13 x 3 = 39

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 112 (A) 234 (B)

Prevalence Index = B/A = 2.089

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is > 50%
- 3 - Prevalence Index is ≤ 3.0¹
- Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Wet - 13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR	3/1	100					Sandy Loam	
4-16	10YR	3/2	90	10YR	7/2	10	D M	Loamy Sand	

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marí (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation
 City/County: Waveland - Hancock
 Sampling Date: 14-Oct-16
Applicant/Owner: NASA
 State: MS
 Sampling Point: Wet - 14
Investigator(s): Lars Larson, Randy Ellis
 Section, Township, Range: S 29 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Terrace
 Local relief (concave, convex, none): none
 Slope: 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T
 Lat.: 30° 24' 9.792" N
 Long.: 89° 37' 1.854" W
 Datum: NAD83
Soil Map Unit Name: Su, Smithton fine sandy loam, frequently flooded
 NWI classification: PSS 1/4

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?**
 Are "Normal Circumstances" present? Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?**
 (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:
 Slightly lower wetter area approximatley 70 feet south of Up - 14. Gradual transitional area back toward west.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required: check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (Inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: **Wet - 14**

Tree Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 43.5%	FACW
2.	<i>Magnolia virginiana</i>	7	<input checked="" type="checkbox"/> 30.4%	FACW
3.	<i>Nyssa sylvatica</i>	5	<input checked="" type="checkbox"/> 21.7%	FAC
4.	<i>Liquidambar styraciflua</i>	1	<input type="checkbox"/> 4.3%	FAC
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 11.5		20% of Total Cover: 4.6	23	= Total Cover
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Magnolia virginiana</i>	20	<input checked="" type="checkbox"/> 76.9%	FACW
2.	<i>Pinus elliotii</i>	5	<input type="checkbox"/> 19.2%	FACW
3.	<i>Liquidambar styraciflua</i>	1	<input type="checkbox"/> 3.8%	FAC
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 13		20% of Total Cover: 5.2	26	= Total Cover
Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Ilex coriacea</i>	50	<input checked="" type="checkbox"/> 83.3%	FACW
2.	<i>Ilex glabra</i>	10	<input type="checkbox"/> 16.7%	FACW
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 30		20% of Total Cover: 12	60	= Total Cover
Herb Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Hypericum cistifolium</i>	10	<input checked="" type="checkbox"/> 76.9%	FACW
2.	<i>Eriocaulon decangulare</i>	2	<input type="checkbox"/> 15.4%	OBL
3.	<i>Lycopodiella alopecuroides</i>	1	<input type="checkbox"/> 7.7%	OBL
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
9.		0	<input type="checkbox"/> 0.0%	
10.		0	<input type="checkbox"/> 0.0%	
11.		0	<input type="checkbox"/> 0.0%	
12.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 6.5		20% of Total Cover: 2.6	13	= Total Cover
Woody Vine Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Smilax laurifolia</i>	2	<input type="checkbox"/> 100.0%	FACW
2.		0	<input type="checkbox"/> 0.0%	
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 1		20% of Total Cover: 0.4	2	= Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: Multiply by:

OBL species 3 x 1 = 3

FACW species 114 x 2 = 228

FAC species 7 x 3 = 21

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 124 (A) 252 (B)

Prevalence Index = B/A = 2.032

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Wet - 14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²			
0-4	10YR	3/2	100						Loamy Sand	
4-16	10YR	4/2	95	10YR	5/6	5	C	M	Loamy Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation
 City/County: Waveland - Hancock
 Sampling Date: 14-Oct-16
Applicant/Owner: NASA
 State: MS
 Sampling Point: Wet - 15
Investigator(s): Lars Larson, Randy Ellis
 Section, Township, Range: S 29 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Terrace
 Local relief (concave, convex, none): none
 Slope: 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T
 Lat.: 30° 24'18.728" N
 Long.: 89° 36' 51.786" W
 Datum: NAD83
Soil Map Unit Name: At, Atmore silt loam, 0 to 2 percent slopes
 NWI classification: PSS 1/4

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** Are "Normal Circumstances" present? Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Remarks:
 Saturated soils do not exist, nor does the presence of any other strong hydrology indicators, but it has not rained in over 2 weeks.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Wet - 15

Tree Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 35.7%	FACW
2.	<i>Magnolia virginiana</i>	15	<input checked="" type="checkbox"/> 53.6%	FACW
3.	<i>Nyssa sylvatica</i>	3	<input type="checkbox"/> 10.7%	FAC
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 14		20% of Total Cover: 5.6	28 = Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	3	<input type="checkbox"/> 13.0%	FACW
2.	<i>Magnolia virginiana</i>	15	<input checked="" type="checkbox"/> 65.2%	FACW
3.	<i>Nyssa sylvatica</i>	5	<input checked="" type="checkbox"/> 21.7%	FAC
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 11.5		20% of Total Cover: 4.6	23 = Total Cover	
Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Ilex coriacea</i>	40	<input checked="" type="checkbox"/> 95.2%	FACW
2.	<i>Ilex opaca</i>	2	<input type="checkbox"/> 4.8%	FAC
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 21		20% of Total Cover: 8.4	42 = Total Cover	
Herb Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Lycopodiella alopecuroides</i>	5	<input checked="" type="checkbox"/> 83.3%	OBL
2.	<i>Woodwardia areolata</i>	1	<input type="checkbox"/> 16.7%	OBL
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
9.		0	<input type="checkbox"/> 0.0%	
10.		0	<input type="checkbox"/> 0.0%	
11.		0	<input type="checkbox"/> 0.0%	
12.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 3		20% of Total Cover: 1.2	6 = Total Cover	
Woody Vine Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Smilax laurifolia</i>	1	<input type="checkbox"/> 100.0%	FACW
2.		0	<input type="checkbox"/> 0.0%	
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 0.5		20% of Total Cover: 0.2	1 = Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>6</u>	x 1 = <u>6</u>
FACW species <u>84</u>	x 2 = <u>168</u>
FAC species <u>10</u>	x 3 = <u>30</u>
FACU species <u>0</u>	x 4 = <u>0</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>100</u> (A)	<u>204</u> (B)
Prevalence Index = B/A = <u>2.040</u>	

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0 ¹
 - Problematic Hydrophytic Vegetation ¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Wet - 15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix			Redox Features				Loc ²	Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹				
0-4	10YR	3/2	100						Loamy Sand	
4-12	10YR	4/2	98	10YR	6/6	2	C	M	Loamy Sand	
12-20	10YR	4/3	95	10YR	6/6	5	C	M	Loamy Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

Slight evidence of sandy redox and mottling. However, no soil saturation to 20 inches. Some moisture in deeper interval, but no saturation. Redox features make a very small portion of soil column.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 14-Oct-16

Applicant/Owner: NASA **State:** MS **Sampling Point:** Wet - 16

Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 28 T 7 s R 16 W

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** none **Slope:** 1.0 % / 0.6 °

Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 11.612" N **Long.:** 89° 36' 43.600" W **Datum:** NAD83

Soil Map Unit Name: EsB, Escambia loam, 2 to 5 percent slopes **NWI classification:** PFO 1/4 C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)

Are Vegetation **, Soil** **, or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No

Are Vegetation **, Soil** **, or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Remarks:
Wet area ner former home/settlement - drainage swale/gentle sloped terrain going back to main wetland area to the west.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Depth (inches): 6 Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Wet - 16

Tree Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 20.8%	FACW
2.	<i>Nyssa biflora</i>	20	<input checked="" type="checkbox"/> 41.7%	OBL
3.	<i>Magnolia virginiana</i>	15	<input checked="" type="checkbox"/> 31.3%	FACW
4.	<i>Quercus nigra</i>	3	<input type="checkbox"/> 6.3%	FAC
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 24		20% of Total Cover: 9.6	48	= Total Cover
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Nyssa biflora</i>	15	<input checked="" type="checkbox"/> 62.5%	OBL
2.	<i>Magnolia virginiana</i>	5	<input checked="" type="checkbox"/> 20.8%	FACW
3.	<i>Pinus elliotii</i>	3	<input type="checkbox"/> 12.5%	FACW
4.	<i>Cyrilla racemiflora</i>	1	<input type="checkbox"/> 4.2%	FACW
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 12		20% of Total Cover: 4.8	24	= Total Cover
Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Morella cerifera</i>	15	<input checked="" type="checkbox"/> 55.6%	FAC
2.	<i>Cyrilla racemiflora</i>	10	<input checked="" type="checkbox"/> 37.0%	FACW
3.	<i>Magnolia virginiana</i>	2	<input type="checkbox"/> 7.4%	FACW
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 13.5		20% of Total Cover: 5.4	27	= Total Cover
Herb Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Mikania scandens</i>	10	<input checked="" type="checkbox"/> 47.6%	FACW
2.	<i>Typha latifolia</i>	5	<input checked="" type="checkbox"/> 23.8%	OBL
3.	<i>Centella erecta</i>	3	<input type="checkbox"/> 14.3%	FACW
4.	<i>Juncus validus</i>	2	<input type="checkbox"/> 9.5%	FACW
5.	<i>Woodwardia areolata</i>	1	<input type="checkbox"/> 4.8%	OBL
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
9.		0	<input type="checkbox"/> 0.0%	
10.		0	<input type="checkbox"/> 0.0%	
11.		0	<input type="checkbox"/> 0.0%	
12.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 10.5		20% of Total Cover: 4.2	21	= Total Cover
Woody Vine Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Smilax laurifolia</i>	5	<input checked="" type="checkbox"/> 83.3%	FACW
2.	<i>Vitis rotundifolia</i>	1	<input type="checkbox"/> 16.7%	FAC
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 3		20% of Total Cover: 1.2	6	= Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 10 (A)

Total Number of Dominant Species Across All Strata: 10 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 48 Multiply by:

OBL species	<u>41</u>	x 1 =	<u>41</u>
FACW species	<u>66</u>	x 2 =	<u>132</u>
FAC species	<u>19</u>	x 3 =	<u>57</u>
FACU species	<u>0</u>	x 4 =	<u>0</u>
UPL species	<u>0</u>	x 5 =	<u>0</u>
Column Totals:	<u>126</u> (A)		<u>230</u> (B)

Prevalence Index = B/A = 1.825

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Wet - 16

Profile Description: (Describe to the depth needed to document the Indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR	2/1	100					Muck	
3-16	10YR	3/1	100					/	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 14-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Wet - 17
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 33 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** none **Slope:** 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 23' 45.027" N **Long.:** 89° 36' 40.425" W **Datum:** NAD83
Soil Map Unit Name: Su, Smithton fine sande loam frequently flooded **NWI classification:** PFO 1/4 C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Remarks:
 Area represents a DRY Wetland - Water table has been pulled down most likely by construction of man-made ditch to east and south of location. Classic wetland features (vegetation, moss trim lines, geomorphic positions, but soils are DRY - barely sufficient chroma qualify as wetland.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 Manipulated drained wetland ditch in SE AOI - near area of previous silvicultural land clearing. Man made ditch has pulled down water table apparently.

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Wet - 17

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Nyssa sylvatica</i>	15	<input checked="" type="checkbox"/> 57.7%	FAC
2. <i>Quercus nigra</i>	5	<input type="checkbox"/> 19.2%	FAC
3. <i>Magnolia virginiana</i>	5	<input type="checkbox"/> 19.2%	FACW
4. <i>Taxodium ascendens</i>	1	<input type="checkbox"/> 3.8%	OBL
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	13	20% of Total Cover: 5.2	26 = Total Cover

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Nyssa sylvatica</i>	10	<input checked="" type="checkbox"/> 55.6%	FAC
2. <i>Quercus nigra</i>	5	<input checked="" type="checkbox"/> 27.8%	FAC
3. <i>Cyrilla racemiflora</i>	2	<input type="checkbox"/> 11.1%	FACW
4. <i>Liquidambar styraciflua</i>	1	<input type="checkbox"/> 5.6%	FAC
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	9	20% of Total Cover: 3.6	18 = Total Cover

Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Cyrilla racemiflora</i>	10	<input checked="" type="checkbox"/> 55.6%	FACW
2. <i>Quercus nigra</i>	5	<input checked="" type="checkbox"/> 27.8%	FAC
3. <i>Liquidambar styraciflua</i>	3	<input type="checkbox"/> 16.7%	FAC
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	9	20% of Total Cover: 3.6	18 = Total Cover

Herb Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Arundinaria tecta</i>	15	<input checked="" type="checkbox"/> 88.2%	FACW
2. <i>Woodwardia areolata</i>	2	<input type="checkbox"/> 11.8%	OBL
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	8.5	20% of Total Cover: 3.4	17 = Total Cover

Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Rubus argutus</i>	5	<input checked="" type="checkbox"/> 83.3%	FAC
2. <i>Smilax laurifolia</i>	1	<input type="checkbox"/> 16.7%	FACW
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	3	20% of Total Cover: 1.2	6 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 85 Multiply by: (A)

OBL species 3 x 1 = 3

FACW species 33 x 2 = 66

FAC species 49 x 3 = 147

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 85 (A) 216 (B)

Prevalence Index = B/A = 2.541

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0 ¹
 - Problematic Hydrophytic Vegetation ¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **Wet - 17**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR	4/2	100					Silt Loam	
6-16	10YR	6/3	100						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

Soil matrices appear to have (at one time) been sufficiently stripped of organic matter due to wet weather drainage through area, but dry weather conditions only display higher value colors than what are typically seen in a wetland but lower chromas seem to meet the criteria.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation
 City/County: Waveland - Hancock
 Sampling Date: 18-Oct-16
Applicant/Owner: NASA
 State: MS
 Sampling Point: Wet - 18
Investigator(s): Lars Larson, Randy Ellis
 Section, Township, Range: S 29 T 7 s R 16 W
Landform (hillslope, terrace, etc.):
 Local relief (concave, convex, none): none
 Slope: 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T
 Lat.: 30° 24' 45.183" N
 Long.: 89° 37' 38.549" W
 Datum: NAD83
Soil Map Unit Name: Su, Smithton fine sandy loam, frequently flooded
 NWI classification: PFO 1/4 C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?**
 Are "Normal Circumstances" present? Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?**
 (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks: Low drainage area approximately 50 feet east of Up - 18.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input checked="" type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input checked="" type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Wet - 18

