

## **Appendix D – Technical Studies and Background Information**

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## **Appendix D Contents**

Wetlands Delineation and U.S. Army Corps of Engineers Preliminary Jurisdictional Determination

**Figure 2** from Environmental Baseline Survey (EBS) for the Proposed Action Alternative (Preferred Alternative) Site (**Note:** Figure 2 will be included following finalization of the EBS.)

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**Wetlands Delineation and U.S. Army Corps of Engineers Preliminary Jurisdictional  
Determination**

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## **PRELIMINARY JURISDICTIONAL DETERMINATION**

Eastern Virginia Regulatory Section  
NAO-2015-0923 (Womans Bay, Bogues bay, Atlantic Ocean)

NASA Wallops Flight Facility  
Attn: Joshua Bundick  
34200 Fulton Street  
Wallops Island, Virginia 23337

Dear Mr. Bundick:

This letter is in regard to your request for a preliminary jurisdictional determination for waters of the U.S. (including wetlands) on property known as NASA Wallops Island Tower Sites, located on two 35 acre study areas at NASA's Wallops Island Flight Facility, in Wallops Island, Virginia.

The maps entitled "Figure 4 Study Area 1 Waters of the U.S. Delineation Map, and Figure 5 Study Area 2 Waters of the U.S. Delineation Map", by VHB and Corps date stamped as received June 1, 2015 (*copies enclosed*) provides the locations of waters and/or wetlands on the study areas listed above. The basis for this delineation includes application of the Corps' 1987 Wetland Delineation Manual and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region or Eastern Mountains and Piedmont Region and the positive indicators of wetland hydrology, hydric soils, and hydrophytic vegetation and the presence of an ordinary high water mark.

Discharges of dredged or fill material, including those associated with mechanized landclearing, into waters and/or wetlands on this site may require a Department of the Army permit and authorization by state and local authorities including a Virginia Water Protection Permit from the Virginia Department of Environmental Quality (DEQ), a permit from the Virginia Marine Resources Commission (VMRC) and/or a permit from your local wetlands board. This letter is a confirmation of the Corps preliminary jurisdiction for the waters and/or wetlands on the subject property and does not authorize any work in these areas. Please obtain all required permits before starting work in the delineated waters/wetland areas.

This is a preliminary jurisdictional determination and is therefore not a legally binding determination regarding whether Corps jurisdiction applies to the waters or wetlands in question. Accordingly, you may either consent to jurisdiction as set out in this preliminary jurisdictional determination and the attachments hereto if you agree with the determination, or you may request and obtain an approved jurisdictional determination.

This preliminary jurisdictional determination and associated wetland delineation map may be submitted with a permit application.

Enclosed is a copy of the "Preliminary Jurisdictional Determination Form". Please review the document, sign, and return one copy to Mr. Brian Denson, either via email ([brian.c.denson@usace.army.mil](mailto:brian.c.denson@usace.army.mil)) or via standard mail to US Army Corps of Engineers, Regulatory Office, and ATTN: Brian Denson, 803 Front Street Norfolk, Virginia 23510 within 30 days of receipt and keep one for your records. This delineation of waters and/or wetlands is valid for a period of five years from the date of this letter unless new information warrants revision prior to the expiration date.

If you have any questions, please contact me, either via telephone at (757) 201-7792 or via email at [brian.c.denson@usace.army.mil](mailto:brian.c.denson@usace.army.mil).

Sincerely,



Brian Denson  
Project Manager,  
Environmental Scientist

Enclosure(s): Figures 4 and 5, Preliminary JD Form

Cc: NASA, VHB



**NASA WALLOPS ISLAND TOWER SITES**  
WATERS OF THE U.S. DELINEATION  
ACCOMACK COUNTY, VIRGINIA



FIGURE 4  
Study Area 1 Waters of the U.S. Delineation Map



**NASA WALLOPS ISLAND TOWER SITES**  
WATERS OF THE U.S. DELINEATION  
ACCOMACK COUNTY, VIRGINIA



FIGURE 5  
Study Area 2 Waters of the U.S. Delineation Map



June 1, 2015

Ref: 33984.00

Norfolk District - Regulatory Branch  
U.S. Army Corps of Engineers  
Regulator of the Day (ROD)  
803 Front Street  
Norfolk, Virginia 23510

DELIVERED VIA EMAIL

Re: Request for Preliminary Jurisdictional Determination  
NASA Wallops Island Tower Sites, Accomack County, Virginia

Dear Norfolk District ROD,

On behalf of the National Aeronautics and Space Administration (NASA) Wallops Flight Facility, in cooperation with LJT & Associates, Inc., Vanasse Hangen Brustlin, Inc. (VHB) is requesting a Preliminary Jurisdictional Determination (PJD) within two study areas on Wallops Island in Accomack County, Virginia (Attachment 1: Figure 1). Each study area is approximately 35 acres in size and is being considered by NASA for suitability pertaining to tower construction. To assist in the completion of the PJD, VHB conducted a detailed delineation of Waters of the U.S. (WOUS), including wetlands, within each study area. Information required by the U.S. Army Corps of Engineers (USACE) to complete the PJD is provided below.

**Methodology:** VHB applied the technical criteria outlined in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plains Region (Version 2.0)* and associated guidance to identify jurisdictional boundaries within the project area (USACE 2010). Preliminary site research utilized soil types identified by Natural Resources Conservation Service (NRCS, Attachment 1: Figure 2) as well as features depicted on the U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (Attachment 1: Figure 3). Fieldwork was then conducted on April 22<sup>nd</sup> and 23<sup>rd</sup> of 2015, when precipitation and drought conditions were considered in the normal range. Data collection for USACE data sheets (Attachment 2) was conducted throughout each study area, and plants encountered during sampling were identified to species level using several regional references, with nomenclature following the 2014 National Wetland Plant List. Representative photographs were taken of the data observation points and are included as Attachment 3.

**Site Description:** Each approximate 35-acre study area is located on Wallops Island within the NASA Flight Facility property. Based on the NRCS Web Soil Survey (WSS), the study areas are predominantly underlain by several soil series, including Assateague fine sand, Beaches, Camocca fine sand, Chincoteague silt loam, Fisherman-Camocca complex, and Udorthents and Udipsamment soils (Attachment 1: Figure 2). The USFWS National Wetlands Inventory



(NWI) mapping depicts a variety of palustrine and estuarine wetland types within and surrounding the study area, as well as marine systems associated with the Atlantic Ocean (Attachment 1: Figure 3).

The detailed wetland delineation conducted by VHB determined that WOUS, including wetlands, are present within each of the two study area. Based on classification standards included in Cowardin et al. (1979), VHB identified several types of estuarine, marine, and palustrine jurisdictional water resources (See Attachment 1, Figure 4 and 5; and Table 1 and 2 below).

Table 1: Summary of Jurisdictional Wetlands and Other Waters of the U.S. located within Study Area 1 of the NASA Wallops Island Tower Sites Project.

Resource Type	Area	Notes
Estuarine Emergent (E2EM1N)	0.19 Ac.	Edge of estuary north of Bypass Road
Marine Intertidal (M2US2)	0.08 Ac.	Intertidal beach of Atlantic Ocean
Palustrine Emergent (PEM1R)	0.66 Ac.	Edge of estuary north of Bypass Road
Palustrine Emergent/Scrub-Shrub (PEM1/SS3Cd)	14.77 Ac.	Mostly dominated by <i>Phragmites australis</i>
Palustrine Open Water (POWS)	0.35 Ac.	Receiving waters for most PEM/SS areas

Table 2: Summary of Jurisdictional Wetlands and Other Waters of the U.S. located within Study Area 2 of the NASA Wallops Island Tower Sites Project.

Resource Type	Area	Notes
Estuarine Emergent (E2US1/EM1N)	0.86 Ac.	Edge of estuary northeast of Bypass Road
Estuarine Scrub-Shrub (E2SS1P)	1.07 Ac.	Edge of estuary northeast of Bypass Road
Marine Intertidal (M2US2)	1.78 Ac.	Intertidal beach of Atlantic Ocean
Marine Subtidal (M1UBL)	0.23 Ac.	Subtidal edge of Atlantic Ocean
Palustrine Emergent (PEM1x)	0.24 Ac.	Jurisdictional ditches and excavated wetlands
Palustrine Emergent/Scrub-Shrub (PEM1/SS3Cd)	12.05 Ac.	Mostly dominated by <i>Phragmites australis</i>
Palustrine Open Water (POWS)	0.32 AC	Receiving waters for most PEM/SS areas



Data describing these resources are presented in the USACE data forms provided in Attachment 2 and representative photographs are provided in Attachment 3. The following paragraphs provide a brief description of each jurisdictional feature type, as well as non-wetland resources within each study area.

*Estuarine WOUS* - These wetlands identified by VHB are connected to the larger estuarine system located north and northeast of Bypass Road (Attachment 1; Figure 4 and 5). Within each study area, emergent and/or scrub-shrub habitats are located along the edge of the estuarine system. Typical vegetation includes eastern baccharis (*Baccharis halimifolia*), cordgrass (*Spartina* spp.), saltgrass (*Distichlis spicata*), and saltmeadow rush (*Juncus gerardii*). These wetland communities meet the three parameters required for a jurisdictional wetland determination, based on meeting multiple indicators for hydrophytic vegetation, hydric soils, and wetland hydrology.

*Marine WOUS* – Marine features within the study area are found along the Atlantic Ocean seaboard. Due to beach renourishment and natural processes, the intertidal beach zone appears typical of natural marine systems found along barrier islands. The transition to the subtidal zone is gradual and active beach erosion appears normal. These jurisdictional features meet the parameters required for marine classifications of WOUS.

*Palustrine WOUS* – The majority of wetlands identified within the study areas belong to the freshwater palustrine system. Palustrine emergent (EM) and scrub-shrub (SS) mosaics are the dominant wetland type; however most of the PEM/SS wetlands identified in Study Area 1 are dominated by dense, contiguous stands of common reed (*Phragmites australis*) bordered by wax myrtle communities along the wetland boundary. Study Area 2 has a greater density of wax myrtle and bayberry (*Morella pensylvanica*), but common reed also remains very dense. These wetland communities meet the three parameters required for a jurisdictional wetland determination, based on meeting multiple indicators for hydrophytic vegetation, hydric soils, and wetland hydrology. Palustrine open waters (POW) are also present paralleling Bypass Road, and provide the receiving waters for the PEM/SS wetland complex.

Further, several PEMx wetlands found in Study Area 1 also meet the three wetland parameters, but appear disconnected from the larger PEM/PSS complex. Past land use and excavation activities have likely influenced the conditions in these wetland areas, and typical wetland functions may therefore be reduced. Study Area 2 also has multiple wetland areas that are disconnected from the main PEM/SS complex. These wetlands are occasionally dominated by common reed, but some vegetation communities appear to be maintained and lack dense populations of reed. These PEM wetlands meet the three wetland parameters, and may have hydraulic inputs from both groundwater and precipitation.

*Non-wetland Features* - Non-wetland habitats identified by VHB within the project area generally include the following community types: 1) roads and nearby grass communities (maintained), 2) dunes, 3) elevated fill created by historic land use, and 4) natural upland buffers along the edge of PEM/SS wetland complexes. These non-wetland habitat are occasional found to meet 1 or 2 wetland parameters required for federal jurisdiction, but all three parameters are typically absent.

**Confirmation Request** - Included in this PJD request package are figures showing the GPS-location of the 2015 WOUS delineation (Attachment 1), USACE regional supplement data forms (Attachment 2), representative field photographs (Attachment 3), and a USACE Pre-application Request Form (Attachment 4). VHB would be happy to



arrange an onsite meeting with you to review the WOUS delineation and to answer any questions you may have. In the interim, if you have any questions or require any additional information, please do not hesitate to contact me at (757) 220-0500, or via email at [csenfield@vhb.com](mailto:csenfield@vhb.com).

Sincerely,

A handwritten signature in black ink, appearing to read "C. Senfield".

Christopher R. Senfield, PWS, PWD

Wetland Scientist

[csenfield@vhb.com](mailto:csenfield@vhb.com)

CC: Mr. Joshua Bundick, NASA Flight Facility (SENT VIA EMAIL)

Ms. Marianne Simko, LJT & Associates, Inc. (SENT VIA EMAIL)



**Reference Cited:**

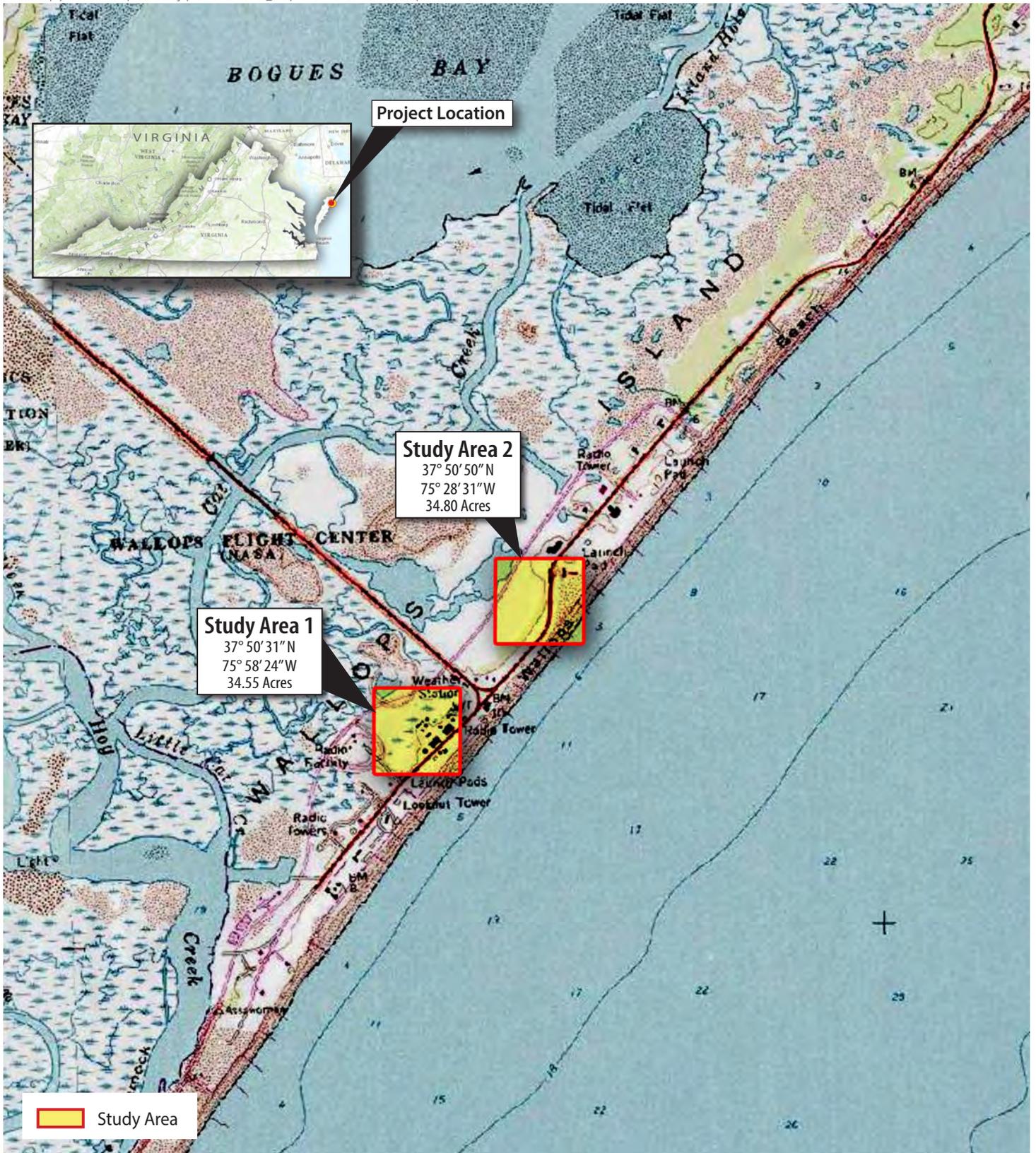
Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U. S. Department of the Interior, Fish and Wildlife Service, Washington, D.C.

U.S. Army Corps of Engineers (USACE). 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coast Region* (Version 2.0). Wetland Regulatory Assistance Program. May.



Attachment 1

2015 Waters of the U.S. Delineation Figures



### NASA WALLOPS ISLAND TOWER SITES

WATERS OF THE U.S. DELINEATION  
ACCOMACK COUNTY, VIRGINIA



FIGURE 1  
Project Location Map



**NASA WALLOPS ISLAND TOWER SITES**

WATERS OF THE U.S. DELINEATION  
ACCOMACK COUNTY, VIRGINIA



FIGURE 2  
NRCS Soil Map





**NASA WALLOPS ISLAND TOWER SITES**  
WATERS OF THE U.S. DELINEATION  
ACCOMACK COUNTY, VIRGINIA



FIGURE 4  
Study Area 1 Waters of the U.S. Delineation Map



**Study Area 2 (34.80 Ac.)**

- Wetland Flag
- Data Point

**Wetlands and Waters of the U.S. Data:**

- Estuarine Emergent (E2US1/EM1N), 0.86 Ac.
- Estuarine Scrub-Shrub (E2SS1P), 1.07 Ac.
- Marine Intertidal (M2US2), 1.78 Ac.
- Marine Subtidal (M1UBL), 0.23 Ac.
- Palustrine Emergent (PEM1x), 0.24 Ac.
- Palustrine Emergent/Scrub-Shrub (PEM1/SS3Cd), 12.05 Ac.
- Palustrine Open Water (POWS), 0.32 Ac.



**NASA WALLOPS ISLAND TOWER SITES**  
**WATERS OF THE U.S. DELINEATION**  
**ACCOMACK COUNTY, VIRGINIA**



FIGURE 5  
 Study Area 2 Waters of the U.S. Delineation Map

Attachment 2  
2015 USACE Data Sheets



WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project Site: NASA Wallops Tower Site - Study Area 1 City/County: Accomack County State: VA Sampling Point: 1

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

Hydrophytic Vegetation Present? YES Is This Sample Area Within a Wetland? YES

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Secondary Indicators (minimum of two required)

Field Observations: Surface Water Present? Depth (inches): SURFACE Wetland Hydrology Present? YES

Remarks: Primary indicators of wetland hydrology present; parameter is met.

SOIL

Table with 8 columns: Depth (in), Matrix, Color (moist), %, Redox Features (Color (moist), %, Type1, Loc2), Texture, Remarks

1>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: X Histosol (A1) Dark Surface (S7) Indicators for Problematic Hydric Soils3: 2 cm Muck (A10)

Restrictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? YES

Remarks: Indicator A1 (Histosol) present and soil meets NTCHS definition of hydric soil; parameter is met.



Tree Stratum	(Plot size: <u>30' radius</u> )	Absolute % Cover	Dom. Sp?	Indicator Status		
1.	_____	_____	_____	_____	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>2</u> (A)  # Dominants across all strata: <u>2</u> (B)  % Dominants OBL, FACW, FAC: <u>100%</u> (A/B)	
2.	_____	_____	_____	_____		
3.	_____	_____	_____	_____		
4.	_____	_____	_____	_____		
5.	_____	_____	_____	_____		
6.	_____	_____	_____	_____		
7.	_____	_____	_____	_____		
				= Total Cover	Prevalence Index Worksheet: Total % Cover of: _____ Multiply By: OBL <u>53</u> x 1 = <u>53</u> FACW <u>63</u> x 2 = <u>126</u> FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: <u>116</u> (A) <u>179</u> (B)  Prevalence Index = B/A = <u>1.54</u>	
Sapling Stratum	(Plot size: <u>30' radius</u> )	Absolute % Cover	Dom. Sp?	Indicator Status		
1.	_____	_____	_____	_____		
2.	_____	_____	_____	_____		
3.	_____	_____	_____	_____		
4.	_____	_____	_____	_____		
5.	_____	_____	_____	_____		
6.	_____	_____	_____	_____		
7.	_____	_____	_____	_____		
				= Total Cover		
Shrub Stratum	(Plot size: <u>15' radius</u> )	Absolute % Cover	Dom. Sp?	Indicator Status		
1.	_____	_____	_____	_____	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation <sup>1</sup> (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2.	_____	_____	_____	_____		
3.	_____	_____	_____	_____		
4.	_____	_____	_____	_____		
5.	_____	_____	_____	_____		
6.	_____	_____	_____	_____		
7.	_____	_____	_____	_____		
				= Total Cover		
Herb Stratum	(Plot size: <u>10' radius</u> )	Absolute % Cover	Dom. Sp?	Indicator Status		
1.	<u>Spartina patens</u>	<u>63</u>	<u>X</u>	<u>FACW</u>	Definitions of Vegetation Strata:  Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).  Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.  Hydrophytic Vegetation Present? <u>YES</u>	
2.	<u>Distichlis spicata</u>	<u>38</u>	<u>X</u>	<u>OBL</u>		
3.	<u>Juncus gerardii</u>	<u>15</u>		<u>OBL</u>		
4.	_____	_____	_____	_____		
5.	_____	_____	_____	_____		
6.	_____	_____	_____	_____		
7.	_____	_____	_____	_____		
8.	_____	_____	_____	_____		
9.	_____	_____	_____	_____		
10.	_____	_____	_____	_____		
11.	_____	_____	_____	_____		
12.	_____	_____	_____	_____		
				<u>116</u> = Total Cover		
Woody Vines	(Plot size: <u>30' radius</u> )	Absolute % Cover	Dom. Sp?	Indicator Status		
1.	_____	_____	_____	_____		
2.	_____	_____	_____	_____		
3.	_____	_____	_____	_____		
4.	_____	_____	_____	_____		
5.	_____	_____	_____	_____		
				= Total Cover		
Remarks: (If observed, list morphological adaptations below). <b>Indicator 1 (Rapid Test) present due to dominance of FACW or OBL species.</b> <b>Other indicators calculated for reference only.</b>						



WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project Site: NASA Wallops Tower Site - Study Area 1 City/County: Accomack County State: VA Sampling Point: 2

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

Hydrophytic Vegetation Present? YES Is This Sample Area Within a Wetland? NO

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Secondary Indicators (minimum of two required)