Tree Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Nyssa biflora</i>	15	<input checked="" type="checkbox"/> 65.2%	OBL
2.	<i>Nyssa sylvatica</i>	5	<input checked="" type="checkbox"/> 21.7%	FAC
3.	<i>Pinus elliotii</i>	2	<input type="checkbox"/> 8.7%	FACW
4.	<i>Cyrilla racemiflora</i>	1	<input type="checkbox"/> 4.3%	FACW
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 11.5		20% of Total Cover: 4.6	23 = Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Nyssa biflora</i>	15	<input checked="" type="checkbox"/> 53.6%	OBL
2.	<i>Cyrilla racemiflora</i>	10	<input checked="" type="checkbox"/> 35.7%	FACW
3.	<i>Pinus elliotii</i>	3	<input type="checkbox"/> 10.7%	FACW
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 14		20% of Total Cover: 5.6	28 = Total Cover	
Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Cyrilla racemiflora</i>	10	<input checked="" type="checkbox"/> 62.5%	FACW
2.	<i>Persea palustris</i>	3	<input type="checkbox"/> 18.8%	FACW
3.	<i>Ilex glabra</i>	2	<input type="checkbox"/> 12.5%	FACW
4.	<i>Ilex opaca</i>	1	<input type="checkbox"/> 6.3%	FAC
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 8		20% of Total Cover: 3.2	16 = Total Cover	
Herb Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Woodwardia areolata</i>	10	<input checked="" type="checkbox"/> 58.8%	OBL
2.	<i>Arundinaria tecta</i>	5	<input checked="" type="checkbox"/> 29.4%	FACW
3.	<i>Sarracenia flava</i>	2	<input type="checkbox"/> 11.8%	OBL
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
9.		0	<input type="checkbox"/> 0.0%	
10.		0	<input type="checkbox"/> 0.0%	
11.		0	<input type="checkbox"/> 0.0%	
12.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 8.5		20% of Total Cover: 3.4	17 = Total Cover	
Woody Vine Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Smilax laurifolia</i>	1	<input type="checkbox"/> 100.0%	FACW
2.		0	<input type="checkbox"/> 0.0%	
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 0.5		20% of Total Cover: 0.2	1 = Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species <u>42</u>	x 1 =	<u>42</u>
FACW species <u>37</u>	x 2 =	<u>74</u>
FAC species <u>6</u>	x 3 =	<u>18</u>
FACU species <u>0</u>	x 4 =	<u>0</u>
UPL species <u>0</u>	x 5 =	<u>0</u>
Column Totals:	85 (A)	134 (B)

Prevalence Index = B/A = 1.576

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0 ¹
 - Problematic Hydrophytic Vegetation ¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **Wet - 18**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)		%	Type ¹	Loc ²		
0-4	10YR	3/1	90	10YR	7/2	10	D	M	Loamy Sand	
4-20	10YR	3/2	85	10YR	7/2	20	D	M	Sandy Loam	

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

Depleted - stripped matrix in lower portion of sample. Redox concentrations also encountered.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 18-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Wet -19
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 29 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Swale **Local relief (concave, convex, none):** none **Slope:** 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 42.655" N **Long.:** 89° 37' 2.924" W **Datum:** NAD83
Soil Map Unit Name: Su, Smithton fine sandy loam, frequently flooded **NWI classification:** PFO 1/4 C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Remarks:
 Bottom area of drainage way between railbeds - this areas had been altered and water connection apparently disrupted, but not enough to keep it from being wet.

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<u>Secondary Indicators (minimum of 2 required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Wet -19

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 50.0%	FACW
2. <i>Nyssa biflora</i>	5	<input checked="" type="checkbox"/> 25.0%	OBL
3. <i>Pinus elliotii</i>	3	<input type="checkbox"/> 15.0%	FACW
4. <i>Acer rubrum</i>	2	<input type="checkbox"/> 10.0%	FAC
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 10	20% of Total Cover: 4	20	= Total Cover

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 40.0%	FACW
2. <i>Nyssa biflora</i>	10	<input checked="" type="checkbox"/> 40.0%	OBL
3. <i>Cyrilla racemiflora</i>	5	<input checked="" type="checkbox"/> 20.0%	FACW
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 12.5	20% of Total Cover: 5	25	= Total Cover

Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Cyrilla racemiflora</i>	25	<input checked="" type="checkbox"/> 67.6%	FACW
2. <i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 27.0%	FACW
3. <i>Ilex coriacea</i>	2	<input type="checkbox"/> 5.4%	FACW
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 18.5	20% of Total Cover: 7.4	37	= Total Cover

Herb Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Woodwardia virginica</i>	20	<input checked="" type="checkbox"/> 71.4%	OBL
2. <i>Woodwardia areolata</i>	5	<input type="checkbox"/> 17.9%	OBL
3. <i>Arundinaria tecta</i>	3	<input type="checkbox"/> 10.7%	FACW
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 14	20% of Total Cover: 5.6	28	= Total Cover

Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Smilax laurifolia</i>	1	<input type="checkbox"/> 100.0%	FACW
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 0.5	20% of Total Cover: 0.2	1	= Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 111 (A) Multiply by: 184 (B)

OBL species 40 x 1 = 40

FACW species 69 x 2 = 138

FAC species 2 x 3 = 6

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 111 (A) 184 (B)

Prevalence Index = B/A = 1.658

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0 ¹

Problematic Hydrophytic Vegetation ¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Wet -19

Profile Description: (Describe to the depth needed to document the Indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²			
0-6	10YR	3/1	100						Sandy Loam	
6-16	10YR	3/2	90	10YR	6/2	10	D	M	Sandy Loam	

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 18-Oct-16

Applicant/Owner: NASA **State:** MS **Sampling Point:** Wet - 21

Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 29 T 7 s R 16 W

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** **Slope:** 2.0 % / 1.1 °

Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 24.006" N **Long.:** 89° 37' 15.980" W **Datum:** NAD83

Soil Map Unit Name: Su, Smithton fine sandy loam, frequently flooded **NWI classification:** PFO 1/4 C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Remarks:
Just downslope from railspur in North/NW part of AOI. Nice transitional area from upland to riparian buffer above TS Creek to the south.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input checked="" type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Wet - 21

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Dominant Species?	Indicator Status
1. <i>Pinus elliotii</i>	5	<input type="checkbox"/> 16.1%		FACW
2. <i>Nyssa sylvatica</i>	10	<input checked="" type="checkbox"/> 32.3%		FAC
3. <i>Magnolia virginiana</i>	15	<input checked="" type="checkbox"/> 48.4%		FACW
4. <i>Taxodium ascendens</i>	1	<input type="checkbox"/> 3.2%		OBL
5.	0	<input type="checkbox"/> 0.0%		
6.	0	<input type="checkbox"/> 0.0%		
7.	0	<input type="checkbox"/> 0.0%		
8.	0	<input type="checkbox"/> 0.0%		
50% of Total Cover: 15.5 20% of Total Cover: 6.2 31 = Total Cover				
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Dominant Species?	Indicator Status
1. <i>Taxodium ascendens</i>	1	<input type="checkbox"/> 3.8%		OBL
2. <i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 38.5%		FACW
3. <i>Cyrilla racemiflora</i>	10	<input checked="" type="checkbox"/> 38.5%		FACW
4. <i>Acer rubrum</i>	5	<input type="checkbox"/> 19.2%		FAC
5.	0	<input type="checkbox"/> 0.0%		
6.	0	<input type="checkbox"/> 0.0%		
7.	0	<input type="checkbox"/> 0.0%		
8.	0	<input type="checkbox"/> 0.0%		
50% of Total Cover: 13 20% of Total Cover: 5.2 26 = Total Cover				
Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Dominant Species?	Indicator Status
1. <i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 33.3%		FACW
2. <i>Acer rubrum</i>	5	<input type="checkbox"/> 16.7%		FAC
3. <i>Cyrilla racemiflora</i>	5	<input type="checkbox"/> 16.7%		FACW
4. <i>Ilex coriacea</i>	10	<input checked="" type="checkbox"/> 33.3%		FACW
5.	0	<input type="checkbox"/> 0.0%		
6.	0	<input type="checkbox"/> 0.0%		
50% of Total Cover: 15 20% of Total Cover: 6 30 = Total Cover				
Herb Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Dominant Species?	Indicator Status
1. <i>Woodwardia areolata</i>	5	<input checked="" type="checkbox"/> 21.7%		OBL
2. <i>Woodwardia virginica</i>	15	<input checked="" type="checkbox"/> 65.2%		OBL
3. <i>Osmunda regalis</i>	2	<input type="checkbox"/> 8.7%		OBL
4. <i>Sarracenia alabamensis</i>	1	<input type="checkbox"/> 4.3%		OBL
5.	0	<input type="checkbox"/> 0.0%		
6.	0	<input type="checkbox"/> 0.0%		
7.	0	<input type="checkbox"/> 0.0%		
8.	0	<input type="checkbox"/> 0.0%		
9.	0	<input type="checkbox"/> 0.0%		
10.	0	<input type="checkbox"/> 0.0%		
11.	0	<input type="checkbox"/> 0.0%		
12.	0	<input type="checkbox"/> 0.0%		
50% of Total Cover: 11.5 20% of Total Cover: 4.6 23 = Total Cover				
Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Dominant Species?	Indicator Status
1. <i>Vitis rotundifolia</i>	2	<input checked="" type="checkbox"/> 28.6%		FAC
2. <i>Smilax laurifolia</i>	5	<input checked="" type="checkbox"/> 71.4%		FACW
3.	0	<input type="checkbox"/> 0.0%		
4.	0	<input type="checkbox"/> 0.0%		
5.	0	<input type="checkbox"/> 0.0%		
50% of Total Cover: 3.5 20% of Total Cover: 1.4 7 = Total Cover				

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 10 (A)

Total Number of Dominant Species Across All Strata: 10 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 117 (A) Multiply by: 2 = 234 (B)

Prevalence Index = B/A = 1.974

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Wet - 21

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²			
0-5	10YR	3/1	100						Fine Loamy Sand	
5-16	10YR	3/2	95	10YR	7/2	5	D	M	Loamy Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 18-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Wet - 22
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 29 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** concave **Slope:** 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 28.866" N **Long.:** 89° 37' 9.203" W **Datum:** NAD83
Soil Map Unit Name: Su, Smithton fine sandy loam, frequently flooded **NWI classification:** PFO 1/4 C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks: Bottom Area within riparian buffer zone approximately 50 feet south of Up-22.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input checked="" type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Wet - 22

Tree Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	5	<input type="checkbox"/> 17.9%	FACW
2.	<i>Nyssa biflora</i>	10	<input checked="" type="checkbox"/> 35.7%	OBL
3.	<i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 35.7%	FACW
4.	<i>Acer campestre</i>	2	<input type="checkbox"/> 7.1%	UPL
5.	<i>Taxodium ascendens</i>	1	<input type="checkbox"/> 3.6%	OBL
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 14		20% of Total Cover: 5.6	28	= Total Cover
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	1	<input type="checkbox"/> 5.3%	FACW
2.	<i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 52.6%	FACW
3.	<i>Nyssa biflora</i>	7	<input checked="" type="checkbox"/> 36.8%	OBL
4.	<i>Taxodium ascendens</i>	1	<input type="checkbox"/> 5.3%	OBL
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 9.5		20% of Total Cover: 3.8	19	= Total Cover
Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Ilex coriacea</i>	15	<input checked="" type="checkbox"/> 57.7%	FACW
2.	<i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 38.5%	FACW
3.	<i>Persea palustris</i>	1	<input type="checkbox"/> 3.8%	FACW
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 13		20% of Total Cover: 5.2	26	= Total Cover
Herb Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Sarracenia alabamensis</i>	7	<input checked="" type="checkbox"/> 31.8%	OBL
2.	<i>Woodwardia areolata</i>	10	<input checked="" type="checkbox"/> 45.5%	OBL
3.	<i>Woodwardia virginica</i>	5	<input checked="" type="checkbox"/> 22.7%	OBL
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
9.		0	<input type="checkbox"/> 0.0%	
10.		0	<input type="checkbox"/> 0.0%	
11.		0	<input type="checkbox"/> 0.0%	
12.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 11		20% of Total Cover: 4.4	22	= Total Cover
Woody Vine Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Smilax laurifolia</i>	2	<input type="checkbox"/> 100.0%	FACW
2.		0	<input type="checkbox"/> 0.0%	
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 1		20% of Total Cover: 0.4	2	= Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 9 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 97 (A) Multiply by:

OBL species	<u>41</u>	x 1 =	<u>41</u>
FACW species	<u>54</u>	x 2 =	<u>108</u>
FAC species	<u>0</u>	x 3 =	<u>0</u>
FACU species	<u>0</u>	x 4 =	<u>0</u>
UPL species	<u>2</u>	x 5 =	<u>10</u>
Column Totals:	<u>97</u>	(A)	<u>159</u> (B)

Prevalence Index = B/A = 1.639

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **Wet - 22**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²			
0-4	10YR	3/1	100						Loamy Sand	
4-16	10YR	3/2	90	10YR	7/2	10	D	M	Loamy Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth: (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 19-Oct-16

Applicant/Owner: NASA **State:** MS **Sampling Point:** Wet - 23

Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 29 T 7 S R 16 W

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** concave **Slope:** 0.0 % / 0.0 %

Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 25.915" N **Long.:** 89° 37' 21.222" W **Datum:** NAD83

Soil Map Unit Name: Su, Smithton fine sandy loam, frequently flooded **NWI classification:** PFO 1/4 C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks: Lower drain area approximately 50-50-feet east of Up-23	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<u>Secondary Indicators (minimum of 2 required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 Depletions observed in 4-16 inch interval. Some (very little) oxidized root channels.