SOIL

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



Tree Stratum	(Plot size: <u>30' radius</u> )	Absolute % Cover	Dom. Sp?	Indicator Status	
1.	_____	_____	_____	_____	<b>Dominance Test Worksheet:</b> # Dominants OBL, FACW, FAC: <u>3</u> (A)  # Dominants across all strata: <u>5</u> (B)  % Dominants OBL, FACW, FAC: <u>60%</u> (A/B)
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	<b>Prevalence Index Worksheet:</b> Total % Cover of: _____ Multiply By: _____ OBL _____ x 1 = _____ FACW <u>15</u> x 2 = <u>30</u> FAC <u>116</u> x 3 = <u>348</u> FACU <u>45</u> x 4 = <u>180</u> UPL <u>15</u> x 5 = <u>75</u> Sum: <u>191</u> (A) <u>633</u> (B)  Prevalence Index = B/A = <u>3.31</u>
				= Total Cover	
				= Total Cover	
				= Total Cover	
				= Total Cover	
				= Total Cover	
				= Total Cover	
				= Total Cover	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
				= Total Cover	
				= Total Cover	
				= Total Cover	
				= Total Cover	
				= Total Cover	
				= Total Cover	
				= Total Cover	<b>Definitions of Vegetation Strata:</b>  Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).  Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.
				= Total Cover	
				= Total Cover	
				= Total Cover	
				= Total Cover	
				= Total Cover	
				= Total Cover	
				= Total Cover	Hydrophytic Vegetation Present? <u>YES</u>
				= Total Cover	
Remarks: (If observed, list morphological adaptations below).  <b>Indicator 2 (Dominance Test) present with &gt;50% of dominant species across all vegetation strata FAC or wetter.</b>  <b>Other indicators calculated for reference only.</b>					



WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project Site: NASA Wallops Tower Site - Study Area 1 City/County: Accomack County State: VA Sampling Point: 3

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

Hydrophytic Vegetation Present? NO Is This Sample Area Within a Wetland? NO

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Secondary Indicators (minimum of two required)

SOIL

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



	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30' radius</u> )				
1. <b>Prunus serotina</b>	<b>63</b>	<b>X</b>	<b>FACU</b>	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
	<b>63</b>	= Total Cover		
Sapling Stratum (Plot size: <u>30' radius</u> )				
1. <b>Prunus serotina</b>	<b>15</b>	<b>X</b>	<b>FACU</b>	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
	<b>15</b>	= Total Cover		
Shrub Stratum (Plot size: <u>15' radius</u> )				
1. <b>Juniperus virginiana</b>	<b>15</b>	<b>X</b>	<b>FACU</b>	
2. <b>Prunus serotina</b>	<b>15</b>	<b>X</b>	<b>FACU</b>	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
	<b>30</b>	= Total Cover		
Herb Stratum (Plot size: <u>10' radius</u> )				
1. <b>Smilax rotundifolia</b>	<b>38</b>	<b>X</b>	<b>FAC</b>	
2. <b>Andropogon virginicus</b>	<b>38</b>	<b>X</b>	<b>FAC</b>	
3. <b>Panicum virgatum</b>	<b>15</b>		<b>FAC</b>	
4. <b>Achillea millefolium</b>	<b>3</b>		<b>FACU</b>	
5. <b>Plantago lanceolata</b>	<b>3</b>		<b>FACU</b>	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<b>97</b>	= Total Cover		
Woody Vines (Plot size: <u>30' radius</u> )				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
		= Total Cover		
				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>2</u> (A) # Dominants across all strata: <u>6</u> (B) % Dominants OBL, FACW, FAC: <u>33%</u> (A/B)
				Prevalence Index Worksheet: Total % Cover of: _____ Multiply By: _____ OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC <u>91</u> x 3 = <u>273</u> FACU <u>114</u> x 4 = <u>456</u> UPL _____ x 5 = _____ Sum: <u>205</u> (A) <u>729</u> (B) Prevalence Index = B/A = <u>3.56</u>
				Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation <sup>1</sup> (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
				Hydrophytic Vegetation Present? <u>NO</u>
Remarks: (If observed, list morphological adaptations below). <b>No hydrophytic vegetation indicators present; parameter is not met.</b>				



WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project Site: NASA Wallops Tower Site - Study Area 1 City/County: Accomack County State: VA Sampling Point: 4
Applicant/Owner: LJT & Associates, Inc./NASA Wallops Island
Investigator(s): C. Senfield, PWS, PWD Section, Township, Range: NA
Landform (hillslope, terrace, etc.): Maintained Field Local relief (concave, convex, none): None Slope (%): 0-1
Subregion (LRR or MLRA): LRR T, MLRA 153D Lat: 37 50 31 N Long: 75 58 24 W Datum: WGS 1984
Soil Map Unit: Camocca fine sand, 0 to 2 percent slopes, frequently flooded NWI Map Unit: None
Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)
Are Vegetation, Soil, or Hydrology significantly disturbed? No Normal Circumstances? Yes
Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? YES
Hydric Soil Present? NO
Wetland Hydrology Present? NO
Is This Sample Area Within a Wetland? NO
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.
Observation point taken in upland field near flag A-47.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Aquatic Fauna (B13) Surface Soil Cracks (B6)
High Water Table (A2) Marl Deposits (B15) Sparsely Vegetated Concave Surface (B8)
Saturation (A3) Hydrogen Sulfide Odor (C1) Drainage Patterns (B10)
Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Moss Trim Lines (B16)
Sediment Deposits (B2) Presence of Reduced Iron (C4) Dry-Season Water Table (C2)
Drift Deposits (B3) Recent Iron Reduction in Tilled Soils (C6) Crayfish Burrows (C8)
Algal Mat or Crust (B4) Thin Muck Surface (C7) Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5) Other (Explain in Remarks) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Shallow Aquitard (D3)
Water-Stained Leaves (B9) FAC-Neutral Test (D5)
Sphagnum Moss (D8)
Field Observations:
Surface Water Present? Depth (inches): Wetland Hydrology Present? NO
Water Table Present? Depth (inches):
Saturation Present? Depth (inches):
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features Texture Remarks
0-3 10YR 3/1 100 7.5YR 5/6 10 C M loamy sand
3-7 10YR 4/3 90 7.5YR 5/6 20 C M loamy sand
7-16 10YR 4/2 80 7.5YR 5/6 20 C M loamy sand
Hydric Soil Indicators:
Dark Surface (S7)
Polyvalue Below Surface (S8)
Thin Dark Surface (S9)
Loamy Gleyed Matrix (F2)
Depleted Matrix (F3)
Redox Dark Surface (F6)
Depleted Dark Surface (F7)
Redox Depressions (F8)
Iron-Manganese Masses (F12)
Umbric Surface (F13)
Piedmont Floodplain Soils (F19)
Anomalous Bright Loamy Soils (F20)
Indicators for Problematic Hydric Soils:
2 cm Muck (A10)
Piedmont Floodplain Soils (F19)
Anomalous Bright Loamy Soils (F20)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? NO
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.



Tree Stratum	(Plot size: <u>30' radius</u> )	Absolute % Cover	Dom. Sp?	Indicator Status	
1.	_____	_____	_____	_____	<b>Dominance Test Worksheet:</b> # Dominants OBL, FACW, FAC: <u>1</u> (A)  # Dominants across all strata: <u>1</u> (B)  % Dominants OBL, FACW, FAC: <u>100%</u> (A/B)
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	<b>Prevalence Index Worksheet:</b> Total % Cover of: _____ Multiply By: _____ OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC <u>85</u> x 3 = <u>255</u> FACU <u>15</u> x 4 = <u>60</u> UPL _____ x 5 = _____ Sum: <u>100</u> (A) <u>315</u> (B)  Prevalence Index = B/A = <u>3.15</u>
<b>Sapling Stratum</b> (Plot size: <u>30' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	
<b>Shrub Stratum</b> (Plot size: <u>15' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
<b>Herb Stratum</b> (Plot size: <u>10' radius</u> )					
1.	<u>Schedonorus arundinaceus</u>	<u>85</u>	<u>X</u>	<u>FAC</u>	
2.	<u>Poa pratensis</u>	<u>15</u>		<u>FACU</u>	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
8.	_____	_____	_____	_____	
9.	_____	_____	_____	_____	
10.	_____	_____	_____	_____	
11.	_____	_____	_____	_____	
12.	_____	_____	_____	_____	
				<u>100</u> = Total Cover	
<b>Woody Vines</b> (Plot size: <u>30' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
				= Total Cover	
Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).  Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.					
Hydrophytic Vegetation Present? <u>YES</u>					
Remarks: (If observed, list morphological adaptations below).  <b>Indicator 2 (Dominance Test) present with &gt;50% of dominant species across all vegetation strata FAC or wetter.</b>  <b>Other indicators calculated for reference only.</b>					



WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project Site: NASA Wallops Tower Site - Study Area 1 City/County: Accomack County State: VA Sampling Point: 5

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

Hydrophytic Vegetation Present? YES Is This Sample Area Within a Wetland? YES

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Secondary Indicators (minimum of two required)

Field Observations: Surface Water Present? YES Depth (inches): SURFACE Wetland Hydrology Present? YES

Remarks: Primary indicators of wetland hydrology present; parameter is met.

SOIL

Table with 9 columns: Depth, Matrix, Color (moist), %, Color (moist), %, Type, Loc, Texture, Remarks. Row 1: 0-16, 2.5Y 4/2, 90, 7.5YR 5/8, 10, C, M, sandy loam

1>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2)Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: Histosol (A1) Dark Surface (S7) Indicators for Problematic Hydric Soils: 2 cm Muck (A10)

Restrictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? YES

Remarks: Indicator F3 (Depleted Matrix) present and soil meets NTCHS definition of hydric soil; parameter is met.



Tree Stratum	(Plot size: <u>30' radius</u> )	Absolute % Cover	Dom. Sp?	Indicator Status	
1.	_____	_____	_____	_____	<b>Dominance Test Worksheet:</b> # Dominants OBL, FACW, FAC: <u>1</u> (A) # Dominants across all strata: <u>1</u> (B) % Dominants OBL, FACW, FAC: <u>100%</u> (A/B)
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	<b>Prevalence Index Worksheet:</b> Total % Cover of: _____ Multiply By: _____ OBL _____ x 1 = _____ FACW <u>95</u> x 2 = <u>190</u> FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: <u>95</u> (A) <u>190</u> (B) Prevalence Index = B/A = <u>2.00</u>
<b>Sapling Stratum</b> (Plot size: <u>30' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	
<b>Shrub Stratum</b> (Plot size: <u>15' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation <sup>1</sup> (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations <small><sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
<b>Herb Stratum</b> (Plot size: <u>10' radius</u> )					
1.	<u>Phragmites australis</u>	<u>95</u>	<u>X</u>	<u>FACW</u>	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
8.	_____	_____	_____	_____	
9.	_____	_____	_____	_____	
10.	_____	_____	_____	_____	
11.	_____	_____	_____	_____	
12.	_____	_____	_____	_____	
				<u>95</u> = Total Cover	
<b>Woody Vines</b> (Plot size: <u>30' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
				= Total Cover	
<b>Remarks:</b> (If observed, list morphological adaptations below). <b>Indicator 1 (Rapid Test) present due to dominance of FACW or OBL species.</b> <b>Other indicators calculated for reference only.</b>					<b>Definitions of Vegetation Strata:</b> Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
					Hydrophytic Vegetation Present? <u>YES</u>



WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project Site: NASA Wallops Tower Site - Study Area 1 City/County: Accomack County State: VA Sampling Point: 6

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

Hydrophytic Vegetation Present? NO Is This Sample Area Within a Wetland? NO

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Secondary Indicators (minimum of two required)

SOIL

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



Tree Stratum	(Plot size: <u>30' radius</u> )	Absolute % Cover	Dom. Sp?	Indicator Status	
1.	_____	_____	_____	_____	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>1</u> (A)  # Dominants across all strata: <u>5</u> (B)  % Dominants OBL, FACW, FAC: <u>20%</u> (A/B)
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
		_____ = Total Cover			Prevalence Index Worksheet: Total % Cover of: _____ Multiply By: _____ OBL _____ x 1 = _____ FACW <u>15</u> x 2 = <u>30</u> FAC <u>3</u> x 3 = <u>9</u> FACU <u>92</u> x 4 = <u>368</u> UPL <u>3</u> x 5 = <u>15</u> Sum: <u>113</u> (A) <u>422</u> (B)  Prevalence Index = B/A = <u>3.73</u>
Sapling Stratum	(Plot size: <u>30' radius</u> )				
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
		_____ = Total Cover			
Shrub Stratum	(Plot size: <u>15' radius</u> )				
1.	_____	_____	_____	_____	Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation <sup>1</sup> (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
		_____ = Total Cover			
Herb Stratum	(Plot size: <u>10' radius</u> )				
1.	<u>Cynodon dactylon</u>	<u>38</u>	<u>X</u>	<u>FACU</u>	Definitions of Vegetation Strata:  Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).  Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.
2.	<u>Phragmites australis</u>	<u>15</u>	<u>X</u>	<u>FACW</u>	
3.	<u>Stellaria media</u>	<u>15</u>	<u>X</u>	<u>FACU</u>	
4.	<u>Taraxacum officinale</u>	<u>15</u>	<u>X</u>	<u>FACU</u>	
5.	<u>Trifolium repens</u>	<u>15</u>	<u>X</u>	<u>FACU</u>	
6.	<u>Vicia sativa</u>	<u>3</u>		<u>FACU</u>	
7.	<u>Cardamine parviflora</u>	<u>3</u>		<u>FACU</u>	
8.	<u>Lamium purpureum</u>	<u>3</u>		<u>UPL</u>	
9.	<u>Schedonorus arundinaceus</u>	<u>3</u>		<u>FAC</u>	
10.	<u>Poa pratensis</u>	<u>3</u>		<u>FACU</u>	
11.	_____	_____	_____	_____	
12.	_____	_____	_____	_____	
		<u>113</u> = Total Cover			
Woody Vines	(Plot size: <u>30' radius</u> )				
1.	_____	_____	_____	_____	Hydrophytic Vegetation Present? <u>NO</u>
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
		_____ = Total Cover			
Remarks: (If observed, list morphological adaptations below). <p style="text-align: center;"><b>No hydrophytic vegetation indicators present; parameter is not met.</b></p>					



WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project Site: NASA Wallops Tower Site - Study Area 1 City/County: Accomack County State: VA Sampling Point: 7

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

Hydrophytic Vegetation Present? YES Is This Sample Area Within a Wetland? YES

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Secondary Indicators (minimum of two required)

Field Observations: Surface Water Present? YES Depth (inches): SURFACE Wetland Hydrology Present? YES

Remarks: Primary indicators of wetland hydrology present; parameter is met.

SOIL

Table with 9 columns: Depth, Matrix, Color (moist), %, Color (moist), %, Type, Loc, Texture, Remarks

1>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2)Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: Dark Surface (S7) Depleted Matrix (F3) Indicators for Problematic Hydric Soils: 2 cm Muck (A10)

Restrictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? YES

Remarks: Indicator F3 (Depleted Matrix) present and soil meets NTCHS definition of hydric soil; parameter is met.



Tree Stratum	(Plot size: <u>30' radius</u> )	Absolute % Cover	Dom. Sp?	Indicator Status	
1.	_____	_____	_____	_____	<b>Dominance Test Worksheet:</b> # Dominants OBL, FACW, FAC: <u>1</u> (A) # Dominants across all strata: <u>1</u> (B) % Dominants OBL, FACW, FAC: <u>100%</u> (A/B)
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	<b>Prevalence Index Worksheet:</b> Total % Cover of: _____ Multiply By: _____ OBL <u>3</u> x 1 = <u>3</u> FACW <u>95</u> x 2 = <u>190</u> FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: <u>98</u> (A) <u>193</u> (B) Prevalence Index = B/A = <u>1.97</u>
<b>Sapling Stratum</b> (Plot size: <u>30' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	
<b>Shrub Stratum</b> (Plot size: <u>15' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation <sup>1</sup> (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
<b>Herb Stratum</b> (Plot size: <u>10' radius</u> )					
1.	<b>Phragmites australis</b>	<b>95</b>	<b>X</b>	<b>FACW</b>	
2.	<b>Salix nigra</b>	<b>3</b>		<b>OBL</b>	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
8.	_____	_____	_____	_____	
9.	_____	_____	_____	_____	
10.	_____	_____	_____	_____	
11.	_____	_____	_____	_____	
12.	_____	_____	_____	_____	
				<b>98</b> = Total Cover	
<b>Woody Vines</b> (Plot size: <u>30' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
				= Total Cover	
<b>Remarks:</b> (If observed, list morphological adaptations below). <b>Indicator 1 (Rapid Test) present due to dominance of FACW or OBL species.</b> <b>Other indicators calculated for reference only.</b>					<b>Tree</b> - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).  <b>Sapling</b> - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.  <b>Shrub</b> - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  <b>Herb</b> - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  <b>Woody vine</b> - All woody vines, regardless of height.
					<b>Hydrophytic Vegetation Present?</b> <u>YES</u>



WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project Site: NASA Wallops Tower Site - Study Area 1 City/County: Accomack County State: VA Sampling Point: 8

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

Hydrophytic Vegetation Present? NO Is This Sample Area Within a Wetland? NO

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Secondary Indicators (minimum of two required)

SOIL

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



	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30' radius</u> )				
1. <b>Prunus serotina</b>	<b>63</b>	<b>X</b>	<b>FACU</b>	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>4</u> (A)  # Dominants across all strata: <u>8</u> (B)  % Dominants OBL, FACW, FAC: <u>50%</u> (A/B)
2. <b>Celtis occidentalis</b>	<b>15</b>		<b>FACU</b>	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
	<b>78</b>	= Total Cover		
Sapling Stratum (Plot size: <u>30' radius</u> )				Prevalence Index Worksheet: Total % Cover of: _____ Multiply By: _____ OBL _____ x 1 = _____ FACW <u>3</u> x 2 = <u>6</u> FAC <u>59</u> x 3 = <u>177</u> FACU <u>114</u> x 4 = <u>456</u> UPL _____ x 5 = _____ Sum: <u>176</u> (A) <u>639</u> (B)  Prevalence Index = B/A = <u>3.63</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
Shrub Stratum (Plot size: <u>15' radius</u> )				Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation <sup>1</sup> (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <b>Baccharis halimifolia</b>	<b>3</b>	<b>X</b>	<b>FAC</b>	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
	<b>3</b>	= Total Cover		
Herb Stratum (Plot size: <u>10' radius</u> )				Definitions of Vegetation Strata:  Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).  Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.
1. <b>Schedonorus arundinaceus</b>	<b>38</b>	<b>X</b>	<b>FAC</b>	
2. <b>Lonicera japonica</b>	<b>15</b>	<b>X</b>	<b>FACU</b>	
3. <b>Achillea millefolium</b>	<b>15</b>	<b>X</b>	<b>FACU</b>	
4. <b>Smilax rotundifolia</b>	<b>15</b>	<b>X</b>	<b>FAC</b>	
5. <b>Juniperus virginiana</b>	<b>3</b>		<b>FACU</b>	
6. <b>Dichanthelium clandestinum</b>	<b>3</b>		<b>FACW</b>	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<b>89</b>	= Total Cover		
Woody Vines (Plot size: <u>30' radius</u> )				Hydrophytic Vegetation Present? <u>NO</u>
1. <b>Toxicodendron radicans</b>	<b>3</b>	<b>X</b>	<b>FAC</b>	
2. <b>Lonicera japonica</b>	<b>3</b>	<b>X</b>	<b>FACU</b>	
3. _____				
4. _____				
5. _____				
	<b>6</b>	= Total Cover		
Remarks: (If observed, list morphological adaptations below).  <b>No hydrophytic vegetation indicators present; parameter is not met.</b> <b>Other indicators calculated for reference only.</b>				



WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project Site: NASA Wallops Tower Site - Study Area 1 City/County: Accomack County State: VA Sampling Point: 9

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

Hydrophytic Vegetation Present? YES Is This Sample Area Within a Wetland? YES

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Secondary Indicators (minimum of two required)

Field Observations: Surface Water Present? YES Depth (inches): SURFACE Wetland Hydrology Present? YES

Remarks: Primary indicators of wetland hydrology present; parameter is met.

SOIL

Table with 9 columns: Depth, Matrix, Color (moist), %, Color (moist), %, Type, Loc, Texture, Remarks

1>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2)Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: Histosol (A1) Dark Surface (S7) Indicators for Problematic Hydric Soils: 2 cm Muck (A10)

Restrictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? YES

Remarks: Indicator F3 (Depleted Matrix) present and soil meets NTCHS definition of hydric soil; parameter is met.



Tree Stratum	(Plot size: <u>30' radius</u> )	Absolute % Cover	Dom. Sp?	Indicator Status	
1.	_____	_____	_____	_____	<b>Dominance Test Worksheet:</b> # Dominants OBL, FACW, FAC: <u>1</u> (A) # Dominants across all strata: <u>1</u> (B) % Dominants OBL, FACW, FAC: <u>100%</u> (A/B)
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	<b>Prevalence Index Worksheet:</b> Total % Cover of: _____ Multiply By: _____ OBL _____ x 1 = _____ FACW <u>95</u> x 2 = <u>190</u> FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: <u>95</u> (A) <u>190</u> (B) Prevalence Index = B/A = <u>2.00</u>
<b>Sapling Stratum</b> (Plot size: <u>30' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	
<b>Shrub Stratum</b> (Plot size: <u>15' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation <sup>1</sup> (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations <small><sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
<b>Herb Stratum</b> (Plot size: <u>10' radius</u> )					
1.	<u>Phragmites australis</u>	<u>95</u>	<u>X</u>	<u>FACW</u>	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
8.	_____	_____	_____	_____	
9.	_____	_____	_____	_____	
10.	_____	_____	_____	_____	
11.	_____	_____	_____	_____	
12.	_____	_____	_____	_____	
				<u>95</u> = Total Cover	
<b>Woody Vines</b> (Plot size: <u>30' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
				= Total Cover	
<b>Remarks:</b> (If observed, list morphological adaptations below). <b>Indicator 1 (Rapid Test) present due to dominance of FACW or OBL species.</b> <b>Other indicators calculated for reference only.</b>					<b>Tree</b> - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).  <b>Sapling</b> - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.  <b>Shrub</b> - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  <b>Herb</b> - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  <b>Woody vine</b> - All woody vines, regardless of height.
					Hydrophytic Vegetation Present? <u>YES</u>



WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

10

Project Site: NASA Wallops Tower Site - Study Area 1 City/County: Accomack County State: VA Sampling Point: 10

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

Hydrophytic Vegetation Present? YES Is This Sample Area Within a Wetland? NO

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Secondary Indicators (minimum of two required)