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Wet - 23

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Nyssa sylvatica</i>	10	<input checked="" type="checkbox"/> 37.0%	FAC
2. <i>Magnolia virginiana</i>	15	<input checked="" type="checkbox"/> 55.6%	FACW
3. <i>Liquidambar styraciflua</i>	2	<input type="checkbox"/> 7.4%	FAC
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 13.5 20% of Total Cover: 5.4 27 = Total Cover

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Magnolia virginiana</i>	15	<input checked="" type="checkbox"/> 41.7%	FACW
2. <i>Nyssa sylvatica</i>	10	<input checked="" type="checkbox"/> 27.8%	FAC
3. <i>Pinus elliotii</i>	1	<input type="checkbox"/> 2.8%	FACW
4. <i>Cyrilla racemiflora</i>	10	<input checked="" type="checkbox"/> 27.8%	FACW
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 18 20% of Total Cover: 7.2 36 = Total Cover

Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Cyrilla racemiflora</i>	15	<input checked="" type="checkbox"/> 50.0%	FACW
2. <i>Morella cerifera</i>	10	<input checked="" type="checkbox"/> 33.3%	FAC
3. <i>Ilex coriacea</i>	5	<input type="checkbox"/> 16.7%	FACW
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 15 20% of Total Cover: 6 30 = Total Cover

Herb Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Helianthus angustifolius</i>	3	<input checked="" type="checkbox"/> 37.5%	FACW
2. <i>Eriocaulon decangulare</i>	1	<input type="checkbox"/> 12.5%	OBL
3. <i>Hypericum cistifolium</i>	2	<input checked="" type="checkbox"/> 25.0%	FACW
4. <i>Woodwardia areolata</i>	2	<input checked="" type="checkbox"/> 25.0%	OBL
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 4 20% of Total Cover: 1.6 8 = Total Cover

Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Smilax laurifolia</i>	1	<input type="checkbox"/> 100.0%	FACW
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 0.5 20% of Total Cover: 0.2 1 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 10 (A)

Total Number of Dominant Species Across All Strata: 10 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 3 Multiply by: 1

OBL species 3 x 1 = 3

FACW species 67 x 2 = 134

FAC species 32 x 3 = 96

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 102 (A) 233 (B)

Prevalence Index = B/A = 2.284

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0 ¹
 - Problematic Hydrophytic Vegetation ¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Wet - 23

Profile Description: (Describe to the depth needed to document the Indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²			
0-5	10YR	3/2	95	10YR	6/2	5	D	M	Loamy Sand	
5-16	10YR	4/2	90	10YR	6/2	10	D	M	Loamy Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 19-Oct-16

Applicant/Owner: NASA **State:** MS **Sampling Point:** Wet - 25

Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 29 T 7 s R 16 W

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** none **Slope:** 2.0 % / 1.1 °

Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 38.761" N **Long.:** 89° 37' 32.356" W **Datum:** NAD83

Soil Map Unit Name: Su, Smithton fine sandy loam, frequently flooded **NWI classification:** PFO 1/4 C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Hydric Soil Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	
Wetland Hydrology Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	

Remarks:
drainage slough approximately 250 feet south of Turtleskin Creek access road. This is a south to north drainage feature feeding TS creek.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)
Primary Indicators (minimum of one required; check all that apply)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input checked="" type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input checked="" type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction In Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)
<input checked="" type="checkbox"/> Water-Stained Leaves (B9)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)

Field Observations:		Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
Surface Water Present?	Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	
Water Table Present?	Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	
Saturation Present? (includes capillary fringe)	Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: **Wet - 25**

Tree Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	5	<input checked="" type="checkbox"/> 83.3%	FACW
2.	<i>Magnolia virginiana</i>	1	<input type="checkbox"/> 16.7%	FACW
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 3		20% of Total Cover: 1.2	6	= Total Cover
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	15	<input checked="" type="checkbox"/> 60.0%	FACW
2.	<i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 40.0%	FACW
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 12.5		20% of Total Cover: 5	25	= Total Cover
Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Magnolia virginiana</i>	30	<input checked="" type="checkbox"/> 69.8%	FACW
2.	<i>Ilex coriacea</i>	10	<input checked="" type="checkbox"/> 23.3%	FACW
3.	<i>Liquidambar styraciflua</i>	2	<input type="checkbox"/> 4.7%	FAC
4.	<i>Acer rubrum</i>	1	<input type="checkbox"/> 2.3%	FAC
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 21.5		20% of Total Cover: 8.6	43	= Total Cover
Herb Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Arundinaria tecta</i>	15	<input checked="" type="checkbox"/> 60.0%	FACW
2.	<i>Scirpus atrocinctus</i>	2	<input type="checkbox"/> 8.0%	FACW
3.	<i>Woodwardia areolata</i>	5	<input checked="" type="checkbox"/> 20.0%	OBL
4.	<i>Osmunda regalis</i>	1	<input type="checkbox"/> 4.0%	OBL
5.	<i>Juncus polycephalos</i>	2	<input type="checkbox"/> 8.0%	OBL
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
9.		0	<input type="checkbox"/> 0.0%	
10.		0	<input type="checkbox"/> 0.0%	
11.		0	<input type="checkbox"/> 0.0%	
12.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 12.5		20% of Total Cover: 5	25	= Total Cover
Woody Vine Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Smilax laurifolia</i>	2	<input type="checkbox"/> 100.0%	FACW
2.		0	<input type="checkbox"/> 0.0%	
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 1		20% of Total Cover: 0.4	2	= Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 101 (A) Multiply by:

OBL species 8 x 1 = 8

FACW species 90 x 2 = 180

FAC species 3 x 3 = 9

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 101 (A) 197 (B)

Prevalence Index = B/A = 1.950

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Wet - 25

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR	3/2	97	10YR	7/2	3	D	M	Loamy Sand
4-16	10YR	4/2	95	10YR	7/2	5	D	M	Loamy Sand

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 19-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Wet - 26
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 29 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** flat **Slope:** 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 34.974" N **Long.:** 89° 37' 44.173" W **Datum:** NAD83
Soil Map Unit Name: At, Atmore silt loam, 0 to 2 percent slopes **NWI classification:** PFO 1/4 C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks: Lower end of drain approximately 300 to 400 feet East of Railspur in Northern part of AOI.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input checked="" type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Depth (inches): <u>11</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Wet - 26

		Dominant Species?		Indicator Status	
		Absolute % Cover	Rel. Strat. Cover		
Tree Stratum (Plot size: <u>30 m</u>)					
1.	<i>Pinus elliotii</i>	5	<input checked="" type="checkbox"/> 22.7%	FACW	
2.	<i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 45.5%	FACW	
3.	<i>Liriodendron tulipifera</i>	2	<input type="checkbox"/> 9.1%	FACU	
4.	<i>Nyssa sylvatica</i>	5	<input checked="" type="checkbox"/> 22.7%	FAC	
5.		0	<input type="checkbox"/> 0.0%		
6.		0	<input type="checkbox"/> 0.0%		
7.		0	<input type="checkbox"/> 0.0%		
8.		0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>11</u>		20% of Total Cover: <u>4.4</u>	<u>22</u>	= Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size: <u>30 m</u>)					
1.	<i>Nyssa sylvatica</i>	10	<input checked="" type="checkbox"/> 50.0%	FAC	
2.	<i>Magnolia virginiana</i>	5	<input checked="" type="checkbox"/> 25.0%	FACW	
3.	<i>Pinus elliotii</i>	2	<input type="checkbox"/> 10.0%	FACW	
4.		3	<input type="checkbox"/> 15.0%		
5.		0	<input type="checkbox"/> 0.0%		
6.		0	<input type="checkbox"/> 0.0%		
7.		0	<input type="checkbox"/> 0.0%		
8.		0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>10</u>		20% of Total Cover: <u>4</u>	<u>20</u>	= Total Cover	
Shrub Stratum (Plot size: <u>30 m</u>)					
1.	<i>Ilex coriacea</i>	20	<input checked="" type="checkbox"/> 55.6%	FACW	
2.	<i>Cyrilla racemiflora</i>	10	<input checked="" type="checkbox"/> 27.8%	FACW	
3.	<i>Ilex vomitoria</i>	1	<input type="checkbox"/> 2.8%	FAC	
4.	<i>Ilex opaca</i>	5	<input type="checkbox"/> 13.9%	FAC	
5.		0	<input type="checkbox"/> 0.0%		
6.		0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>18</u>		20% of Total Cover: <u>7.2</u>	<u>36</u>	= Total Cover	
Herb Stratum (Plot size: <u>30 m</u>)					
1.	<i>Arundinaria tecta</i>	10	<input checked="" type="checkbox"/> 71.4%	FACW	
2.	<i>Sarracenia alabamensis</i>	2	<input type="checkbox"/> 14.3%	OBL	
3.	<i>Scirpus atrocinctus</i>	1	<input type="checkbox"/> 7.1%	FACW	
4.	<i>Woodwardia virginica</i>	1	<input type="checkbox"/> 7.1%	OBL	
5.		0	<input type="checkbox"/> 0.0%		
6.		0	<input type="checkbox"/> 0.0%		
7.		0	<input type="checkbox"/> 0.0%		
8.		0	<input type="checkbox"/> 0.0%		
9.		0	<input type="checkbox"/> 0.0%		
10.		0	<input type="checkbox"/> 0.0%		
11.		0	<input type="checkbox"/> 0.0%		
12.		0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>7</u>		20% of Total Cover: <u>2.8</u>	<u>14</u>	= Total Cover	
Woody Vine Stratum (Plot size: <u>30 m</u>)					
1.	<i>Smilax laurifolia</i>	2	<input type="checkbox"/> 100.0%	FACW	
2.		0	<input type="checkbox"/> 0.0%		
3.		0	<input type="checkbox"/> 0.0%		
4.		0	<input type="checkbox"/> 0.0%		
5.		0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>1</u>		20% of Total Cover: <u>0.4</u>	<u>2</u>	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>3</u>	x 1 = <u>3</u>
FACW species <u>65</u>	x 2 = <u>130</u>
FAC species <u>21</u>	x 3 = <u>63</u>
FACU species <u>2</u>	x 4 = <u>8</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals:	<u>91</u> (A) <u>204</u> (B)

Prevalence Index = B/A = 2.242

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test Is > 50%

3 - Prevalence Index is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Wet - 26

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR	5/2	100					Loamy Sand	
5-16	10YR	6/2	95	10YR	7/2	5	D M	Loamy Sand	

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 19-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Wet - 27
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 29 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** none **Slope:** 1.0 % / 0.6 °
Subregion (LRR or MLRA): LRR T **Lat:** 30° 24' 26.188" N **Long.:** 89° 37' 37.076" W **Datum:** NAD83
Soil Map Unit Name: Su, Smithton fine sandy loam, frequently flooded **NWI classification:** PFO 1/4 C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	
Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	

Remarks:
 Head of drainage feature about 50 feet west - northwest of Up-27.

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (minimum of 2 required)
Primary Indicators (minimum of one required; check all that apply)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain In Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input checked="" type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)

Field Observations:

Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches): _____	
Saturation Present? (Includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches): _____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 Fairly dry soil conditions given time of year. No strong redoximorphic features noted in soil profile, but surface hydrological indicators are present.

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: **Wet - 27**

		Dominant Species?					
Tree Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status	Dominance Test worksheet:			
1. <i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 40.0%	FACW	Number of Dominant Species That are OBL, FACW, or FAC: <u>9</u> (A)			
2. <i>Nyssa sylvatica</i>	10	<input checked="" type="checkbox"/> 40.0%	FAC	Total Number of Dominant Species Across All Strata: <u>9</u> (B)			
3. <i>Pinus elliotii</i>	5	<input checked="" type="checkbox"/> 20.0%	FACW	Percent of dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)			
4.	0	<input type="checkbox"/> 0.0%					
5.	0	<input type="checkbox"/> 0.0%					
6.	0	<input type="checkbox"/> 0.0%					
7.	0	<input type="checkbox"/> 0.0%					
8.	0	<input type="checkbox"/> 0.0%					
50% of Total Cover: <u>12.5</u> 20% of Total Cover: <u>5</u> <u>25</u> = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>2</u> x 1 = <u>2</u> FACW species <u>101</u> x 2 = <u>202</u> FAC species <u>19</u> x 3 = <u>57</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>122</u> (A) <u>261</u> (B) Prevalence Index = B/A = <u>2.139</u>			
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status				
1. <i>Magnolia virginiana</i>	15	<input checked="" type="checkbox"/> 46.9%	FACW				
2. <i>Cyrilla racemiflora</i>	10	<input checked="" type="checkbox"/> 31.3%	FACW				
3. <i>Nyssa sylvatica</i>	5	<input type="checkbox"/> 15.6%	FAC				
4. <i>Acer rubrum</i>	2	<input type="checkbox"/> 6.3%	FAC				
5.	0	<input type="checkbox"/> 0.0%					
6.	0	<input type="checkbox"/> 0.0%					
7.	0	<input type="checkbox"/> 0.0%					
8.	0	<input type="checkbox"/> 0.0%					
50% of Total Cover: <u>16</u> 20% of Total Cover: <u>6.4</u> <u>32</u> = Total Cover							
Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is > 50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.			
1. <i>Ilex coriacea</i>	30	<input checked="" type="checkbox"/> 52.6%	FACW				
2. <i>Cyrilla racemiflora</i>	15	<input checked="" type="checkbox"/> 26.3%	FACW				
3. <i>Magnolia virginiana</i>	10	<input type="checkbox"/> 17.5%	FACW				
4. <i>Ilex opaca</i>	2	<input type="checkbox"/> 3.5%	FAC				
5.	0	<input type="checkbox"/> 0.0%					
6.	0	<input type="checkbox"/> 0.0%					
50% of Total Cover: <u>28.5</u> 20% of Total Cover: <u>11.4</u> <u>57</u> = Total Cover							
Herb Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status				
1. <i>Arundinaria tecta</i>	5	<input checked="" type="checkbox"/> 71.4%	FACW				
2. <i>Woodwardia areolata</i>	2	<input checked="" type="checkbox"/> 28.6%	OBL				
3.	0	<input type="checkbox"/> 0.0%					
4.	0	<input type="checkbox"/> 0.0%					
5.	0	<input type="checkbox"/> 0.0%					
6.	0	<input type="checkbox"/> 0.0%					
7.	0	<input type="checkbox"/> 0.0%					
8.	0	<input type="checkbox"/> 0.0%					
9.	0	<input type="checkbox"/> 0.0%					
10.	0	<input type="checkbox"/> 0.0%					
11.	0	<input type="checkbox"/> 0.0%					
12.	0	<input type="checkbox"/> 0.0%					
50% of Total Cover: <u>3.5</u> 20% of Total Cover: <u>1.4</u> <u>7</u> = Total Cover							
Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status	Definition of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall. Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine - All woody vines, regardless of height.			
1. <i>Smilax laurifolia</i>	1	<input type="checkbox"/> 100.0%	FACW				
2.	0	<input type="checkbox"/> 0.0%					
3.	0	<input type="checkbox"/> 0.0%					
4.	0	<input type="checkbox"/> 0.0%					
5.	0	<input type="checkbox"/> 0.0%					
50% of Total Cover: <u>0.5</u> 20% of Total Cover: <u>0.2</u> <u>1</u> = Total Cover				Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>			

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Wet - 27

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR	5/1	100					Loamy Sand	
5-16	10YR	5/2	95	10YR	7/2	5	C M	Loamy Sand	

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 21-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Wet - 29
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 31 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Floodplain **Local relief (concave, convex, none):** none **Slope:** 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 23.925" N **Long.:** 89° 37' 49.957" W **Datum:** NAD83
Soil Map Unit Name: Su, Smithton fine sandy loam, frequently flooded **NWI classification:** PFO 1/4 C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks: Lower bottom area just up from UP - 20 approximately 50 feet.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (minimum of 2 required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input checked="" type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (Includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: Lower area within a drain with plenty of secondary hydrological indicators.		

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Wet - 29

		Dominant Species?		Indicator Status	
		Absolute % Cover	Rel.Strat. Cover		
Tree Stratum (Plot size: 30 m)					
1.	<i>Pinus elliotii</i>	2	<input type="checkbox"/> 11.1%	FACW	
2.	<i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 55.6%	FACW	
3.	<i>Acer rubrum</i>	5	<input checked="" type="checkbox"/> 27.8%	FAC	
4.	<i>Nyssa biflora</i>	1	<input type="checkbox"/> 5.6%	OBL	
5.		0	<input type="checkbox"/> 0.0%		
6.		0	<input type="checkbox"/> 0.0%		
7.		0	<input type="checkbox"/> 0.0%		
8.		0	<input type="checkbox"/> 0.0%		
50% of Total Cover: 9		20% of Total Cover: 3.6	18	= Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)					
1.	<i>Magnolia virginiana</i>	5	<input type="checkbox"/> 18.5%	FACW	
2.	<i>Acer rubrum</i>	10	<input checked="" type="checkbox"/> 37.0%	FAC	
3.	<i>Cyrilla racemiflora</i>	10	<input checked="" type="checkbox"/> 37.0%	FACW	
4.	<i>Nyssa biflora</i>	2	<input type="checkbox"/> 7.4%	OBL	
5.		0	<input type="checkbox"/> 0.0%		
6.		0	<input type="checkbox"/> 0.0%		
7.		0	<input type="checkbox"/> 0.0%		
8.		0	<input type="checkbox"/> 0.0%		
50% of Total Cover: 13.5		20% of Total Cover: 5.4	27	= Total Cover	
Shrub Stratum (Plot size: 30 m)					
1.	<i>Magnolia virginiana</i>	5	<input checked="" type="checkbox"/> 20.0%	FACW	
2.	<i>Cyrilla racemiflora</i>	10	<input checked="" type="checkbox"/> 40.0%	FACW	
3.	<i>Ilex coriacea</i>	10	<input checked="" type="checkbox"/> 40.0%	FACW	
4.		0	<input type="checkbox"/> 0.0%		
5.		0	<input type="checkbox"/> 0.0%		
6.		0	<input type="checkbox"/> 0.0%		
50% of Total Cover: 12.5		20% of Total Cover: 5	25	= Total Cover	
Herb Stratum (Plot size: 30 m)					
1.	<i>Woodwardia areolata</i>	5	<input checked="" type="checkbox"/> 41.7%	OBL	
2.	<i>Osmunda regalis</i>	3	<input checked="" type="checkbox"/> 25.0%	OBL	
3.	<i>Arundinaria tecta</i>	2	<input type="checkbox"/> 16.7%	FACW	
4.	<i>Dichanthelium scabrusculum</i>	2	<input type="checkbox"/> 16.7%	OBL	
5.		0	<input type="checkbox"/> 0.0%		
6.		0	<input type="checkbox"/> 0.0%		
7.		0	<input type="checkbox"/> 0.0%		
8.		0	<input type="checkbox"/> 0.0%		
9.		0	<input type="checkbox"/> 0.0%		
10.		0	<input type="checkbox"/> 0.0%		
11.		0	<input type="checkbox"/> 0.0%		
12.		0	<input type="checkbox"/> 0.0%		
50% of Total Cover: 6		20% of Total Cover: 2.4	12	= Total Cover	
Woody Vine Stratum (Plot size: 30 m)					
1.	<i>Smilax laurifolia</i>	1	<input type="checkbox"/> 100.0%	FACW	
2.		0	<input type="checkbox"/> 0.0%		
3.		0	<input type="checkbox"/> 0.0%		
4.		0	<input type="checkbox"/> 0.0%		
5.		0	<input type="checkbox"/> 0.0%		
50% of Total Cover: 0.5		20% of Total Cover: 0.2	1	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 9 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 13 Multiply by: 13

OBL species 13 x 1 = 13

FACW species 55 x 2 = 110

FAC species 15 x 3 = 45

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 83 (A) 168 (B)

Prevalence Index = B/A = 2.024

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Wet - 29

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)	%	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR	3/2	95	10YR	7/2	5	D	M	Loamy Sand
4-16	10YR	4/2	90	10YR	7/2	10	D	M	Loamy Sand

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

depletions throughout soil profile.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 21-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Wet - 30
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 31 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Floodplain **Local relief (concave, convex, none):** none **Slope:** 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 20.526" N **Long.:** 89° 37' 41.438" W **Datum:** NAD83
Soil Map Unit Name: Su, Smithton fine sandy loam, frequently flooded **NWI classification:** PFO 1/4 C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Remarks:
 Lower portion of riparian flood zone within 100 feet north of Turtleskin Creek.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input checked="" type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (Inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Dominant Species?

Sampling Point: Wet - 30

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliottii</i>	2	<input type="checkbox"/> 13.3%	FACW
2. <i>Nyssa biflora</i>	8	<input checked="" type="checkbox"/> 53.3%	OBL
3. <i>Magnolia virginiana</i>	5	<input checked="" type="checkbox"/> 33.3%	FACW
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 7.5 20% of Total Cover: 3 15 = Total Cover

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliottii</i>	2	<input type="checkbox"/> 14.3%	FACW
2. <i>Nyssa biflora</i>	5	<input checked="" type="checkbox"/> 35.7%	OBL
3. <i>Acer rubrum</i>	5	<input checked="" type="checkbox"/> 35.7%	FAC
4. <i>Cyrilla racemiflora</i>	2	<input type="checkbox"/> 14.3%	FACW
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 7 20% of Total Cover: 2.8 14 = Total Cover

Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliottii</i>	5	<input type="checkbox"/> 11.9%	FACW
2. <i>Cyrilla racemiflora</i>	20	<input checked="" type="checkbox"/> 47.6%	FACW
3. <i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 23.8%	FACW
4. <i>Acer rubrum</i>	5	<input type="checkbox"/> 11.9%	FAC
5. <i>Morella cerifera</i>	2	<input type="checkbox"/> 4.8%	FAC
6.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 21 20% of Total Cover: 8.4 42 = Total Cover

Herb Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Andropogon glomeratus</i>	3	<input checked="" type="checkbox"/> 27.3%	FACW
2. <i>Arundinaria tecta</i>	5	<input checked="" type="checkbox"/> 45.5%	FACW
3. <i>Woodwardia areolata</i>	2	<input type="checkbox"/> 18.2%	OBL
4. <i>Scirpus expansus</i>	1	<input type="checkbox"/> 9.1%	OBL
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 5.5 20% of Total Cover: 2.2 11 = Total Cover

Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	0	<input type="checkbox"/> 0.0%	
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 0 20% of Total Cover: 0 0 = Total Cover

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	<u>8</u>	(A)
Total Number of Dominant Species Across All Strata:	<u>8</u>	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	<u>100.0%</u>	(A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>16</u>	x 1 = <u>16</u>
FACW species <u>54</u>	x 2 = <u>108</u>
FAC species <u>12</u>	x 3 = <u>36</u>
FACU species <u>0</u>	x 4 = <u>0</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals:	<u>82</u> (A) <u>160</u> (B)
Prevalence Index = B/A =	<u>1.951</u>

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

SOIL

Sampling Point: Wet - 30

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR	3/1	100						
4-14	10YR	4/2	98	10YR	7/2	2	D	M	Silty Clay Loam
14-24	10YR	5/2	95	10YR	7/2	5	D	M	Silty Clay Loam

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)	<input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)	<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)	<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 153B)
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input type="checkbox"/> Marl (F10) (LRR U)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)	
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)	
<input type="checkbox"/> Sandy Muck Mineral (S1) (LRR O, S)	<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)	
<input checked="" type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)	
<input checked="" type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)	
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (Inches): _____	Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Remarks:
Oxidized root channels are also observed in soil profile.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 21-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Wet - 31
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 29 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** none **Slope:** 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 0.830" N **Long.:** 89° 37' 22.350" W **Datum:** NAD83
Soil Map Unit Name: At, Atmore silt loam, 0 to 2 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Hydric Soil Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	
Wetland Hydrology Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	

Remarks:
 Wet plot approximately 500 feet south of E-W Logging Road through center portion of AOI.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (minimum of 2 required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input checked="" type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)

Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 No strong primary hydrology indicators present except for some minor occurrences of oxidized root channels.

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: **Wet - 31**

Tree Stratum	(Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	15	<input checked="" type="checkbox"/> 75.0%	FACW
2.	<i>Nyssa sylvatica</i>	3	<input type="checkbox"/> 15.0%	FAC
3.	<i>Magnolia virginiana</i>	2	<input type="checkbox"/> 10.0%	FACW
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 10 20% of Total Cover: 4 20 = Total Cover

Sapling or Sapling/Shrub Stratum	(Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	15	<input checked="" type="checkbox"/> 55.6%	FACW
2.	<i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 37.0%	FACW
3.	<i>Nyssa sylvatica</i>	2	<input type="checkbox"/> 7.4%	FAC
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 13.5 20% of Total Cover: 5.4 27 = Total Cover

Shrub Stratum	(Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Ilex coriacea</i>	40	<input checked="" type="checkbox"/> 72.7%	FACW
2.	<i>Ilex glabra</i>	10	<input type="checkbox"/> 18.2%	FACW
3.	<i>Ilex vomitoria</i>	5	<input type="checkbox"/> 9.1%	FAC
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 27.5 20% of Total Cover: 11 55 = Total Cover

Herb Stratum	(Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Lycopodiella alopecuroides</i>	15	<input checked="" type="checkbox"/> 75.0%	OBL
2.	<i>Dichanthellum scabrusculum</i>	5	<input checked="" type="checkbox"/> 25.0%	OBL
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
9.		0	<input type="checkbox"/> 0.0%	
10.		0	<input type="checkbox"/> 0.0%	
11.		0	<input type="checkbox"/> 0.0%	
12.		0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 10 20% of Total Cover: 4 20 = Total Cover

Woody Vine Stratum	(Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Smilax laurifolia</i>	2	<input type="checkbox"/> 100.0%	FACW
2.		0	<input type="checkbox"/> 0.0%	
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 1 20% of Total Cover: 0.4 2 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	20 x 1 = 20
FACW species	94 x 2 = 188
FAC species	10 x 3 = 30
FACU species	0 x 4 = 0
UPL species	0 x 5 = 0
Column Totals:	124 (A) 238 (B)

Prevalence Index = B/A = 1.919

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Wet - 31

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR	3/2	97	10YR	6/2	3	D	M	Loamy Sand
	10YR	4/2	95	10YR	6/2	5	D	M	Loamy Sand

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)	<input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)	<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)	<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 153B)
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input type="checkbox"/> Marl (F10) (LRR U)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)	
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)	
<input type="checkbox"/> Sandy Muck Mineral (S1) (LRR O, S)	<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)	
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)	
<input checked="" type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)	
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 21-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Wet - 32
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 31 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** flat **Slope:** 1.0 % / 0.6 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 23' 58.663" N **Long.:** 89° 37' 27.288" W **Datum:** NAD83
Soil Map Unit Name: H1B, Harleston fine sandy loam, 2 to 5 percent slopes **NWI classification:** PSS 1/4

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Remarks:
 Approximately 300 feet south of wet 31 - transitional area closer to main logging road.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input checked="" type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 slight evidence of oxidized root channels on living roots

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Dominant Species?