SOIL

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



Tree Stratum	(Plot size: <u>30' radius</u> )	Absolute % Cover	Dom. Sp?	Indicator Status	
1.	_____	_____	_____	_____	<b>Dominance Test Worksheet:</b> # Dominants OBL, FACW, FAC: <u>3</u> (A) # Dominants across all strata: <u>4</u> (B) % Dominants OBL, FACW, FAC: <u>75%</u> (A/B)
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	<b>Prevalence Index Worksheet:</b> Total % Cover of: _____ Multiply By: _____ OBL _____ x 1 = _____ FACW <u>30</u> x 2 = <u>60</u> FAC <u>15</u> x 3 = <u>45</u> FACU <u>44</u> x 4 = <u>176</u> UPL _____ x 5 = _____ Sum: <u>89</u> (A) <u>281</u> (B) Prevalence Index = B/A = <u>3.16</u>
Sapling Stratum (Plot size: <u>30' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	
Shrub Stratum (Plot size: <u>15' radius</u> )					<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	
Herb Stratum (Plot size: <u>10' radius</u> )					<b>Definitions of Vegetation Strata:</b> Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1.	<u>Cynodon dactylon</u>	<u>38</u>	<u>X</u>	<u>FACU</u>	
2.	<u>Baccharis halimifolia</u>	<u>15</u>	<u>X</u>	<u>FAC</u>	
3.	<u>Phragmites australis</u>	<u>15</u>	<u>X</u>	<u>FACW</u>	
4.	<u>Solidago sempervirens</u>	<u>15</u>	<u>X</u>	<u>FACW</u>	
5.	<u>Plantago lanceolata</u>	<u>3</u>		<u>FACU</u>	
6.	<u>Trifolium repens</u>	<u>3</u>		<u>FACU</u>	
7.	_____	_____	_____	_____	
8.	_____	_____	_____	_____	
9.	_____	_____	_____	_____	
10.	_____	_____	_____	_____	
11.	_____	_____	_____	_____	
12.	_____	_____	_____	_____	
				<u>89</u> = Total Cover	
Woody Vines (Plot size: <u>30' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
				= Total Cover	
Hydrophytic Vegetation Present? <u>YES</u>					
Remarks: (If observed, list morphological adaptations below). <b>Indicator 2 (Dominance Test) present with &gt;50% of dominant species across all vegetation strata FAC or wetter.</b> Other indicators calculated for reference only.					



WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project Site: NASA Wallops Tower Site - Study Area 2 City/County: Accomack County State: VA Sampling Point: 1

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

Hydrophytic Vegetation Present? YES Is This Sample Area Within a Wetland? YES

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Secondary Indicators (minimum of two required)

Field Observations: Surface Water Present? YES Depth (inches): SURFACE Wetland Hydrology Present? YES

Remarks: Primary indicators of wetland hydrology present; parameter is met.

SOIL

Table with 8 columns: Depth (in), Matrix (Color (moist), %), Redox Features (Color (moist), %, Type1, Loc2), Texture, Remarks

1>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2)Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: Histosol (A1), Histic Epipedon (A2), Dark Surface (S7), Polyvalue Below Surface (S8), etc.

Restrictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? YES

Remarks: Indicator S4 (Sandy Gleyed Matrix) present and soil meets NTCHS definition of hydric soil; parameter is met.



Tree Stratum	(Plot size: <u>30' radius</u> )	Absolute % Cover	Dom. Sp?	Indicator Status	
1.	_____	_____	_____	_____	<b>Dominance Test Worksheet:</b> # Dominants OBL, FACW, FAC: <u>3</u> (A)  # Dominants across all strata: <u>3</u> (B)  % Dominants OBL, FACW, FAC: <u>100%</u> (A/B)
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
		_____ = Total Cover			<b>Prevalence Index Worksheet:</b> Total % Cover of: _____ Multiply By: _____ OBL _____ x 1 = _____ FACW <u>38</u> x 2 = <u>76</u> FAC <u>53</u> x 3 = <u>159</u> FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: <u>91</u> (A) <u>235</u> (B)  Prevalence Index = B/A = <u>2.58</u>
Sapling Stratum (Plot size: <u>30' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
		_____ = Total Cover			
Shrub Stratum (Plot size: <u>15' radius</u> )					<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation <sup>1</sup> (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations  <small><sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
1.	<u>Baccharis halimifolia</u>	<u>38</u>	<u>X</u>	<u>FAC</u>	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
		<u>38</u> = Total Cover			
Herb Stratum (Plot size: <u>10' radius</u> )					<b>Definitions of Vegetation Strata:</b>  Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).  Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.  Hydrophytic Vegetation Present? <u>YES</u>
1.	<u>Phragmites australis</u>	<u>38</u>	<u>X</u>	<u>FACW</u>	
2.	<u>Baccharis halimifolia</u>	<u>15</u>	<u>X</u>	<u>FAC</u>	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
8.	_____	_____	_____	_____	
9.	_____	_____	_____	_____	
10.	_____	_____	_____	_____	
11.	_____	_____	_____	_____	
12.	_____	_____	_____	_____	
		<u>53</u> = Total Cover			
Woody Vines (Plot size: <u>30' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
		_____ = Total Cover			
Remarks: (If observed, list morphological adaptations below). <b>Indicator 2 (Dominance Test) present with &gt;50% of dominant species across all vegetation strata FAC or wetter.</b> <b>Other indicators calculated for reference only.</b>					



WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project Site: NASA Wallops Tower Site - Study Area 2 City/County: Accomack County State: VA Sampling Point: 2
Applicant/Owner: LJT & Associates, Inc./NASA Wallops Island
Investigator(s): C. Senfield, PWS, PWD Section, Township, Range: NA
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 0-1
Subregion (LRR or MLRA): LRR T, MLRA 153D Lat: 37 50 50 N Long: 75 28 31 W Datum: WGS 1984
Soil Map Unit: Udorthent and Udipsamment soils, 0 to 30 percent slopes NWI Map Unit: PEM1/SS3Cd
Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)
Are Vegetation, Soil, or Hydrology significantly disturbed? No Normal Circumstances? Yes
Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? NO
Hydric Soil Present? NO
Wetland Hydrology Present? NO
Is This Sample Area Within a Wetland? NO
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.
Observation point taken in forested upland near flag C-14.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Aquatic Fauna (B13) Surface Soil Cracks (B6)
High Water Table (A2) Marl Deposits (B15) Sparsely Vegetated Concave Surface (B8)
Saturation (A3) Hydrogen Sulfide Odor (C1) Drainage Patterns (B10)
Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Moss Trim Lines (B16)
Sediment Deposits (B2) Presence of Reduced Iron (C4) Dry-Season Water Table (C2)
Drift Deposits (B3) Recent Iron Reduction in Tilled Soils (C6) Crayfish Burrows (C8)
Algal Mat or Crust (B4) Thin Muck Surface (C7) Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5) Other (Explain in Remarks) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Shallow Aquitard (D3)
Water-Stained Leaves (B9) FAC-Neutral Test (D5)
Sphagnum Moss (D8)
Field Observations:
Surface Water Present? Depth (inches): Wetland Hydrology Present? NO
Water Table Present? Depth (inches):
Saturation Present? Depth (inches):
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features Texture Remarks
0-3 10YR 3/3 100 Color (moist) % Type1 Loc2 sandy loam
3-10 2.5Y 5/2 99 7.5YR 4/4 1 C M loamy sand
10-16 10YR 2/1 100 loam DRY
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Dark Surface (S7) Indicators for Problematic Hydric Soils3:
2 cm Muck (A10)
Histic Epipedon (A2) Polyvalue Below Surface (S8) Piedmont Floodplain Soils (F19)
Black Histic (A3) Thin Dark Surface (S9) Anomalous Bright Loamy Soils (F20)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Red Parent Material (F21)
Stratified Layers (A5) Depleted Matrix (F3) Very Shallow Dark Surface (TF12)
Organic Bodies (A6) Redox Dark Surface (F6) Other (Explain in Remarks)
5cm Mucky Mineral (A7) Depleted Dark Surface (F7)
1cm Muck (A9) Redox Depressions (F8)
Depleted Below Dark Surface (A11) Iron-Manganese Masses (F12)
Thick Dark Surface (A12) Umbric Surface (F13)
Sandy Gleyed Matrix (S4) Piedmont Floodplain Soils (F19)
Sandy Redox (S5) Anomalous Bright Loamy Soils (F20)
Stripped Matrix (S6)
Restrictive Layer (if observed):
Type: Hydric Soil Present? NO
Depth (inches):
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.



	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30' radius</u> )				
1. <b>Prunus serotina</b>	<b>15</b>	<b>X</b>	<b>FACU</b>	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
	<b>15</b>	= Total Cover		
Sapling Stratum (Plot size: <u>30' radius</u> )				
1. <b>Morella pensylvanica</b>	<b>15</b>	<b>X</b>	<b>FAC</b>	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
		= Total Cover		
Shrub Stratum (Plot size: <u>15' radius</u> )				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
		= Total Cover		
Herb Stratum (Plot size: <u>10' radius</u> )				
1. <b>Morella cerifera</b>	<b>15</b>	<b>X</b>	<b>FAC</b>	
2. <b>Toxicodendron radicans</b>	<b>3</b>		<b>FAC</b>	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<b>18</b>	= Total Cover		
Woody Vines (Plot size: <u>30' radius</u> )				
1. <b>Lonicera japonica</b>	<b>38</b>	<b>X</b>	<b>FACU</b>	
2. <b>Smilax rotundifolia</b>	<b>3</b>		<b>FAC</b>	
3. _____				
4. _____				
5. _____				
	<b>41</b>	= Total Cover		
				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>2</u> (A) # Dominants across all strata: <u>4</u> (B) % Dominants OBL, FACW, FAC: <u>50%</u> (A/B)
				Prevalence Index Worksheet: Total % Cover of: _____ Multiply By: _____ OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC <u>36</u> x 3 = <u>108</u> FACU <u>53</u> x 4 = <u>212</u> UPL _____ x 5 = _____ Sum: <u>89</u> (A) <u>320</u> (B) Prevalence Index = B/A = <u>3.60</u>
				Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation <sup>1</sup> (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.
				Hydrophytic Vegetation Present? <u>NO</u>
Remarks: (If observed, list morphological adaptations below). <b>No hydrophytic vegetation indicators present; parameter is not met.</b>				



WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project Site: NASA Wallops Tower Site - Study Area 2 City/County: Accomack County State: VA Sampling Point: 3

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

Hydrophytic Vegetation Present? YES Is This Sample Area Within a Wetland? YES

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Secondary Indicators (minimum of two required)

Field Observations: Surface Water Present? YES Depth (inches): SURFACE Wetland Hydrology Present? YES

Remarks: Primary indicators of wetland hydrology present; parameter is met.

SOIL

Table with 9 columns: Depth, Matrix, Color (moist), %, Color (moist), %, Type, Loc, Texture, Remarks. Row 1: 0-16, 2.5Y 4/2, 80, 7.5YR 5/8, 20, C, M, sandy loam

1>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2)Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: Histosol (A1) Dark Surface (S7) Indicators for Problematic Hydric Soils: 2 cm Muck (A10)

Restrictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? YES

Remarks: Indicator F3 (Depleted Matrix) present and soil meets NTCHS definition of hydric soil; parameter is met.





WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project Site: NASA Wallops Tower Site - Study Area 2 City/County: Accomack County State: VA Sampling Point: 4
Applicant/Owner: LJT & Associates, Inc./NASA Wallops Island
Investigator(s): C. Senfield, PWS, PWD Section, Township, Range: NA
Landform (hillslope, terrace, etc.): Manmade Berm Local relief (concave, convex, none): Convex Slope (%): 0-1
Subregion (LRR or MLRA): LRR T, MLRA 153D Lat: 37 50 50 N Long: 75 28 31 W Datum: WGS 1984
Soil Map Unit: Camocca fine sand, 0 to 2 percent slopes, frequently flooded NWI Map Unit: PEM1/SS3Cd
Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)
Are Vegetation, Soil, or Hydrology significantly disturbed? No Normal Circumstances? Yes
Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? NO
Hydric Soil Present? NO
Wetland Hydrology Present? NO
Is This Sample Area Within a Wetland? NO
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.
Observation point taken in near flag B-8.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Aquatic Fauna (B13) Surface Soil Cracks (B6)
High Water Table (A2) Marl Deposits (B15) Sparsely Vegetated Concave Surface (B8)
Saturation (A3) Hydrogen Sulfide Odor (C1) Drainage Patterns (B10)
Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Moss Trim Lines (B16)
Sediment Deposits (B2) Presence of Reduced Iron (C4) Dry-Season Water Table (C2)
Drift Deposits (B3) Recent Iron Reduction in Tilled Soils (C6) Crayfish Burrows (C8)
Algal Mat or Crust (B4) Thin Muck Surface (C7) Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5) Other (Explain in Remarks) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Shallow Aquitard (D3)
Water-Stained Leaves (B9) FAC-Neutral Test (D5)
Sphagnum Moss (D8)
Field Observations: Surface Water Present? Depth (inches):
Water Table Present? Depth (inches): Wetland Hydrology Present? NO
Saturation Present? Depth (inches):
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-2 10YR 3/2 100 loamy sand
2-5 2.5Y 4/3 100 loamy sand
5-8 2.5Y 3/3 100 loamy sand
8-16 2.5Y 4/3 100 loamy sand
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators: Histosol (A1) Dark Surface (S7) Indicators for Problematic Hydric Soils3: 2 cm Muck (A10)
Histic Epipedon (A2) Polyvalue Below Surface (S8) Piedmont Floodplain Soils (F19)
Black Histic (A3) Thin Dark Surface (S9) Anomalous Bright Loamy Soils (F20)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Red Parent Material (F21)
Stratified Layers (A5) Depleted Matrix (F3) Very Shallow Dark Surface (TF12)
Organic Bodies (A6) Redox Dark Surface (F6) Other (Explain in Remarks)
5cm Mucky Mineral (A7) Depleted Dark Surface (F7)
1cm Muck (A9) Redox Depressions (F8)
Depleted Below Dark Surface (A11) Iron-Manganese Masses (F12)
Thick Dark Surface (A12) Umbric Surface (F13)
Sandy Gleyed Matrix (S4) Piedmont Floodplain Soils (F19)
Sandy Redox (S5) Anomalous Bright Loamy Soils (F20)
Stripped Matrix (S6)
Restrictive Layer (if observed): Type: Hydric Soil Present? NO
Depth (inches):
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.
Evidence of disturbance in soil profile.



Tree Stratum	(Plot size: <u>30' radius</u> )	Absolute % Cover	Dom. Sp?	Indicator Status	
1.	_____	_____	_____	_____	<b>Dominance Test Worksheet:</b> # Dominants OBL, FACW, FAC: <u>1</u> (A) # Dominants across all strata: <u>2</u> (B) % Dominants OBL, FACW, FAC: <u>50%</u> (A/B)
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	<b>Prevalence Index Worksheet:</b> Total % Cover of: _____ Multiply By: _____ OBL _____ x 1 = _____ FACW <u>38</u> x 2 = <u>76</u> FAC _____ x 3 = _____ FACU <u>53</u> x 4 = <u>212</u> UPL _____ x 5 = _____ Sum: <u>91</u> (A) <u>288</u> (B) Prevalence Index = B/A = <u>3.16</u>
<b>Sapling Stratum</b> (Plot size: <u>30' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	
<b>Shrub Stratum</b> (Plot size: <u>15' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	
<b>Herb Stratum</b> (Plot size: <u>10' radius</u> )					
1.	<b>Phragmites australis</b>	<b>38</b>	<b>X</b>	<b>FACW</b>	
2.	<b>Achillea millefolium</b>	<b>38</b>	<b>X</b>	<b>FACU</b>	
3.	<b>Cardamine parviflora</b>	<b>15</b>		<b>FACU</b>	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
8.	_____	_____	_____	_____	
9.	_____	_____	_____	_____	
10.	_____	_____	_____	_____	
11.	_____	_____	_____	_____	
12.	_____	_____	_____	_____	
				<b>91</b> = Total Cover	
<b>Woody Vines</b> (Plot size: <u>30' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
				= Total Cover	
Remarks: (If observed, list morphological adaptations below). <b>No hydrophytic vegetation indicators present; parameter is not met.</b> <b>Other indicators calculated for reference only.</b>					
<b>Hydrophytic Vegetation Present? <u>NO</u></b>					

**Hydrophytic Vegetation Indicators:**  
 \_\_\_\_\_ Dominance Test is > 50%  
 \_\_\_\_\_ Prevalence Index is <= 3.0  
 \_\_\_\_\_ Problematic Hydrophytic Vegetation<sup>1</sup> (explain)  
 \_\_\_\_\_ Rapid Test for Hydrophytic Vegetation  
 \_\_\_\_\_ Morphological Adaptations

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

**Definitions of Vegetation Strata:**

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

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

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

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

**Woody vine** - All woody vines, regardless of height.

**Hydrophytic Vegetation Present? NO**



WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project Site: NASA Wallops Tower Site - Study Area 2 City/County: Accomack County State: VA Sampling Point: 5

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

Hydrophytic Vegetation Present? YES Is This Sample Area Within a Wetland? YES

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Secondary Indicators (minimum of two required)

Field Observations: Surface Water Present? YES Depth (inches): SURFACE Wetland Hydrology Present? YES

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Primary indicators of wetland hydrology present; parameter is met.

SOIL

Table with 8 columns: Depth (in), Matrix, Color (moist), %, Color (moist), %, Type1, Loc2, Texture, Remarks

1>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2)Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: Histosol (A1) Dark Surface (S7) Indicators for Problematic Hydric Soils3: 2 cm Muck (A10)

Restrictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? YES

Remarks: Indicator S5 (Sandy Redox) present and soil meets NTCHS definition of hydric soil; parameter is met.



Tree Stratum	(Plot size: <u>30' radius</u> )	Absolute % Cover	Dom. Sp?	Indicator Status	
1.	_____	_____	_____	_____	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>1</u> (A)  # Dominants across all strata: <u>1</u> (B)  % Dominants OBL, FACW, FAC: <u>100%</u> (A/B)
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	Prevalence Index Worksheet: Total % Cover of: _____ Multiply By: _____ OBL _____ x 1 = _____ FACW <u>78</u> x 2 = <u>156</u> FAC <u>21</u> x 3 = <u>63</u> FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: <u>99</u> (A) <u>219</u> (B)  Prevalence Index = B/A = <u>2.21</u>
Sapling Stratum (Plot size: <u>30' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	
Shrub Stratum (Plot size: <u>15' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation <sup>1</sup> (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: <u>10' radius</u> )					
1.	<b>Phragmites australis</b>	<b>63</b>	<b>X</b>	<b>FACW</b>	
2.	<b>Morella cerifera</b>	<b>15</b>		<b>FAC</b>	
3.	<b>Juncus scirpoides</b>	<b>15</b>		<b>FACW</b>	
4.	<b>Baccharis halimifolia</b>	<b>3</b>		<b>FAC</b>	
5.	<b>Toxicodendron radicans</b>	<b>3</b>		<b>FAC</b>	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
8.	_____	_____	_____	_____	
9.	_____	_____	_____	_____	
10.	_____	_____	_____	_____	
11.	_____	_____	_____	_____	
12.	_____	_____	_____	_____	
				<b>99</b> = Total Cover	
Woody Vines (Plot size: <u>30' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
				= Total Cover	
Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).  Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.					
Hydrophytic Vegetation Present? <u>YES</u>					
Remarks: (If observed, list morphological adaptations below). <b>Indicator 2 (Dominance Test) present with &gt;50% of dominant species across all vegetation strata FAC or wetter.</b> <b>Other indicators calculated for reference only.</b>					



WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project Site: NASA Wallops Tower Site - Study Area 2 City/County: Accomack County State: VA Sampling Point: 6

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

Hydrophytic Vegetation Present? NO Is This Sample Area Within a Wetland? NO

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Secondary Indicators (minimum of two required)

SOIL

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



	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30' radius</u> )				
1. <b>Prunus serotina</b>	<b>38</b>	<b>X</b>	<b>FACU</b>	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>3</u> (A)  # Dominants across all strata: <u>8</u> (B)  % Dominants OBL, FACW, FAC: <u>38%</u> (A/B)
2. <b>Juniperus virginiana</b>	<b>15</b>	<b>X</b>	<b>FACU</b>	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
	<b>53</b>	= Total Cover		
Sapling Stratum (Plot size: <u>30' radius</u> )				Prevalence Index Worksheet: Total % Cover of: _____ Multiply By: _____ OBL _____ x 1 = _____ FACW <u>15</u> x 2 = <u>30</u> FAC <u>21</u> x 3 = <u>63</u> FACU <u>89</u> x 4 = <u>356</u> UPL _____ x 5 = _____ Sum: <u>125</u> (A) <u>449</u> (B)  Prevalence Index = B/A = <u>3.59</u>
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
		= Total Cover		
Shrub Stratum (Plot size: <u>15' radius</u> )				Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation <sup>1</sup> (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <b>Prunus serotina</b>	<b>3</b>	<b>X</b>	<b>FACU</b>	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
	<b>3</b>	= Total Cover		
Herb Stratum (Plot size: <u>10' radius</u> )				Definitions of Vegetation Strata:  Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).  Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.  Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.  Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.  Woody vine - All woody vines, regardless of height.
1. <b>Phragmites australis</b>	<b>15</b>	<b>X</b>	<b>FACW</b>	
2. <b>Lonicera japonica</b>	<b>15</b>	<b>X</b>	<b>FACU</b>	
3. <b>Toxicodendron radicans</b>	<b>15</b>	<b>X</b>	<b>FAC</b>	
4. <b>Aristida dichotoma</b>	<b>15</b>	<b>X</b>	<b>FACU</b>	
5. <b>Rubus argutus</b>	<b>3</b>		<b>FAC</b>	
6. <b>Achillea millefolium</b>	<b>3</b>		<b>FACU</b>	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<b>66</b>	= Total Cover		
Woody Vines (Plot size: <u>30' radius</u> )				Hydrophytic Vegetation Present? <u>NO</u>
1. <b>Toxicodendron radicans</b>	<b>3</b>	<b>X</b>	<b>FAC</b>	
2. _____				
3. _____				
4. _____				
5. _____				
	<b>3</b>	= Total Cover		
Remarks: (If observed, list morphological adaptations below). <p style="text-align:center;"><b>No hydrophytic vegetation indicators present; parameter is not met.</b></p>				



WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project Site: NASA Wallops Tower Site - Study Area 2 City/County: Accomack County State: VA Sampling Point: 7
Applicant/Owner: LJT & Associates, Inc./NASA Wallops Island
Investigator(s): C. Senfield, PWS, PWD Section, Township, Range: NA
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1
Subregion (LRR or MLRA): LRR T, MLRA 153D Lat: 37 50 50 N Long: 75 28 31 W Datum: WGS 1984
Soil Map Unit: Chincoteague silt loam, 0 to 1 percent slopes, frequently flooded NWI Map Unit: PEM1/SS3Cd
Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)
Are Vegetation, Soil, or Hydrology significantly disturbed? No Normal Circumstances? Yes
Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? YES
Hydric Soil Present? YES
Wetland Hydrology Present? YES
Is This Sample Area Within a Wetland? YES
Remarks: All parameters are met. Area is classified as a palustrine scrub-shrub (PSS) wetland.
Observation point taken in wetland near flag A-12.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Aquatic Fauna (B13)
X High Water Table (A2) Marl Deposits (B15)
X Saturation (A3) Hydrogen Sulfide Odor (C1)
Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3)
Sediment Deposits (B2) Presence of Reduced Iron (C4)
Drift Deposits (B3) Recent Iron Reduction in Tilled Soils (C6)
Algal Mat or Crust (B4) Thin Muck Surface (C7)
Iron Deposits (B5) Other (Explain in Remarks)
Inundation Visible on Aerial (B7)
Water-Stained Leaves (B9)
Field Observations:
Surface Water Present? Depth (inches):
Water Table Present? YES Depth (inches): SURFACE
Saturation Present? YES Depth (inches): SURFACE
Wetland Hydrology Present? YES
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: Primary indicators of wetland hydrology present; parameter is met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-16 10YR 3/2 80 7.5YR 5/8 20 C M sandy loam
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1) Dark Surface (S7)
Histic Epipedon (A2) Polyvalue Below Surface (S8)
Black Histic (A3) Thin Dark Surface (S9)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2)
Stratified Layers (A5) Depleted Matrix (F3)
Organic Bodies (A6) X Redox Dark Surface (F6)
5cm Mucky Mineral (A7) Depleted Dark Surface (F7)
1cm Muck (A9) Redox Depressions (F8)
Depleted Below Dark Surface (A11) Iron-Manganese Masses (F12)
Thick Dark Surface (A12) Umbric Surface (F13)
Sandy Gleyed Matrix (S4) Piedmont Floodplain Soils (F19)
Sandy Redox (S5) Anomalous Bright Loamy Soils (F20)
Stripped Matrix (S6)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10)
Piedmont Floodplain Soils (F19)
Anomalous Bright Loamy Soils (F20)
Red Parent Material (F21)
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
Remarks: Indicator F6 (Redox Dark Surface) present and soil meets NTCHS definition of hydric soil; parameter is met.



Tree Stratum	(Plot size: <u>30' radius</u> )	Absolute % Cover	Dom. Sp?	Indicator Status	
1.	_____	_____	_____	_____	<b>Dominance Test Worksheet:</b> # Dominants OBL, FACW, FAC: <u>3</u> (A) # Dominants across all strata: <u>3</u> (B) % Dominants OBL, FACW, FAC: <u>100%</u> (A/B)
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
		_____ = Total Cover			<b>Prevalence Index Worksheet:</b> Total % Cover of: _____ Multiply By: _____ OBL _____ x 1 = _____ FACW <u>85</u> x 2 = <u>170</u> FAC <u>30</u> x 3 = <u>90</u> FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: <u>115</u> (A) <u>260</u> (B) Prevalence Index = B/A = <u>2.26</u>
<b>Sapling Stratum</b> (Plot size: <u>30' radius</u> )					
1.	<b>Morella cerifera</b>	<b>15</b>	<b>X</b>	<b>FAC</b>	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
		_____ = Total Cover			
<b>Shrub Stratum</b> (Plot size: <u>15' radius</u> )					
1.	<b>Morella cerifera</b>	<b>15</b>	<b>X</b>	<b>FAC</b>	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation <sup>1</sup> (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations <small><sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
		_____ = Total Cover			
<b>Herb Stratum</b> (Plot size: <u>10' radius</u> )					
1.	<b>Phragmites australis</b>	<b>85</b>	<b>X</b>	<b>FACW</b>	<b>Definitions of Vegetation Strata:</b> Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
8.	_____	_____	_____	_____	
9.	_____	_____	_____	_____	
10.	_____	_____	_____	_____	
11.	_____	_____	_____	_____	
12.	_____	_____	_____	_____	
		_____ = Total Cover			
<b>Woody Vines</b> (Plot size: <u>30' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
		_____ = Total Cover			
<b>Hydrophytic Vegetation Present? <u>YES</u></b>					

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

**Indicator 2 (Dominance Test) present with >50% of dominant species across all vegetation strata FAC or wetter.**

**Other indicators calculated for reference only.**



WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project Site: NASA Wallops Tower Site - Study Area 2 City/County: Accomack County State: VA Sampling Point: 8

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

Hydrophytic Vegetation Present? YES Is This Sample Area Within a Wetland? YES

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Secondary Indicators (minimum of two required)

Field Observations: Surface Water Present? YES Depth (inches): SURFACE Wetland Hydrology Present? YES

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Primary indicators of wetland hydrology present; parameter is met.

SOIL

Table with 9 columns: Depth (in), Matrix, Color (moist), %, Redox Features, Type, Loc, Texture, Remarks

1>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2)Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: Histosol (A1) Dark Surface (S7) Indicators for Problematic Hydric Soils: 2 cm Muck (A10)

Restrictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? YES

Remarks: Indicator F6 (Redox Dark Surface) present and soil meets NTCHS definition of hydric soil; parameter is met.



Tree Stratum	(Plot size: <u>30' radius</u> )	Absolute % Cover	Dom. Sp?	Indicator Status	
1.	_____	_____	_____	_____	<b>Dominance Test Worksheet:</b> # Dominants OBL, FACW, FAC: <u>2</u> (A)  # Dominants across all strata: <u>2</u> (B)  % Dominants OBL, FACW, FAC: <u>100%</u> (A/B)
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	<b>Prevalence Index Worksheet:</b> Total % Cover of: <u>56</u> Multiply By: OBL <u>56</u> x 1 = <u>56</u> FACW _____ x 2 = _____ FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: <u>56</u> (A) <u>56</u> (B)  Prevalence Index = B/A = <u>1.00</u>
Sapling Stratum (Plot size: <u>30' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	
Shrub Stratum (Plot size: <u>15' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation <sup>1</sup> (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: <u>10' radius</u> )					
1.	<u>Ludwigia palustris</u>	<u>38</u>	<u>X</u>	<u>OBL</u>	
2.	<u>Juncus effusus</u>	<u>15</u>	<u>X</u>	<u>OBL</u>	
3.	<u>Hydrocotyle umbellata</u>	<u>3</u>		<u>OBL</u>	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
8.	_____	_____	_____	_____	
9.	_____	_____	_____	_____	
10.	_____	_____	_____	_____	
11.	_____	_____	_____	_____	
12.	_____	_____	_____	_____	
				<u>56</u> = Total Cover	
Woody Vines (Plot size: <u>30' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
				= Total Cover	
<b>Hydrophytic Vegetation Present? <u>YES</u></b>					
Remarks: (If observed, list morphological adaptations below). <b>Indicator 1 (Rapid Test) present due to dominance of FACW or OBL species.</b> <b>Other indicators calculated for reference only.</b>					



WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project Site: NASA Wallops Tower Site - Study Area 2 City/County: Accomack County State: VA Sampling Point: 9

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

Hydrophytic Vegetation Present? YES Is This Sample Area Within a Wetland? NO

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Secondary Indicators (minimum of two required)

SOIL

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



Tree Stratum	(Plot size: <u>30' radius</u> )	Absolute % Cover	Dom. Sp?	Indicator Status	
1.	_____	_____	_____	_____	<b>Dominance Test Worksheet:</b> # Dominants OBL, FACW, FAC: <u>1</u> (A) # Dominants across all strata: <u>1</u> (B) % Dominants OBL, FACW, FAC: <u>100%</u> (A/B)
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	<b>Prevalence Index Worksheet:</b> Total % Cover of: _____ Multiply By: _____ OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC <u>85</u> x 3 = <u>255</u> FACU <u>9</u> x 4 = <u>36</u> UPL _____ x 5 = _____ Sum: <u>94</u> (A) <u>291</u> (B) Prevalence Index = B/A = <u>3.10</u>
<b>Sapling Stratum</b> (Plot size: <u>30' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	
<b>Shrub Stratum</b> (Plot size: <u>15' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
<b>Herb Stratum</b> (Plot size: <u>10' radius</u> )					
1.	<u>Schedonorus arundinaceus</u>	<u>85</u>	<u>X</u>	<u>FAC</u>	
2.	<u>Taraxacum officinale</u>	<u>3</u>		<u>FACU</u>	
3.	<u>Cynodon dactylon</u>	<u>3</u>		<u>FACU</u>	
4.	<u>Vicia americana</u>	<u>3</u>		<u>FACU</u>	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
8.	_____	_____	_____	_____	
9.	_____	_____	_____	_____	
10.	_____	_____	_____	_____	
11.	_____	_____	_____	_____	
12.	_____	_____	_____	_____	
				<u>94</u> = Total Cover	
<b>Woody Vines</b> (Plot size: <u>30' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
				= Total Cover	
Remarks: (If observed, list morphological adaptations below). <b>Indicator 2 (Dominance Test) present with &gt;50% of dominant species across all vegetation strata FAC or wetter.</b> <b>Other indicators calculated for reference only.</b>					
<b>Tree</b> - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). <b>Sapling</b> - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. <b>Shrub</b> - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. <b>Herb</b> - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. <b>Woody vine</b> - All woody vines, regardless of height.					
Hydrophytic Vegetation Present? <u>YES</u>					



WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project Site: NASA Wallops Tower Site - Study Area 2 City/County: Accomack County State: VA Sampling Point: 10
Applicant/Owner: LJT & Associates, Inc./NASA Wallops Island
Investigator(s): C. Senfield, PWS, PWD Section, Township, Range: NA
Landform (hillslope, terrace, etc.): Maintained Field Local relief (concave, convex, none): None Slope (%): 0-1
Subregion (LRR or MLRA): LRR T, MLRA 153D Lat: 37 50 50 N Long: 75 28 31 W Datum: WGS 1984
Soil Map Unit: Camocca fine sand, 0 to 2 percent slopes, frequently flooded NWI Map Unit: None
Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)
Are Vegetation, Soil, or Hydrology significantly disturbed? No Normal Circumstances? Yes
Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? NO
Hydric Soil Present? NO
Wetland Hydrology Present? NO
Is This Sample Area Within a Wetland? NO
Remarks: One or more parameters lacking. Area is not a jurisdictional wetland.
Observation point taken in upland field above jurisdictional ditch near flag JD-2-8.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Aquatic Fauna (B13) Surface Soil Cracks (B6)
High Water Table (A2) Marl Deposits (B15) Sparsely Vegetated Concave Surface (B8)
Saturation (A3) Hydrogen Sulfide Odor (C1) Drainage Patterns (B10)
Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Moss Trim Lines (B16)
Sediment Deposits (B2) Presence of Reduced Iron (C4) Dry-Season Water Table (C2)
Drift Deposits (B3) Recent Iron Reduction in Tilled Soils (C6) Crayfish Burrows (C8)
Algal Mat or Crust (B4) Thin Muck Surface (C7) Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5) Other (Explain in Remarks) Geomorphic Position (D2)
Inundation Visible on Aerial (B7) Shallow Aquitard (D3)
Water-Stained Leaves (B9) FAC-Neutral Test (D5)
Sphagnum Moss (D8)
Field Observations: Surface Water Present? Depth (inches):
Water Table Present? Depth (inches): Wetland Hydrology Present? NO
Saturation Present? Depth (inches):
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: No primary or secondary indicators of wetland hydrology present; parameter is not met.

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features
(in) Color (moist) % Color (moist) % Type1 Loc2 Texture Remarks
0-4 10YR 4/3 100
4-16 10YR 4/4 100
1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators: Histosol (A1) Dark Surface (S7) Indicators for Problematic Hydric Soils3: 2 cm Muck (A10)
Histic Epipedon (A2) Polyvalue Below Surface (S8) Piedmont Floodplain Soils (F19)
Black Histic (A3) Thin Dark Surface (S9) Anomalous Bright Loamy Soils (F20)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Red Parent Material (F21)
Stratified Layers (A5) Depleted Matrix (F3) Very Shallow Dark Surface (TF12)
Organic Bodies (A6) Redox Dark Surface (F6) Other (Explain in Remarks)
5cm Mucky Mineral (A7) Depleted Dark Surface (F7)
1cm Muck (A9) Redox Depressions (F8)
Depleted Below Dark Surface (A11) Iron-Manganese Masses (F12)
Thick Dark Surface (A12) Umbric Surface (F13)
Sandy Gleyed Matrix (S4) Piedmont Floodplain Soils (F19)
Sandy Redox (S5) Anomalous Bright Loamy Soils (F20)
Stripped Matrix (S6)
Restrictive Layer (if observed): Type:
Depth (inches): Hydric Soil Present? NO
Remarks: No hydric soil indicators present and soil does not meet NTCHS definition of hydric soil; parameter is not met.



Tree Stratum	(Plot size: <u>30' radius</u> )	Absolute % Cover	Dom. Sp?	Indicator Status	
1.	_____	_____	_____	_____	<b>Dominance Test Worksheet:</b> # Dominants OBL, FACW, FAC: <u>0</u> (A) # Dominants across all strata: <u>2</u> (B) % Dominants OBL, FACW, FAC: <u>0</u> (A/B)
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	<b>Prevalence Index Worksheet:</b> Total % Cover of: _____ Multiply By: _____ OBL _____ x 1 = _____ FACW <u>3</u> x 2 = <u>6</u> FAC <u>15</u> x 3 = <u>45</u> FACU <u>91</u> x 4 = <u>364</u> UPL _____ x 5 = _____ Sum: <u>109</u> (A) <u>415</u> (B) Prevalence Index = B/A = <u>3.81</u>
<b>Sapling Stratum</b> (Plot size: <u>30' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	
<b>Shrub Stratum</b> (Plot size: <u>15' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
				= Total Cover	<b>Hydrophytic Vegetation Indicators:</b> _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation <sup>1</sup> (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. <b>Definitions of Vegetation Strata:</b> Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height. Hydrophytic Vegetation Present? <u>NO</u>
<b>Herb Stratum</b> (Plot size: <u>10' radius</u> )					
1.	<b>Stellaria media</b>	<b>38</b>	<b>X</b>	<b>FACU</b>	
2.	<b>Rumex acetosella</b>	<b>38</b>	<b>X</b>	<b>FACU</b>	
3.	<b>Schedonorus arundinaceus</b>	<b>15</b>		<b>FAC</b>	
4.	<b>Cynodon dactylon</b>	<b>15</b>		<b>FACU</b>	
5.	<b>Dichantheium clandestinum</b>	<b>3</b>		<b>FACW</b>	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
8.	_____	_____	_____	_____	
9.	_____	_____	_____	_____	
10.	_____	_____	_____	_____	
11.	_____	_____	_____	_____	
12.	_____	_____	_____	_____	
				<b>109</b> = Total Cover	
<b>Woody Vines</b> (Plot size: <u>30' radius</u> )					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
				= Total Cover	
Remarks: (If observed, list morphological adaptations below). <b>No hydrophytic vegetation indicators present; parameter is not met.</b> <b>Other indicators calculated for reference only.</b>					

Attachment 3  
2015 Representative Photographs

2015 VHB Wetland and Waters of the U.S. Delineation - Representative Photographs  
NASA Wallops Island Tower Sites; Accomack County, VA  
April 23, 2015 - Page 1 of 12



Photograph 1: View of Data Point 1 (Study Area 1) showing E2EM Wetlands.



Photograph 2: View of Data Point 2 (Study Area 1) showing upland shrub community.

2015 VHB Wetland and Waters of the U.S. Delineation - Representative Photographs  
NASA Wallops Island Tower Sites; Accomack County, VA  
April 23, 2015 - Page 2 of 12



Photograph 3: View of Data Point 3 (Study Area 1) showing forested upland island "H".



Photograph 4: View of Data Point 4 (Study Area 1) showing upland field near PEM wetlands dominated by common reed.



Photograph 5: View of Data Point 5 (Study Area 1) showing PEM wetland dominated by common reed.



Photograph 6: View of Data Point 6 (Study Area 1) showing maintained upland field.



Photograph 7: View of Data Point 7 (Study Area 1) showing PEM wetland dominated by common reed.



Photograph 8: View of Data Point 8 (Study Area 1) showing existing upland on old fill material.

2015 VHB Wetland and Waters of the U.S. Delineation - Representative Photographs  
NASA Wallops Island Tower Sites; Accomack County, VA  
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Photograph 9: View of Data Point 9 (Study Area 1) showing PEM wetland dominated by common reed.



Photograph 10: View of Data Point 10 (Study Area 1) showing maintained upland field near dune.

2015 VHB Wetland and Waters of the U.S. Delineation - Representative Photographs  
NASA Wallops Island Tower Sites; Accomack County, VA  
April 23, 2015 - Page 6 of 12



Photograph 11: View of intertidal zone along Atlantic Ocean in Study Area 1.



Photograph 12: View of open waters (tidally influenced) draining PEM wetlands Study Area 1.

2015 VHB Wetland and Waters of the U.S. Delineation - Representative Photographs  
NASA Wallops Island Tower Sites; Accomack County, VA  
April 23, 2015 - Page 7 of 12



Photograph 13: View of Data Point 1 (Study Area 2) showing E2SS Wetlands.



Photograph 14: View of Data Point 2 (Study Area 2) showing upland forest community.

2015 VHB Wetland and Waters of the U.S. Delineation - Representative Photographs  
NASA Wallops Island Tower Sites; Accomack County, VA  
April 23, 2015 - Page 8 of 12



Photograph 15: View of Data Point 3 (Study Area 2) showing PSS wetlands.



Photograph 16: View of Data Point 4 (Study Area 2) showing manmade upland berm (at auger) above PEMx wetland.

2015 VHB Wetland and Waters of the U.S. Delineation - Representative Photographs  
NASA Wallops Island Tower Sites; Accomack County, VA  
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Photograph 17: View of Data Point 5 (Study Area 2) showing PEMx wetland dominated by common reed.



Photograph 18: View of Data Point 6 (Study Area 2) showing forested upland adjacent to PEM/SS wetland complex.



Photograph 19: View of Data Point 7 (Study Area 2) showing PEM/SS wetland complex dominated by wax myrtle and common reed.



Photograph 20: View of Data Point 8 (Study Area 2) showing jurisdictional ditch (PEMx).



Photograph 21: View of Data Point 9 (Study Area 2) showing maintained field surrounding jurisdictional ditches.



Photograph 22: View of Data Point 10 (Study Area 2) showing maintained field surrounding jurisdictional ditches.



Photograph 23: View of intertidal zone along Atlantic Ocean in Study Area 2.



Photograph 24: View of open waters draining PEM/SS wetlands Study Area 2.

Attachment 4

USACE Jurisdictional Waters Request Form



**NORFOLK DISTRICT REGULATORY OFFICE  
PRE-APPLICATION AND/OR JURISDICTIONAL WATERS  
DETERMINATION REQUEST FORM**

This form is used when you want to determine if areas on your property fall under regulatory requirements of the U.S. Army Corps of Engineers (USACE). Please supply the following information and supporting documents described below. This form can be filled out online and/or printed and then mailed, faxed, or e-mailed to the Norfolk District. Submitting this request authorizes the US Army Corps of Engineers to field inspect the property site, if necessary, to help in the determination process. **THIS FORM MUST BE SIGNED BY THE PROPERTY OWNER TO BE CONSIDERED A FORMAL REQUEST.**

The printed form and supporting documents should be mailed to:

U.S. Army Corps of Engineers, Norfolk District  
Regulatory Branch  
803 Front Street  
Norfolk, Virginia 23510-1096

Or faxed to (757) 201-7678

Or sent via e-mail to: CENAO.REG\_ROD@usace.army.mil

Additional information on the Regulatory Program is available on our website at:  
<http://www.nao.usace.army.mil/>

Please contact us at 757-201-7652 if you need any assistance with filling out this form.

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**Location and Information about Property to be subject to a Jurisdictional Determination:**

1. Date of Request: June 1, 2015
2. Project Name: NASA Wallops Island Tower Sites
3. City or County where property located: Accomack County
4. Address of property and directions (attach a map of the property location and a copy of the property plat): See Figure 1 (Attachment 1) to PJD Request Package.
5. Coordinates of property (if known): Study Area 1: 37° 50' 31" N, 75° 58' 24" W; Study Area 2: 37° 50' 50" N, 75° 28' 31" W
6. Size of property in acres: ±69 acres
7. Tax Parcel Number / GPIN (if available): N/A

8. Name of Nearest Waterway: Atlantic Ocean, Cat Creek
9. Brief Description of Proposed Activity, Reason for Preapplication Request, and/or Reason for Jurisdictional Waters Determination Request:

Natural Resource planning needed to conduct impacts analysis during permitting process for two tower sites.

10. Has a wetland delineation/determination been completed by a consultant or the Corps on the property previously?  YES  NO  UNKNOWN

**Study Area 1:** PJD done in 2012 as part of remedial action; Consultant - Tetra Tech Corps RPM – Robert Cole; File No: NAO-2012-01273. **Study Area 2:** PJD done in 2009 for part of the area in support of a construction project; Consultant – Ellen Grimes, Coastal Resources, LLC; Corps RPM – Robert Cole; File No: NAO-2009-01004.

**Property Owner Contact Information:**

Property Owner Name: Joshua Bundick, NASA Wallops Flight Facility  
Mailing Address: 34200 Fulton Street  
City: State: Zip: Wallops Island, Virginia 23337  
Daytime Telephone: 757-824-2319  
E-mail Address: Joshua.a.bundick@nasa.gov

If the person requesting the Jurisdictional Determination is **NOT** the Property Owner, please also supply the Requestor's contact information here:

Requestor Name: VHB, Inc., c/o Christopher R. Senfield, PWS, PWD  
Mailing Address: 351 McLaws Circle, Suite 3  
City: State: Zip: Williamsburg, VA 23185  
Daytime Telephone: 757-220-0500  
E-mail Address: csenfield@vhb.com

Additionally, if you have any of the following information, please include it with your request: wetland delineation map, other relevant maps, drain tile survey, topographic survey, and/or site photographs.

CERTIFICATION: I am hereby requesting a preapplication consultation or jurisdictional waters and/or wetlands determination from the U.S. Army Corps of Engineers, for the property(ies) I have described herein. I agree to allow the duly authorized representatives of the Norfolk District Corps of Engineers and other regulatory or advisory agencies to enter upon the premises of the project site at reasonable times to evaluate inspect and photograph site conditions. This consent to enter the property is superior to, takes precedence over, and waives any communication to the contrary. For example, if the property is posted as "no trespassing" this consent specifically supercedes and waives that prohibition and grants permission to enter the property despite such posting. I hereby certify that the information contained in the Request for a Jurisdictional Determination is accurate and complete:

  
\_\_\_\_\_  
Property Owner's Signature

  
\_\_\_\_\_  
Date

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**Figure 2 from Environmental Baseline Survey (EBS) for the Alternative 1 (Preferred Alternative) Site** *(to be included following finalization of the EBS)*

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