Sampling Point: Wet - 32

Tree Stratum (Plot size: 30 m)		Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Nyssa sylvatica</i>	20	<input checked="" type="checkbox"/> 57.1%	FAC
2.	<i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 28.6%	FACW
3.	<i>Pinus elliotii</i>	5	<input type="checkbox"/> 14.3%	FACW
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 17.5		20% of Total Cover: 7	35	= Total Cover
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Nyssa sylvatica</i>	15	<input checked="" type="checkbox"/> 40.5%	FAC
2.	<i>Magnolia virginiana</i>	20	<input checked="" type="checkbox"/> 54.1%	FACW
3.	<i>Pinus elliotii</i>	2	<input type="checkbox"/> 5.4%	FACW
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 18.5		20% of Total Cover: 7.4	37	= Total Cover
Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Ilex coriacea</i>	30	<input checked="" type="checkbox"/> 63.8%	FACW
2.	<i>Ilex glabra</i>	10	<input checked="" type="checkbox"/> 21.3%	FACW
3.	<i>Ilex vomitoria</i>	2	<input type="checkbox"/> 4.3%	FAC
4.	<i>Magnolia virginiana</i>	5	<input type="checkbox"/> 10.6%	FACW
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 23.5		20% of Total Cover: 9.4	47	= Total Cover
Herb Stratum (Plot size: 30 m)		Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Lycopodiella alopecuroides</i>	15	<input checked="" type="checkbox"/> 68.2%	OBL
2.	<i>Sarracenia alabamensis</i>	5	<input checked="" type="checkbox"/> 22.7%	OBL
3.	<i>Hypericum distifolium</i>	2	<input type="checkbox"/> 9.1%	FACW
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
9.		0	<input type="checkbox"/> 0.0%	
10.		0	<input type="checkbox"/> 0.0%	
11.		0	<input type="checkbox"/> 0.0%	
12.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 11		20% of Total Cover: 4.4	22	= Total Cover
Woody Vine Stratum (Plot size: 30 m)		Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Smilax laurifolia</i>	3	<input type="checkbox"/> 100.0%	FACW
2.		0	<input type="checkbox"/> 0.0%	
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 1.5		20% of Total Cover: 0.6	3	= Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 17.5 Multiply by: 20

OBL species 20 x 1 = 20

FACW species 87 x 2 = 174

FAC species 37 x 3 = 111

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 144 (A) 305 (B)

Prevalence Index = B/A = 2.118

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test Is > 50%
 - 3 - Prevalence Index is ≤ 3.0 ¹
 - Problematic Hydrophytic Vegetation ¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **Wet - 32**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR	3/2	98	10YR	6/2	2	C	M	Sandy Loam
5-16	10YR	4/2	95	10YR	6/2	5	C	M	Sandy Loam

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Linng, M=Matrix

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)	<input type="checkbox"/> 1 cm Muck (A9) (LRR O)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)	<input type="checkbox"/> 2 cm Muck (A10) (LRR S)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)	<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 153B)	
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input type="checkbox"/> Marl (F10) (LRR U)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)		
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)		
<input type="checkbox"/> Sandy Muck Mineral (S1) (LRR O, S)	<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)		
<input checked="" type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)		
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)		
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)			

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:
 slight redox concentrations with Oxidized root channels.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 21-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Wet - 33
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 32 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** **Slope:** 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 23' 57.874" N **Long.:** 89° 37' 9.078" W **Datum:** NAD83
Soil Map Unit Name: Su, Smithton fine sandy loam, frequently flooded **NWI classification:** PFO 1/4 C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Remarks:
 Transect #2 +/- 1000 feet south of logging road in central part of AOI.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input checked="" type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Depth (inches): 10	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Wet - 33

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Dominant Species?	Indicator Status
1. <i>Pinus elliotii</i>	5	<input type="checkbox"/> 14.3%		FACW
2. <i>Nyssa biflora</i>	20	<input checked="" type="checkbox"/> 57.1%		OBL
3. <i>Taxodium ascendens</i>	5	<input type="checkbox"/> 14.3%		OBL
4. <i>Magnolia virginiana</i>	5	<input type="checkbox"/> 14.3%		FACW
5.	0	<input type="checkbox"/> 0.0%		
6.	0	<input type="checkbox"/> 0.0%		
7.	0	<input type="checkbox"/> 0.0%		
8.	0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>17.5</u> 20% of Total Cover: <u>7</u> 35 = Total Cover				
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Dominant Species?	Indicator Status
1. <i>Nyssa biflora</i>	20	<input checked="" type="checkbox"/> 58.8%		OBL
2. <i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 29.4%		FACW
3. <i>Pinus elliotii</i>	3	<input type="checkbox"/> 8.8%		FACW
4. <i>Taxodium ascendens</i>	1	<input type="checkbox"/> 2.9%		OBL
5.	0	<input type="checkbox"/> 0.0%		
6.	0	<input type="checkbox"/> 0.0%		
7.	0	<input type="checkbox"/> 0.0%		
8.	0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>17</u> 20% of Total Cover: <u>6.8</u> 34 = Total Cover				
Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Dominant Species?	Indicator Status
1. <i>Magnolia virginiana</i>	15	<input checked="" type="checkbox"/> 50.0%		FACW
2. <i>Cyrilla racemiflora</i>	10	<input checked="" type="checkbox"/> 33.3%		FACW
3. <i>Ilex coriacea</i>	5	<input type="checkbox"/> 16.7%		FACW
4.	0	<input type="checkbox"/> 0.0%		
5.	0	<input type="checkbox"/> 0.0%		
6.	0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>15</u> 20% of Total Cover: <u>6</u> 30 = Total Cover				
Herb Stratum (Plot size:)	Absolute % Cover	Rel.Strat. Cover	Dominant Species?	Indicator Status
1. <i>Arundinaria tecta</i>	20	<input checked="" type="checkbox"/> 80.0%		FACW
2. <i>Woodwardia virginica</i>	5	<input checked="" type="checkbox"/> 20.0%		OBL
3.	0	<input type="checkbox"/> 0.0%		
4.	0	<input type="checkbox"/> 0.0%		
5.	0	<input type="checkbox"/> 0.0%		
6.	0	<input type="checkbox"/> 0.0%		
7.	0	<input type="checkbox"/> 0.0%		
8.	0	<input type="checkbox"/> 0.0%		
9.	0	<input type="checkbox"/> 0.0%		
10.	0	<input type="checkbox"/> 0.0%		
11.	0	<input type="checkbox"/> 0.0%		
12.	0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>12.5</u> 20% of Total Cover: <u>5</u> 25 = Total Cover				
Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Dominant Species?	Indicator Status
1. <i>Smilax laurifolia</i>	1	<input type="checkbox"/> 100.0%		FACW
2.	0	<input type="checkbox"/> 0.0%		
3.	0	<input type="checkbox"/> 0.0%		
4.	0	<input type="checkbox"/> 0.0%		
5.	0	<input type="checkbox"/> 0.0%		
50% of Total Cover: <u>0.5</u> 20% of Total Cover: <u>0.2</u> 1 = Total Cover				

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 35 Multiply by:

OBL species	<u>51</u>	x 1 =	<u>51</u>
FACW species	<u>74</u>	x 2 =	<u>148</u>
FAC species	<u>0</u>	x 3 =	<u>0</u>
FACU species	<u>0</u>	x 4 =	<u>0</u>
UPL species	<u>0</u>	x 5 =	<u>0</u>
Column Totals:	<u>125</u> (A)		<u>199</u> (B)

Prevalence Index = B/A = 1.592

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Wet - 33

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR	3/1	100					Sandy Clay Loam	
4-16	10YR	3/2	95	10YR	5/6	5	C M	Silty Clay Loam	

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input checked="" type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)	<input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)	<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)	<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 153B)
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input type="checkbox"/> Marl (F10) (LRR U)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)	
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)	
<input type="checkbox"/> Sandy Muck Mineral (S1) (LRR O, S)	<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)	
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)	
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)	
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 24-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Wet - 34
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 29 T 7 S R 16 W
Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** flat **Slope:** 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 2.713" N **Long.:** 89° 37' 1.660" W **Datum:** NAD83
Soil Map Unit Name: Su, Smithton fine sandy loam, frequently flooded **NWI classification:** PSS 1/4

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Hydric Soil Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	
Wetland Hydrology Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	

Remarks:
 Flat area that transitions from distinct upland to a wetland within 100-feet.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (minimum of 2 required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input checked="" type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)

Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: **Wet - 34**

				Dominant Species?		
				Indicator Status		
Tree Stratum (Plot size: 30 m)				Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	30	<input checked="" type="checkbox"/>	75.0%	FACW	
2.	<i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/>	25.0%	FACW	
3.		0	<input type="checkbox"/>	0.0%		
4.		0	<input type="checkbox"/>	0.0%		
5.		0	<input type="checkbox"/>	0.0%		
6.		0	<input type="checkbox"/>	0.0%		
7.		0	<input type="checkbox"/>	0.0%		
8.		0	<input type="checkbox"/>	0.0%		
50% of Total Cover: 20		20% of Total Cover: 8		40	= Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)				Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	15	<input checked="" type="checkbox"/>	75.0%	FACW	
2.	<i>Magnolia virginiana</i>	5	<input checked="" type="checkbox"/>	25.0%	FACW	
3.		0	<input type="checkbox"/>	0.0%		
4.		0	<input type="checkbox"/>	0.0%		
5.		0	<input type="checkbox"/>	0.0%		
6.		0	<input type="checkbox"/>	0.0%		
7.		0	<input type="checkbox"/>	0.0%		
8.		0	<input type="checkbox"/>	0.0%		
50% of Total Cover: 10		20% of Total Cover: 4		20	= Total Cover	
Shrub Stratum (Plot size: 30 m)				Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Ilex coriacea</i>	60	<input checked="" type="checkbox"/>	100.0%	FACW	
2.		0	<input type="checkbox"/>	0.0%		
3.		0	<input type="checkbox"/>	0.0%		
4.		0	<input type="checkbox"/>	0.0%		
5.		0	<input type="checkbox"/>	0.0%		
6.		0	<input type="checkbox"/>	0.0%		
50% of Total Cover: 30		20% of Total Cover: 12		60	= Total Cover	
Herb Stratum (Plot size: 30 m)				Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Sarracenia alabamensis</i>	3	<input checked="" type="checkbox"/>	60.0%	OBL	
2.	<i>Lycopodiella alopecuroides</i>	2	<input checked="" type="checkbox"/>	40.0%	OBL	
3.		0	<input type="checkbox"/>	0.0%		
4.		0	<input type="checkbox"/>	0.0%		
5.		0	<input type="checkbox"/>	0.0%		
6.		0	<input type="checkbox"/>	0.0%		
7.		0	<input type="checkbox"/>	0.0%		
8.		0	<input type="checkbox"/>	0.0%		
9.		0	<input type="checkbox"/>	0.0%		
10.		0	<input type="checkbox"/>	0.0%		
11.		0	<input type="checkbox"/>	0.0%		
12.		0	<input type="checkbox"/>	0.0%		
50% of Total Cover: 2.5		20% of Total Cover: 1		5	= Total Cover	
Woody Vine Stratum (Plot size: 30 m)				Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Smilax laurifolia</i>	1	<input type="checkbox"/>	100.0%	FACW	
2.		0	<input type="checkbox"/>	0.0%		
3.		0	<input type="checkbox"/>	0.0%		
4.		0	<input type="checkbox"/>	0.0%		
5.		0	<input type="checkbox"/>	0.0%		
50% of Total Cover: 0.5		20% of Total Cover: 0.2		1	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 5 Multiply by: 1 = 5

OBL species 5 x 1 = 5

FACW species 121 x 2 = 242

FAC species 0 x 3 = 0

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 126 (A) 247 (B)

Prevalence Index = B/A = 1.960

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0 ¹

Problematic Hydrophytic Vegetation ¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **Wet - 34**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²			
0-3	10YR	3/2	100						Silt Loam	
3-16	10YR	4/2	97	10YR	6/6	3	C	M	Silt Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)	<input type="checkbox"/> 1 cm Muck (A9) (LRR O)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)	<input type="checkbox"/> 2 cm Muck (A10) (LRR S)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)	<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 153B)	
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input type="checkbox"/> Marl (F10) (LRR U)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)		
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)		
<input type="checkbox"/> Sandy Muck Mineral (S1) (LRR O, S)	<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)		
<input checked="" type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)		
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)		
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)			

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation City/County: Waveland - Hancock Sampling Date: 24-Oct-16
 Applicant/Owner: NASA State: MS Sampling Point: Wet - 35
 Investigator(s): Lars Larson, Randy Ellis Section, Township, Range: S 29 T 7 S R 16 W
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope: 0.0 % / 0.0 °
 Subregion (LRR or MLRA): LRR T Lat.: 30° 24' 3.049" N Long.: 89° 36' 57.357" W Datum: NAD83
 Soil Map Unit Name: Su, Smithton fine sandy loam, frequently flooded NWI classification: PFO 1/4 C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Hydric Soil Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	
Wetland Hydrology Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	

Remarks:
 Transitional zone into wet area after heavy pine overstory back to the north. Small drain near this plot.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2 required)	
<u>Primary Indicators (minimum of one required; check all that apply)</u>			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input checked="" type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry Season Water Table (C2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Water-Stained Leaves (B9)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)	

Field Observations:		Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches): _____	
Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches): _____	
Saturation Present? (Includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches): _____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Wet - 35

		Dominant Species?			
Tree Stratum (Plot size: 30 m)	Absolute % Cover	<input type="checkbox"/>	Rel.Strat. Cover	<input type="checkbox"/>	Indicator Status
1. <i>Pinus elliotii</i>	15	<input checked="" type="checkbox"/>	45.5%	<input type="checkbox"/>	FACW
2. <i>Nyssa biflora</i>	10	<input checked="" type="checkbox"/>	30.3%	<input type="checkbox"/>	OBL
3. <i>Magnolia virginiana</i>	5	<input type="checkbox"/>	15.2%	<input type="checkbox"/>	FACW
4. <i>Taxodium ascendens</i>	2	<input type="checkbox"/>	6.1%	<input type="checkbox"/>	OBL
5. <i>Acer rubrum</i>	1	<input type="checkbox"/>	3.0%	<input type="checkbox"/>	FAC
6.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
7.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
8.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
50% of Total Cover: <u>16.5</u> 20% of Total Cover: <u>6.6</u>		<u>33</u>	= Total Cover		
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	<input type="checkbox"/>	Rel.Strat. Cover	<input type="checkbox"/>	Indicator Status
1. <i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/>	40.0%	<input type="checkbox"/>	FACW
2. <i>Magnolia virginiana</i>	15	<input checked="" type="checkbox"/>	60.0%	<input type="checkbox"/>	FACW
3.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
4.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
5.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
6.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
7.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
8.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
50% of Total Cover: <u>12.5</u> 20% of Total Cover: <u>5</u>		<u>25</u>	= Total Cover		
Shrub Stratum (Plot size: 30 m)	Absolute % Cover	<input type="checkbox"/>	Rel.Strat. Cover	<input type="checkbox"/>	Indicator Status
1. <i>Ilex coriacea</i>	30	<input checked="" type="checkbox"/>	56.6%	<input type="checkbox"/>	FACW
2. <i>Magnolia virginiana</i>	10	<input type="checkbox"/>	18.9%	<input type="checkbox"/>	FACW
3. <i>Cyrilla racemiflora</i>	10	<input type="checkbox"/>	18.9%	<input type="checkbox"/>	FACW
4. <i>Persea palustris</i>	3	<input type="checkbox"/>	5.7%	<input type="checkbox"/>	FACW
5.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
6.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
50% of Total Cover: <u>26.5</u> 20% of Total Cover: <u>10.6</u>		<u>53</u>	= Total Cover		
Herb Stratum (Plot size: 30 m)	Absolute % Cover	<input type="checkbox"/>	Rel.Strat. Cover	<input type="checkbox"/>	Indicator Status
1. <i>Woodwardia areolata</i>	15	<input checked="" type="checkbox"/>	60.0%	<input type="checkbox"/>	OBL
2. <i>Lycopodiella alopecuroides</i>	10	<input checked="" type="checkbox"/>	40.0%	<input type="checkbox"/>	OBL
3.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
4.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
5.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
6.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
7.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
8.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
9.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
10.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
11.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
12.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
50% of Total Cover: <u>12.5</u> 20% of Total Cover: <u>5</u>		<u>25</u>	= Total Cover		
Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	<input type="checkbox"/>	Rel.Strat. Cover	<input type="checkbox"/>	Indicator Status
1. <i>Smilax laurifolia</i>	10	<input checked="" type="checkbox"/>	100.0%	<input type="checkbox"/>	FACW
2.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
3.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
4.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
5.	0	<input type="checkbox"/>	0.0%	<input type="checkbox"/>	
50% of Total Cover: <u>5</u> 20% of Total Cover: <u>2</u>		<u>10</u>	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species 37 x 1 = 37

FACW species 108 x 2 = 216

FAC species 1 x 3 = 3

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 146 (A) 256 (B)

Prevalence Index = B/A = 1.753

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0 ¹

Problematic Hydrophytic Vegetation ¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **Wet - 35**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²			
0-4	10YR	3/2							Silt Loam	
4-16	10YR	4/2	98	10YR	6/2	20	D	M	Silt Loam	

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation
 City/County: Waveland - Hancock
 Sampling Date: 24-Oct-16
Applicant/Owner: NASA
 State: MS
 Sampling Point: Wet - 36
Investigator(s): Lars Larson, Randy Ellis
 Section, Township, Range: S 29 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Terrace
 Local relief (concave, convex, none): flat
 Slope: 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T
 Lat.: 30° 24' 5.679" N
 Long.: 89° 36' 45.177" W
 Datum: NAD83
Soil Map Unit Name: HIB, Harleston fine sandy loam, 2 to 5 percent slopes
 NWI classification: PFO 1/4 C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?**
 Are "Normal Circumstances" present? Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?**
 (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Remarks:
 Plot is 15 feet (+/-) northeast of Up - 36... slight transition into lower area.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input checked="" type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: **Wet - 36**

		Dominant Species?					
Tree Stratum (Plot size: 30 m)	Absolute % Cover	Rel. Strat. Cover	Indicator Status	Dominance Test worksheet:			
1. <i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 40.0%	FACW	Number of Dominant Species That are OBL, FACW, or FAC: <u>7</u> (A)			
2. <i>Nyssa biflora</i>	10	<input checked="" type="checkbox"/> 40.0%	OBL	Total Number of Dominant Species Across All Strata: <u>7</u> (B)			
3. <i>Magnolia virginiana</i>	5	<input checked="" type="checkbox"/> 20.0%	FACW	Percent of dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)			
4.	0	<input type="checkbox"/> 0.0%					
5.	0	<input type="checkbox"/> 0.0%					
6.	0	<input type="checkbox"/> 0.0%					
7.	0	<input type="checkbox"/> 0.0%					
8.	0	<input type="checkbox"/> 0.0%					
50% of Total Cover: <u>12.5</u> 20% of Total Cover: <u>5</u> <u>25</u> = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>28</u> x 1 = <u>28</u> FACW species <u>57</u> x 2 = <u>114</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>85</u> (A) <u>142</u> (B) Prevalence Index = B/A = <u>1.671</u>			
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel. Strat. Cover	Indicator Status				
1. <i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 35.7%	FACW				
2. <i>Nyssa biflora</i>	15	<input checked="" type="checkbox"/> 53.6%	OBL				
3. <i>Magnolia virginiana</i>	2	<input type="checkbox"/> 7.1%	FACW				
4. <i>Cyrilla racemiflora</i>	1	<input type="checkbox"/> 3.6%	FACW				
5.	0	<input type="checkbox"/> 0.0%					
6.	0	<input type="checkbox"/> 0.0%					
7.	0	<input type="checkbox"/> 0.0%					
8.	0	<input type="checkbox"/> 0.0%					
50% of Total Cover: <u>14</u> 20% of Total Cover: <u>5.6</u> <u>28</u> = Total Cover							
Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel. Strat. Cover	Indicator Status				
1. <i>Ilex coriacea</i>	15	<input checked="" type="checkbox"/> 55.6%	FACW	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is > 50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.			
2. <i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 37.0%	FACW				
3. <i>Cyrilla racemiflora</i>	2	<input type="checkbox"/> 7.4%	FACW				
4.	0	<input type="checkbox"/> 0.0%					
5.	0	<input type="checkbox"/> 0.0%					
6.	0	<input type="checkbox"/> 0.0%					
50% of Total Cover: <u>13.5</u> 20% of Total Cover: <u>5.4</u> <u>27</u> = Total Cover							
Herb Stratum (Plot size: 30 m)	Absolute % Cover	Rel. Strat. Cover	Indicator Status				
1. <i>Sarracenia alabamensis</i>	2	<input type="checkbox"/> 66.7%	OBL			Definition of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall. Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine - All woody vines, regardless of height.	
2. <i>Lycopodiella alopecuroides</i>	1	<input type="checkbox"/> 33.3%	OBL				
3.	0	<input type="checkbox"/> 0.0%					
4.	0	<input type="checkbox"/> 0.0%					
5.	0	<input type="checkbox"/> 0.0%					
6.	0	<input type="checkbox"/> 0.0%					
7.	0	<input type="checkbox"/> 0.0%					
8.	0	<input type="checkbox"/> 0.0%					
9.	0	<input type="checkbox"/> 0.0%					
10.	0	<input type="checkbox"/> 0.0%					
11.	0	<input type="checkbox"/> 0.0%					
12.	0	<input type="checkbox"/> 0.0%					
50% of Total Cover: <u>1.5</u> 20% of Total Cover: <u>0.6</u> <u>3</u> = Total Cover							
Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Rel. Strat. Cover	Indicator Status				
1. <i>Smlax laurifolia</i>	2	<input type="checkbox"/> 100.0%	FACW	Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>			
2.	0	<input type="checkbox"/> 0.0%					
3.	0	<input type="checkbox"/> 0.0%					
4.	0	<input type="checkbox"/> 0.0%					
5.	0	<input type="checkbox"/> 0.0%					
50% of Total Cover: <u>1</u> 20% of Total Cover: <u>0.4</u> <u>2</u> = Total Cover							

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **Wet - 36**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR	3/2	100					Silt Loam	
3-16	10YR	4/2	95	10YR	6/6	5	C	M	Silt Loam

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation
 City/County: Waveland - Hancock
 Sampling Date: 24-Oct-16
Applicant/Owner: NASA
 State: MS
 Sampling Point: Wet - 37
Investigator(s): Lars Larson, Randy Ellis
 Section, Township, Range: S 29 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Floodplain
 Local relief (concave, convex, none): none
 Slope: 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T
 Lat.: 30° 24' 1.648" N
 Long.: 89° 36' 55.679" W
 Datum: NAD83
Soil Map Unit Name: Su, Smithton fine sandy loam, frequently flooded
 NWI classification: PFO 1/4 C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?**
 Are "Normal Circumstances" present? Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?**
 (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks: Low drainage area - part of the overall main NE-SW trending drainage way conveying surface water through the central to southern part of AOI.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (minimum of 2 required)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)	
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Depth (inches): 12 (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Wet - 37

Tree Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 34.5%	FACW
2.	<i>Nyssa biflora</i>	15	<input checked="" type="checkbox"/> 51.7%	OBL
3.	<i>Taxodium ascendens</i>	3	<input type="checkbox"/> 10.3%	OBL
4.	<i>Magnolia virginiana</i>	1	<input type="checkbox"/> 3.4%	FACW
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 14.5		20% of Total Cover: 5.8	29 = Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	3	<input type="checkbox"/> 14.3%	FACW
2.	<i>Nyssa biflora</i>	10	<input checked="" type="checkbox"/> 47.6%	OBL
3.	<i>Magnolia virginiana</i>	7	<input checked="" type="checkbox"/> 33.3%	FACW
4.	<i>Taxodium ascendens</i>	1	<input type="checkbox"/> 4.8%	OBL
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 10.5		20% of Total Cover: 4.2	21 = Total Cover	
Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Ilex coriacea</i>	20	<input checked="" type="checkbox"/> 60.6%	FACW
2.	<i>Cyrilla racemiflora</i>	10	<input checked="" type="checkbox"/> 30.3%	FACW
3.	<i>Magnolia virginiana</i>	3	<input type="checkbox"/> 9.1%	FACW
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 16.5		20% of Total Cover: 6.6	33 = Total Cover	
Herb Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Woodwardia areolata</i>	5	<input checked="" type="checkbox"/> 25.0%	OBL
2.	<i>Arundinaria tecta</i>	10	<input checked="" type="checkbox"/> 50.0%	FACW
3.	<i>Sarracenia alabamensis</i>	2	<input type="checkbox"/> 10.0%	OBL
4.	<i>Carex lurida</i>	1	<input type="checkbox"/> 5.0%	OBL
5.	<i>Dichanthelium scabritusculum</i>	2	<input type="checkbox"/> 10.0%	OBL
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
9.		0	<input type="checkbox"/> 0.0%	
10.		0	<input type="checkbox"/> 0.0%	
11.		0	<input type="checkbox"/> 0.0%	
12.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 10		20% of Total Cover: 4	20 = Total Cover	
Woody Vine Stratum (Plot size: 30 m)		Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	<i>Smilax laurifolia</i>	2	<input type="checkbox"/> 100.0%	FACW
2.		0	<input type="checkbox"/> 0.0%	
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 1		20% of Total Cover: 0.4	2 = Total Cover	

Dominance Test worksheet:	
Number of Dominant Species That are OBL, FACW, or FAC:	8 (A)
Total Number of Dominant Species Across All Strata:	8 (B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0% (A/B)

Prevalence Index worksheet:	
Total % Cover of:	Multiply by:
OBL species 39	x 1 = 39
FACW species 66	x 2 = 132
FAC species 0	x 3 = 0
FACU species 0	x 4 = 0
UPL species 0	x 5 = 0
Column Totals: 105 (A)	171 (B)
Prevalence Index = B/A = 1.629	

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 24-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Wet - 38
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 32 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Floodplain **Local relief (concave, convex, none):** none **Slope:** 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 23' 54.543" N **Long.:** 89° 37' 1.688" W **Datum:** NAD83
Soil Map Unit Name: Su, Smithton fine sandy loam, frequently flooded **NWI classification:** PFO 1/4 C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks: Low drainage area approximately 200 feet West of Up - 38.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <table style="width:100%; border: none;"> <tr> <td style="width:50%; border: none;"> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) </td> <td style="width:50%; border: none;"> <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks) </td> </tr> </table>	<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	Secondary Indicators (minimum of 2 required) <table style="width:100%; border: none;"> <tr> <td style="width:50%; border: none;"> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input checked="" type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) </td> <td style="width:50%; border: none;"> <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U) </td> </tr> </table>	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input checked="" type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	<input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)				
<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input checked="" type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	<input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)				
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Depth (inches): <u>12</u>	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>				
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____ _____ _____					
Remarks: _____ _____ _____					

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Wet - 38

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 34.5%	FACW
2. <i>Nyssa biflora</i>	10	<input checked="" type="checkbox"/> 34.5%	OBL
3. <i>Taxodium ascendens</i>	5	<input type="checkbox"/> 17.2%	OBL
4. <i>Magnolia virginiana</i>	3	<input type="checkbox"/> 10.3%	FACW
5. <i>Acer rubrum</i>	1	<input type="checkbox"/> 3.4%	FAC
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 14.5 20% of Total Cover: 5.8 29 = Total Cover

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 35.7%	FACW
2. <i>Magnolia virginiana</i>	5	<input type="checkbox"/> 17.9%	FACW
3. <i>Taxodium ascendens</i>	8	<input checked="" type="checkbox"/> 28.6%	OBL
4. <i>Acer rubrum</i>	5	<input type="checkbox"/> 17.9%	FAC
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 14 20% of Total Cover: 5.6 28 = Total Cover

Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Ilex glabra</i>	30	<input checked="" type="checkbox"/> 62.5%	FACW
2. <i>Morella cerifera</i>	10	<input checked="" type="checkbox"/> 20.8%	FAC
3. <i>Magnolia virginiana</i>	5	<input type="checkbox"/> 10.4%	FACW
4. <i>Taxodium ascendens</i>	3	<input type="checkbox"/> 6.3%	OBL
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 24 20% of Total Cover: 9.6 48 = Total Cover

Herb Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Arundinaria tecta</i>	10	<input checked="" type="checkbox"/> 35.7%	FACW
2. <i>Sarracenia alabamensis</i>	3	<input type="checkbox"/> 10.7%	OBL
3. <i>Dichanthellum scabriusculum</i>	2	<input type="checkbox"/> 7.1%	OBL
4. <i>Hypericum cistifolium</i>	3	<input type="checkbox"/> 10.7%	FACW
5. <i>Lycopodiella alopecuroides</i>	10	<input checked="" type="checkbox"/> 35.7%	OBL
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 14 20% of Total Cover: 5.6 28 = Total Cover

Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Smilax laurifolia</i>	3	<input type="checkbox"/> 100.0%	FACW
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 1.5 20% of Total Cover: 0.6 3 = Total Cover

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	<u>8</u>	(A)
Total Number of Dominant Species Across All Strata:	<u>8</u>	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	<u>100.0%</u>	(A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>41</u>	x 1 = <u>41</u>
FACW species <u>79</u>	x 2 = <u>158</u>
FAC species <u>16</u>	x 3 = <u>48</u>
FACU species <u>0</u>	x 4 = <u>0</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>136</u>	(A) <u>247</u> (B)
Prevalence Index = B/A = <u>1.816</u>	

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

SOIL

Sampling Point: Wet - 38

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR	3/2	100					Silt Loam	
4-16	10YR	4/2	97	10YR	7/1	3	D	M	Silt Loam

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)	<input type="checkbox"/> 1 cm Muck (A9) (LRR O)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)	<input type="checkbox"/> 2 cm Muck (A10) (LRR S)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)	<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 153B)	
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input type="checkbox"/> Marl (F10) (LRR U)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)		
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)		
<input type="checkbox"/> Sandy Muck Mineral (S1) (LRR O, S)	<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)		
<input checked="" type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)		
<input checked="" type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)		
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)			

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Remarks:
depleted matrix with redox features present in soil profile.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation
 City/County: Waveland - Hancock
 Sampling Date: 24-Oct-16
Applicant/Owner: NASA
 State: MS
 Sampling Point: Wet - 39
Investigator(s): Lars Larson, Randy Ellis
 Section, Township, Range: S 32 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Floodplain
 Local relief (concave, convex, none): none
 Slope: 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T
 Lat.: 30° 23' 47.542" N
 Long.: 89° 37' 8.862" W
 Datum: NAD83
Soil Map Unit Name: Su, Smithton fine sandy loam, frequently flooded
 NWI classification: PFO 1/4 C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?**
 Are "Normal Circumstances" present? Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?**
 (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
--	--

Remarks:
 generally normal conditions except that Keller Road (old logging road) has split wetland and drainage culverts are sufficiently designed to allow water to flow through area. Water in turn backs up to abnormally high levies to the north of Keller Road. Area is 30-40 ft North of Keller Road.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Depth (inches): 9	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Dominant Species?

Sampling Point: Wet - 39

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Ref.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 27.0%	FACW
2. <i>Nyssa biflora</i>	20	<input checked="" type="checkbox"/> 54.1%	OBL
3. <i>Magnolia virginiana</i>	5	<input type="checkbox"/> 13.5%	FACW
4. <i>Acer rubrum</i>	2	<input type="checkbox"/> 5.4%	FAC
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	18.5	20% of Total Cover: 7.4	37 = Total Cover

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Ref.Strat. Cover	Indicator Status
1. <i>Cyrilla racemiflora</i>	10	<input checked="" type="checkbox"/> 50.0%	FACW
2. <i>Pinus elliotii</i>	2	<input type="checkbox"/> 10.0%	FACW
3. <i>Nyssa biflora</i>	5	<input checked="" type="checkbox"/> 25.0%	OBL
4. <i>Acer rubrum</i>	3	<input type="checkbox"/> 15.0%	FAC
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	10	20% of Total Cover: 4	20 = Total Cover

Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Ref.Strat. Cover	Indicator Status
1. <i>Ilex glabra</i>	20	<input checked="" type="checkbox"/> 90.9%	FACW
2. <i>Cyrilla racemiflora</i>	2	<input type="checkbox"/> 9.1%	FACW
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	11	20% of Total Cover: 4.4	22 = Total Cover

Herb Stratum (Plot size: 30 m)	Absolute % Cover	Ref.Strat. Cover	Indicator Status
1. <i>Arundinaria tecta</i>	20	<input checked="" type="checkbox"/> 95.2%	FACW
2. <i>Scirpus expansus</i>	1	<input type="checkbox"/> 4.8%	OBL
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	10.5	20% of Total Cover: 4.2	21 = Total Cover

Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Ref.Strat. Cover	Indicator Status
1. <i>Smilax laurifolia</i>	1	<input type="checkbox"/> 100.0%	FACW
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	0.5	20% of Total Cover: 0.2	1 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 26 Multiply by: 1

OBL species: 26 x 1 = 26

FACW species: 70 x 2 = 140

FAC species: 5 x 3 = 15

FACU species: 0 x 4 = 0

UPL species: 0 x 5 = 0

Column Totals: 101 (A) 181 (B)

Prevalence Index = B/A = 1.792

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Wet - 39

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²			
0-8	10YR	3/1	100						Sandy Clay Loam	
8-18	10YR	5/3	95	10YR	6/1	5	D	M	Sandy Clay Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 25-Oct-16

Applicant/Owner: NASA **State:** MS **Sampling Point:** Wet - 40

Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 32 T 7 S R 16 W

Landform (hillslope, terrace, etc.): Floodplain **Local relief (concave, convex, none):** none **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR T **Lat.:** 30° 23' 43.163" N **Long.:** 89° 36' 49.831" W **Datum:** NAD83

Soil Map Unit Name: EsB, Escambia loam, 2 to 5 percent slopes **NWI classification:** PFO 1/4 C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks: Bottom drainage area approximately 50-feet north of UKP - 40. Water comes through this area but appears to be impacted by road and small culvert that restrict water flow to the south.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: **Wet - 40**

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Dominant Species?	Indicator Status
1. <i>Nyssa biflora</i>	20	69.0%	<input checked="" type="checkbox"/>	OBL
2. <i>Liquidambar styraciflua</i>	5	17.2%	<input type="checkbox"/>	FAC
3. <i>Quercus nigra</i>	3	10.3%	<input type="checkbox"/>	FAC
4. <i>Triadica sebifera</i>	1	3.4%	<input type="checkbox"/>	FAC
5.	0	0.0%	<input type="checkbox"/>	
6.	0	0.0%	<input type="checkbox"/>	
7.	0	0.0%	<input type="checkbox"/>	
8.	0	0.0%	<input type="checkbox"/>	

50% of Total Cover: 14.5 20% of Total Cover: 5.8 29 = Total Cover

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Dominant Species?	Indicator Status
1. <i>Nyssa biflora</i>	10	41.7%	<input checked="" type="checkbox"/>	OBL
2. <i>Quercus nigra</i>	10	41.7%	<input checked="" type="checkbox"/>	FAC
3. <i>Acer rubrum</i>	3	12.5%	<input type="checkbox"/>	FAC
4. <i>Triadica sebifera</i>	1	4.2%	<input type="checkbox"/>	FAC
5.	0	0.0%	<input type="checkbox"/>	
6.	0	0.0%	<input type="checkbox"/>	
7.	0	0.0%	<input type="checkbox"/>	
8.	0	0.0%	<input type="checkbox"/>	

50% of Total Cover: 12 20% of Total Cover: 4.8 24 = Total Cover

Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Dominant Species?	Indicator Status
1. <i>Quercus nigra</i>	5	41.7%	<input checked="" type="checkbox"/>	FAC
2. <i>Acer rubrum</i>	5	41.7%	<input checked="" type="checkbox"/>	FAC
3. <i>Triadica sebifera</i>	1	8.3%	<input type="checkbox"/>	FAC
4. <i>Diospyros virginiana</i>	1	8.3%	<input type="checkbox"/>	FAC
5.	0	0.0%	<input type="checkbox"/>	
6.	0	0.0%	<input type="checkbox"/>	

50% of Total Cover: 6 20% of Total Cover: 2.4 12 = Total Cover

Herb Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Dominant Species?	Indicator Status
1. <i>Typha latifolia</i>	10	76.9%	<input checked="" type="checkbox"/>	OBL
2. <i>Scirpus expansus</i>	3	23.1%	<input checked="" type="checkbox"/>	OBL
3.	0	0.0%	<input type="checkbox"/>	
4.	0	0.0%	<input type="checkbox"/>	
5.	0	0.0%	<input type="checkbox"/>	
6.	0	0.0%	<input type="checkbox"/>	
7.	0	0.0%	<input type="checkbox"/>	
8.	0	0.0%	<input type="checkbox"/>	
9.	0	0.0%	<input type="checkbox"/>	
10.	0	0.0%	<input type="checkbox"/>	
11.	0	0.0%	<input type="checkbox"/>	
12.	0	0.0%	<input type="checkbox"/>	

50% of Total Cover: 6.5 20% of Total Cover: 2.6 13 = Total Cover

Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Dominant Species?	Indicator Status
1. <i>Vitis rotundifolia</i>	2	66.7%	<input type="checkbox"/>	FAC
2. <i>Smilax laurifolia</i>	1	33.3%	<input type="checkbox"/>	FACW
3.	0	0.0%	<input type="checkbox"/>	
4.	0	0.0%	<input type="checkbox"/>	
5.	0	0.0%	<input type="checkbox"/>	

50% of Total Cover: 1.5 20% of Total Cover: 0.6 3 = Total Cover

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: Multiply by:

OBL species	43	x 1 =	43
FACW species	1	x 2 =	2
FAC species	37	x 3 =	111
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	81 (A)		156 (B)

Prevalence Index = B/A = 1.926

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

SOIL

Sampling Point: Wet - 40

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR	3/1	98	10YR	7/2	2	D	M	Silt Loam
4-18	10YR	4/2	90	10YR	7/2	10	D	M	Silt Loam

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis: 1,100 Acre Wetland Delineation
City/County: Waveland - Hancock
Sampling Date: 25-Oct-16
Applicant/Owner: NASA
State: MS
Sampling Point: Wet - 41
Investigator(s): Lars Larson, Randy Ellis
Section, Township, Range: S 32 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Floodplain
Local relief (concave, convex, none): none
Slope: 0.0 % / 0.0 *
Subregion (LRR or MLRA): LRR T
Lat.: 30° 23' 46.616" N
Long.: 89° 36' 57.298" W
Datum: NAD83
Soil Map Unit Name: Su, Smithton fine sandy loam, frequently flooded
NWI classification: PFO 1/4 B

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** Are "Normal Circumstances" present? Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (minimum of 2 required)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input checked="" type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)	
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Dominant Species?

Sampling Point: Wet - 41

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Rel. Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	5	<input checked="" type="checkbox"/> 21.7%	FACW
2. <i>Nyssa biflora</i>	10	<input checked="" type="checkbox"/> 43.5%	OBL
3. <i>Magnolia virginiana</i>	5	<input checked="" type="checkbox"/> 21.7%	FACW
4. <i>Acer rubrum</i>	2	<input type="checkbox"/> 8.7%	FAC
5. <i>Cyrilla racemiflora</i>	1	<input type="checkbox"/> 4.3%	FACW
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	11.5	20% of Total Cover: 4.6	23 = Total Cover

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel. Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	5	<input type="checkbox"/> 16.7%	FACW
2. <i>Cyrilla racemiflora</i>	10	<input checked="" type="checkbox"/> 33.3%	FACW
3. <i>Acer rubrum</i>	5	<input type="checkbox"/> 16.7%	FAC
4. <i>Nyssa biflora</i>	10	<input checked="" type="checkbox"/> 33.3%	OBL
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	15	20% of Total Cover: 6	30 = Total Cover

Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel. Strat. Cover	Indicator Status
1. <i>Ilex coriacea</i>	25	<input checked="" type="checkbox"/> 67.6%	FACW
2. <i>Magnolia virginiana</i>	5	<input type="checkbox"/> 13.5%	FACW
3. <i>Cyrilla racemiflora</i>	5	<input type="checkbox"/> 13.5%	FACW
4. <i>Ilex vomitoria</i>	1	<input type="checkbox"/> 2.7%	FAC
5. <i>Persea palustris</i>	1	<input type="checkbox"/> 2.7%	FACW
6.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	18.5	20% of Total Cover: 7.4	37 = Total Cover

Herb Stratum (Plot size: 30 m)	Absolute % Cover	Rel. Strat. Cover	Indicator Status
1. <i>Sarracenia alabamensis</i>	2	<input checked="" type="checkbox"/> 22.2%	OBL
2. <i>Arundinaria tecta</i>	3	<input checked="" type="checkbox"/> 33.3%	FACW
3. <i>Dichanthellum scabriusculum</i>	2	<input checked="" type="checkbox"/> 22.2%	OBL
4. <i>Scirpus expansus</i>	1	<input type="checkbox"/> 11.1%	OBL
5. <i>Osmunda regalis</i>	1	<input type="checkbox"/> 11.1%	OBL
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	4.5	20% of Total Cover: 1.8	9 = Total Cover

Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Rel. Strat. Cover	Indicator Status
1. <i>Smilax laurifolia</i>	1	<input type="checkbox"/> 100.0%	FACW
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover:	0.5	20% of Total Cover: 0.2	1 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 9 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 26 Multiply by: 1

OBL species 26 x 1 = 26

FACW species 66 x 2 = 132

FAC species 8 x 3 = 24

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 100 (A) 182 (B)

Prevalence Index = B/A = 1.820

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Wet - 41

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²			
0-4	10YR	3/1	100						Very Fine Loamy Sand	
4-18	10YR	3/2	95	10YR	6/2	5	D	M	Loamy Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (SB) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 25-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Wet - 43
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 32 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Floodplain **Local relief (concave, convex, none):** flat **Slope:** 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 23' 52.457" N **Long.:** 89° 37' 18.611" W **Datum:** NAD83
Soil Map Unit Name: Smithton - escambia **NWI classification:** PFO 1/4 C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Remarks:
 Low drainage area approximately 250-feet east of the black top road in the SW part of the AOI.

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<u>Secondary Indicators (minimum of 2 required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input checked="" type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Dominant Species?

Sampling Point: Wet - 43

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 30.3%	FACW
2. <i>Nyssa biflora</i>	15	<input checked="" type="checkbox"/> 45.5%	OBL
3. <i>Quercus nigra</i>	5	<input type="checkbox"/> 15.2%	FAC
4. <i>Taxodium ascendens</i>	3	<input type="checkbox"/> 9.1%	OBL
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 16.5	20% of Total Cover: 6.6	33	= Total Cover
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	3	<input type="checkbox"/> 14.3%	FACW
2. <i>Taxodium ascendens</i>	10	<input checked="" type="checkbox"/> 47.6%	OBL
3. <i>Nyssa biflora</i>	5	<input checked="" type="checkbox"/> 23.8%	OBL
4. <i>Cyrilla racemiflora</i>	3	<input type="checkbox"/> 14.3%	FACW
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 10.5	20% of Total Cover: 4.2	21	= Total Cover
Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Cyrilla racemiflora</i>	10	<input checked="" type="checkbox"/> 58.8%	FACW
2. <i>Morella cerifera</i>	5	<input checked="" type="checkbox"/> 29.4%	FAC
3. <i>Magnolia virginiana</i>	2	<input type="checkbox"/> 11.8%	FACW
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 8.5	20% of Total Cover: 3.4	17	= Total Cover
Herb Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1. <i>Arundinaria tecta</i>	1	<input type="checkbox"/> 100.0%	FACW
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 0.5	20% of Total Cover: 0.2	1	= Total Cover
Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	0	<input type="checkbox"/> 0.0%	
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 33 Multiply by: 1

OBL species 33 x 1 = 33

FACW species 29 x 2 = 58

FAC species 10 x 3 = 30

FACU species 0 x 4 = 0

UPL species 0 x 5 = 0

Column Totals: 72 (A) 121 (B)

Prevalence Index = B/A = 1.681

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Wet - 43

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-5	10YR	3/1				Very Fine Loamy Sand	
5-16	10YR	3/2				Sandy Clay Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 27-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Wet - 47
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 31 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** flat **Slope:** 2.0 % / 1.1 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 24' 15.210" N **Long.:** 89° 37' 43.444" W **Datum:** NAD83
Soil Map Unit Name: Su, Smithton fine sandy loam, frequently flooded **NWI classification:** PSS 1/4

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Remarks:
 Sideslope of low relief hillside drainage feature that transitions down into more of a wet area below. Plot is approximately 500-600- feet east of Trent Lot (Main NASA site) road.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <table style="width:100%; border: none;"> <tr> <td style="width:50%; border: none;"><input type="checkbox"/> Surface Water (A1)</td> <td style="width:50%; border: none;"><input type="checkbox"/> Aquatic Fauna (B13)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> High Water Table (A2)</td> <td style="border: none;"><input type="checkbox"/> Marl Deposits (B15) (LRR U)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Saturation (A3)</td> <td style="border: none;"><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Water Marks (B1)</td> <td style="border: none;"><input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Sediment Deposits (B2)</td> <td style="border: none;"><input type="checkbox"/> Presence of Reduced Iron (C4)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Drift Deposits (B3)</td> <td style="border: none;"><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Algal Mat or Crust (B4)</td> <td style="border: none;"><input type="checkbox"/> Thin Muck Surface (C7)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Iron Deposits (B5)</td> <td style="border: none;"><input type="checkbox"/> Other (Explain in Remarks)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</td> <td></td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Water-Stained Leaves (B9)</td> <td></td> </tr> </table>	<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Water-Stained Leaves (B9)		Secondary Indicators (minimum of 2 required) <table style="width:100%; border: none;"> <tr><td style="border: none;"><input type="checkbox"/> Surface Soil Cracks (B6)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</td></tr> <tr><td style="border: none;"><input checked="" type="checkbox"/> Drainage Patterns (B10)</td></tr> <tr><td style="border: none;"><input checked="" type="checkbox"/> Moss Trim Lines (B16)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Dry Season Water Table (C2)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Crayfish Burrows (C8)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</td></tr> <tr><td style="border: none;"><input checked="" type="checkbox"/> Geomorphic Position (D2)</td></tr> <tr><td style="border: none;"><input type="checkbox"/> Shallow Aquitard (D3)</td></tr> <tr><td style="border: none;"><input checked="" type="checkbox"/> FAC-Neutral Test (D5)</td></tr> <tr><td style="border: none;"><input checked="" type="checkbox"/> Sphagnum moss (D8) (LRR T, U)</td></tr> </table>	<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	<input checked="" type="checkbox"/> Moss Trim Lines (B16)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	<input type="checkbox"/> Shallow Aquitard (D3)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	<input checked="" type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 No real strong hydrology, but a few secondary indicators.

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Wet - 47

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? <input type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	15	<input checked="" type="checkbox"/>	51.7%	FACW
2. <i>Nyssa sylvatica</i>	10	<input checked="" type="checkbox"/>	34.5%	FAC
3. <i>Liquidambar styraciflua</i>	2	<input type="checkbox"/>	6.9%	FAC
4. <i>Quercus nigra</i>	1	<input type="checkbox"/>	3.4%	FAC
5. <i>Magnolia virginiana</i>	1	<input type="checkbox"/>	3.4%	FACW
6.	0	<input type="checkbox"/>	0.0%	
7.	0	<input type="checkbox"/>	0.0%	
8.	0	<input type="checkbox"/>	0.0%	
50% of Total Cover: 14.5 20% of Total Cover: 5.8 29 = Total Cover				
Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? <input type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/>	47.6%	FACW
2. <i>Magnolia virginiana</i>	5	<input checked="" type="checkbox"/>	23.8%	FACW
3. <i>Nyssa sylvatica</i>	5	<input checked="" type="checkbox"/>	23.8%	FAC
4. <i>Morella cerifera</i>	1	<input type="checkbox"/>	4.8%	FAC
5.	0	<input type="checkbox"/>	0.0%	
6.	0	<input type="checkbox"/>	0.0%	
7.	0	<input type="checkbox"/>	0.0%	
8.	0	<input type="checkbox"/>	0.0%	
50% of Total Cover: 10.5 20% of Total Cover: 4.2 21 = Total Cover				
Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? <input type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1. <i>Ilex vomitoria</i>	25	<input checked="" type="checkbox"/>	52.1%	FAC
2. <i>Ilex glabra</i>	10	<input checked="" type="checkbox"/>	20.8%	FACW
3. <i>Morella cerifera</i>	10	<input checked="" type="checkbox"/>	20.8%	FAC
4. <i>Ilex opaca</i>	2	<input type="checkbox"/>	4.2%	FAC
5. <i>Persea palustris</i>	1	<input type="checkbox"/>	2.1%	FACW
6.	0	<input type="checkbox"/>	0.0%	
50% of Total Cover: 24 20% of Total Cover: 9.6 48 = Total Cover				
Herb Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? <input type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1. <i>Osmunda regalis</i>	5	<input checked="" type="checkbox"/>	50.0%	OBL
2. <i>Woodwardia areolata</i>	3	<input checked="" type="checkbox"/>	30.0%	OBL
3. <i>Sagittaria lancifolia</i>	1	<input type="checkbox"/>	10.0%	OBL
4. <i>Dichanthellum scabrusculum</i>	1	<input type="checkbox"/>	10.0%	OBL
5.	0	<input type="checkbox"/>	0.0%	
6.	0	<input type="checkbox"/>	0.0%	
7.	0	<input type="checkbox"/>	0.0%	
8.	0	<input type="checkbox"/>	0.0%	
9.	0	<input type="checkbox"/>	0.0%	
10.	0	<input type="checkbox"/>	0.0%	
11.	0	<input type="checkbox"/>	0.0%	
12.	0	<input type="checkbox"/>	0.0%	
50% of Total Cover: 5 20% of Total Cover: 2 10 = Total Cover				
Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? <input type="checkbox"/>	Rel.Strat. Cover	Indicator Status
1. <i>Smilax laurifolia</i>	1	<input type="checkbox"/>	100.0%	FACW
2.	0	<input type="checkbox"/>	0.0%	
3.	0	<input type="checkbox"/>	0.0%	
4.	0	<input type="checkbox"/>	0.0%	
5.	0	<input type="checkbox"/>	0.0%	
50% of Total Cover: 0.5 20% of Total Cover: 0.2 1 = Total Cover				

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 10 (A)

Total Number of Dominant Species Across All Strata: 10 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of: 109 (A) Multiply by: 264 (B)

OBL species: 10 x 1 = 10

FACW species: 43 x 2 = 86

FAC species: 56 x 3 = 168

FACU species: 0 x 4 = 0

UPL species: 0 x 5 = 0

Column Totals: 109 (A) 264 (B)

Prevalence Index = B/A = 2.422

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Wet - 47

Profile Description: (Describe to the depth needed to document the Indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR	3/2	100					Sandy Loam	
6-16	10YR	4/2	95	10YR	6/6	5	C M	Sandy Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation
 City/County: Waveland - Hancock
 Sampling Date: 26-Oct-16
Applicant/Owner: NASA
 State: MS
 Sampling Point: Wet - 52
Investigator(s): Lars Larson, Randy Ellis
 Section, Township, Range: S 21 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Terrace
 Local relief (concave, convex, none): none
 Slope: 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T
 Lat.: 30° 25' 2.553" N
 Long.: 89° 36' 29.223" W
 Datum: NAD83
Soil Map Unit Name: H1A, Harleston fine sandy loam, 0 to 2 percent slopes
 NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?**
 Are "Normal Circumstances" present? Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?**
 (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Remarks:
 Area is approximately 250 feet east of Up - 52.

HYDROLOGY

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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 Barely have hydrology.... Slight evidence of oxidized rhizospheres.

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: Wet - 52

Tree Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	15	<input checked="" type="checkbox"/> 42.9%	FACW
2. <i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 28.6%	FACW
3. <i>Nyssa sylvatica</i>	10	<input checked="" type="checkbox"/> 28.6%	FAC
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 17.5 20% of Total Cover: 7 35 = Total Cover

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Pinus elliotii</i>	5	<input type="checkbox"/> 15.6%	FACW
2. <i>Nyssa sylvatica</i>	10	<input checked="" type="checkbox"/> 31.3%	FAC
3. <i>Magnolia virginiana</i>	15	<input checked="" type="checkbox"/> 46.9%	FACW
4. <i>Acer rubrum</i>	2	<input type="checkbox"/> 6.3%	FAC
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 16 20% of Total Cover: 6.4 32 = Total Cover

Shrub Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Ilex coriacea</i>	50	<input checked="" type="checkbox"/> 94.3%	FACW
2. <i>Cyrilla racemiflora</i>	3	<input type="checkbox"/> 5.7%	FACW
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 26.5 20% of Total Cover: 10.6 53 = Total Cover

Herb Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Ilex coriacea</i>	5	<input checked="" type="checkbox"/> 100.0%	FACW
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	
6.	0	<input type="checkbox"/> 0.0%	
7.	0	<input type="checkbox"/> 0.0%	
8.	0	<input type="checkbox"/> 0.0%	
9.	0	<input type="checkbox"/> 0.0%	
10.	0	<input type="checkbox"/> 0.0%	
11.	0	<input type="checkbox"/> 0.0%	
12.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 2.5 20% of Total Cover: 1 5 = Total Cover

Woody Vine Stratum (Plot size: 30 m)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. <i>Smilax laurifolia</i>	1	<input type="checkbox"/> 100.0%	FACW
2.	0	<input type="checkbox"/> 0.0%	
3.	0	<input type="checkbox"/> 0.0%	
4.	0	<input type="checkbox"/> 0.0%	
5.	0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 0.5 20% of Total Cover: 0.2 1 = Total Cover

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	<u>7</u>	(A)
Total Number of Dominant Species Across All Strata:	<u>7</u>	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	<u>100.0%</u>	(A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	0	x 1 = 0
FACW species	104	x 2 = 208
FAC species	22	x 3 = 66
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	<u>126</u> (A)	<u>274</u> (B)
Prevalence Index = B/A =		<u>2.175</u>

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0¹
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

SOIL

Sampling Point: Wet - 52

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)		%	Type ¹	Loc ²		
0-4	10YR	3/2	100						Loamy Sand	
4-12	10YR	4/2	97	10YR	6/6	3	D	M	Loamy Sand	
12-24	10YR	5/2	97	10YR	6/6	3	D	M	Loamy Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: NASA - Stennis; 1,100 Acre Wetland Delineation **City/County:** Waveland - Hancock **Sampling Date:** 31-Oct-16
Applicant/Owner: NASA **State:** MS **Sampling Point:** Wet - 53
Investigator(s): Lars Larson, Randy Ellis **Section, Township, Range:** S 21 T 7 s R 16 W
Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** none **Slope:** 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR T **Lat.:** 30° 25' 2.254" N **Long.:** 89° 36' 14.733" W **Datum:** NAD83
Soil Map Unit Name: At, Atmore silt loam, 0 to 2 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Remarks:
 Plot is approximately 200 feet south of the main property boundary and fence... small wet area approximately 500 feet north of the toe of the landfill area.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of 2 required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input checked="" type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
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Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (Inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 No strong redoximorphic indicators in soil.

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Dominant Species?

Sampling Point: Wet - 53

Tree Stratum (Plot size: 30 m)		Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	10	<input checked="" type="checkbox"/> 27.8%	FACW
2.	<i>Nyssa sylvatica</i>	15	<input checked="" type="checkbox"/> 41.7%	FAC
3.	<i>Magnolia virginiana</i>	10	<input checked="" type="checkbox"/> 27.8%	FACW
4.	<i>Taxodium ascendens</i>	1	<input type="checkbox"/> 2.8%	OBL
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 18 20% of Total Cover: 7.2 36 = Total Cover

Sapling or Sapling/Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Pinus elliotii</i>	1	<input type="checkbox"/> 6.3%	FACW
2.	<i>Nyssa sylvatica</i>	10	<input checked="" type="checkbox"/> 62.5%	FAC
3.	<i>Magnolia virginiana</i>	5	<input checked="" type="checkbox"/> 31.3%	FACW
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 8 20% of Total Cover: 3.2 16 = Total Cover

Shrub Stratum (Plot size: 30 m)		Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Ilex coriacea</i>	30	<input checked="" type="checkbox"/> 75.0%	FACW
2.	<i>Cyrilla racemiflora</i>	10	<input checked="" type="checkbox"/> 25.0%	FACW
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 20 20% of Total Cover: 8 40 = Total Cover

Herb Stratum (Plot size: 30 m)		Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Juncus polycephalus</i>	1	<input type="checkbox"/> 33.3%	OBL
2.	<i>Sarracenia alabamensis</i>	1	<input type="checkbox"/> 33.3%	OBL
3.	<i>Eriocaulon decangulare</i>	1	<input type="checkbox"/> 33.3%	OBL
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	
6.		0	<input type="checkbox"/> 0.0%	
7.		0	<input type="checkbox"/> 0.0%	
8.		0	<input type="checkbox"/> 0.0%	
9.		0	<input type="checkbox"/> 0.0%	
10.		0	<input type="checkbox"/> 0.0%	
11.		0	<input type="checkbox"/> 0.0%	
12.		0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 1.5 20% of Total Cover: 0.6 3 = Total Cover

Woody Vine Stratum (Plot size: 30 m)		Absolute % Cover	Rel.Strat. Cover	Indicator Status
1.	<i>Smilax laurifolia</i>	1	<input type="checkbox"/> 100.0%	FACW
2.		0	<input type="checkbox"/> 0.0%	
3.		0	<input type="checkbox"/> 0.0%	
4.		0	<input type="checkbox"/> 0.0%	
5.		0	<input type="checkbox"/> 0.0%	

50% of Total Cover: 0.5 20% of Total Cover: 0.2 1 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>4</u>	x 1 = <u>4</u>
FACW species <u>67</u>	x 2 = <u>134</u>
FAC species <u>25</u>	x 3 = <u>75</u>
FACU species <u>0</u>	x 4 = <u>0</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>96</u> (A)	<u>213</u> (B)
Prevalence Index = B/A = <u>2.219</u>	

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is > 50%
 - 3 - Prevalence Index is ≤ 3.0 ¹
 - Problematic Hydrophytic Vegetation ¹ (Explain)
- ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definition of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: Wet - 53

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR	3/1	98	10YR	6/2	2	D	M	Sandy Loam
4-16	10YR	4/2	98	10YR	6/2	20	D	M	Sandy Loam

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Muck Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks: