Appendix O: Water Resources Documents

1. Wetland and Stream Delineation Report
2. Regulatory Summary
3. Pre-Application Meeting with USACE and VADEQ – Meeting Minutes
4. Mitigation Bank Credits
5. Impact Minimization Memorandum

Appendix O: Water Resources Documents

1. Wetland and Stream Delineation Report

DAVEY Resource Group

March 13, 2026

Peter Byrne, Director
Avion Solutions Group, LLC
244 5th Avenue
Suite P296
New York, NY 10001
email: pbyrne@avionsg.com

Re: Manassas Regional Airport (HEF) Wetland and Stream Delineation

Dear Mr. Byrne:

Please find enclosed a report summarizing Davey Resource Group's (DRG) field review of wetlands and streams within fifteen potential project areas at Manassas Regional Airport (HEF). This assessment was conducted on March 11-14, 2024, June 4-5, 2025 and July 7-8, 2005, along with a habitat assessment in support of a National Environmental Policy Act (NEPA) Environmental Assessment (EA). Please note that this field study reviewed potential project areas (the "Area of Investigation") in excess of those currently proposed for this effort and should be reviewed for water resource documentation purposes only. The delineation report is not intended to display or discuss information specific to projects, but to document the locations of wetlands and streams within specific areas at HEF.

Please also be aware that the original boundary for Project Area #3 included a box that included land east of Cannon Branch. Per discussion with Richard Allabaugh, Senior Airport Operations Officer at HEF, the Airport only controls land to the west of Cannon Branch, and thus all evaluations for Project Area #3 ended at the western top of bank of Cannon Branch. Should project area disturbance extend beyond this area, additional evaluation may be necessary.

If you have any questions regarding the information presented within this report or above, please do not hesitate to contact me via phone at 908-788-9676, extension 4895, or via email at Jamie.Morgan@Davey.com.

Sincerely,
Davey Resource Group, Inc.

Jamie Morgan, MS, CPSS, Certified Senior Ecologist,
State Certified Wetland Scientist - VA & NH
Project Manager

CC: Susan Quackenbush, PWS, DRG
Carol S. Weed, M.A., RPA

MANASSAS REGIONAL AIRPORT (HEF)

CITY OF MANASSAS AND PRINCE WILLIAM COUNTY
VIRGINIA

PROPOSED PROGRAM PROJECT AREAS

WETLAND and STREAM DELINEATION REPORT

August 16, 2024
Revised March 13, 2026

Prepared for:

Avion Solutions Group, LLC
244 5th Avenue
Suite P296
New York, NY 10001
Attn: Peter Byrne, Director

DAVEY Resource Group

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APPENDICES

1.0 INTRODUCTION

On behalf of Avion Solutions Group (ASG), LLC, Davey Resource Group, Inc. (DRG) conducted wetland and watercourse delineations at the 888-acre Manassas Regional Airport (HEF) site (hereafter referred to as the "Site"), in the City of Manassas and Prince William County, Virginia.

DRG evaluated an approximate 100-foot buffer around sixteen areas within the Site where "Program Projects" were being considered. The area that was evaluated is hereafter referred to as the "Area of Investigation" (AOI) and this area does not necessarily have implications with respect to where a project is or is not occurring. The AOI solely represents the area investigated by DRG for the purposes of identifying regulated features and is not intended to evaluate or discuss proposed impacts to regulated features. The AOI for this investigation encompassed approximately 217-acres, not including Project Area #2, which consists solely of existing pavement used for active airport activities.

The following report documents current Site conditions and the protocol used in determining the occurrence of wetland and stream features. Findings provided in this report are representative of field conditions that were documented at the time of the investigation and were based on DRG's understanding of the project scope at that time.

2.0 WETLAND & STREAM DELINEATION PROCEDURES

DRG conducted the initial wetland and stream delineation on March 11-14, 2024. The AOI was revisited June 4-5, 2025 and a newly added section of AOI, the Broad Run bypass channel, was reviewed July 7-8, 2025. The wetland delineation was completed in accordance with methodology outlined in the United States Army Corps of Engineers (USACE) *1987 Wetland Delineation Manual* (Environmental Laboratory, 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (United States Army Corps of Engineers, 2010). This approach utilizes the three parameters of vegetation, soils, and hydrology to identify and delineate wetlands. In situations when one or more of these parameters was absent due to natural, seasonal, or man-made disturbances, a determination was made as to whether the missing parameter(s) would occur under normal circumstances. This determination is based on other data (e.g., current weather conditions; comparisons of adjacent undisturbed areas; etc.), field indicators, and best professional judgement.

Prior to fieldwork, field biologists reviewed available mapping (topographic, orthophoto, and various data layers) to identify areas containing wet signatures which may be problematic and to understand the nature of wetlands and/or streams that may be encountered. Additionally, a desktop evaluation was conducted for topography via the Nokesville 7.5' USGS Quadrangle (**Figure 1**), soils via the Soils Survey Geographic (SSURGO) database (**Figure 2**), the United States Fish and Wildlife Service (USFWS) National

Wetland Inventory (NWI) wetlands (**Figure 3**), and the United States Department of Homeland Security Federal Emergency Management Agency (FEMA) 100-year floodplains (**Figure 4**) that may be located at the Site.

During the delineation, vegetation, soils, and hydrology were documented at sampling stations throughout the AOI. The information obtained at sampling stations is documented on data forms (see **Appendix A**) as per the *1987 USACE Manual* Protocol. Nomenclature and indicator status of vegetative species was identified using the National Wetland Plant List (NWPL) (United States Army Corps of Engineers, 2020). Wetlands and streams were classified according to Cowardin et al. (Cowardin, Carter, Golet, & LaRoe, 1979) classification system.

During the delineation, streams were identified based on the presence of defined bed and banks and an observable ordinary high-water mark (OHWM). Geomorphic traits were recorded, such as flow regime, bank height, width and depth, sinuosity, stream bed substrate, relative erosion, dominant riparian vegetation, and percent riparian canopy cover.

All identified streams were characterized as perennial, intermittent, or ephemeral. The USACE defines perennial, intermittent, and ephemeral streams as follows:

- Perennial streams have running water throughout the majority of the year with groundwater contributing to stream flow.
- Intermittent streams are defined as having running water during certain times of the year when groundwater contributes to stream flow.
- Ephemeral streams are defined as having running water primarily after storm events and are dry the majority of the year because the water table is generally well below the stream bed (Environmental Laboratory, 1987).

3.0 BACKGROUND INFORMATION

3.1 Site Description

The Site is located about 30 miles southwest of Washington D.C. within the 'piedmont plateau' physiographic province of Virginia (Virginia Department of Conservation and Recreation, Division of Natural Heritage, 2021). The elevation of the AOI ranges from approximately 170 to 200 feet above mean sea level (msl) (**Figure 1**). The area surrounding the AOI consists of high density commercial and suburban development to the north, agricultural and rural residential to the southwest, and forest and rural residential to the southeast. Currently, the Site consists of runways, taxiways, roads, buildings, parking lots, and natural areas. A Norfolk Southern Rail line crosses east to west to the immediate north of the Site. Ecological communities within the active airport grounds include maintained (mowed) grasslands, disturbed emergent wetlands, concrete lined drainage channels, drainage ditches, and one major perennial stream (Broad Run) and its associated floodplain. The natural areas near the Site perimeter contain mature oak-hickory forest, forested and emergent wetlands, intermittent streams,

and a second major perennial stream (Cannon Branch).

3.2 Soils Information

The Natural Resource Conservation Service (NRCS) Web Soil Mapper identified 13 soil units occurring within the AOI and one additional unit (54B) that includes Urban Land mapped within Project #2, as shown in **Table 1** and displayed with respect to the Site on **Figure 2**.

TABLE 1: MAPPED SOIL UNITS WITHIN SITE AOI AND PROJECT #2

MUSYM	NAME	SLOPE	HYDRIC RATING
1A	Aden silt loam	0 to 2 percent slopes	Hydric
4B	Arcola silt loam	2 to 7 percent slopes	None Listed
5C	Arcola-Nestoria Complex	7 to 15 percent slopes	None listed
7A	Bermudian silt loam	0 to 2 percent slopes	None Listed
11B	Calverton silt loam	0 to 7 percent slopes	Hydric
15A	Comus loam	0 to 2 percent slopes	None Listed
16A	Delanco fine sandy loam	0 to 4 percent slopes	Hydric
17A	Dulles silt loam	0 to 2 percent slopes	Hydric
20B	Elsinboro sandy loam	2 to 7 percent slopes	None Listed
26A	Hatboro silt loam	0 to 2 percent slopes	Hydric
35B	Manassas silt loam	2 to 7 percent slopes	None Listed
46B	Panorama silt loam	2 to 7 percent slopes	None Listed
49A	Rowland silt loam	0 to 2 percent slopes	Hydric
54B	Urban Land – Udorthents Complex	0 to 7 percent slopes	None Listed

The Arcola, Bermudian, Comus, Manassas, Nestoria, Panorama and Elsinboro series are well drained soils formed from alluvium, colluvium or residuum of weathered red bed siltstone and sandstone. All are deep to very deep except for the Nestoria, which contains shallow residuum formed on side slopes. The Bermudian series is associated with floodplains (United States Department of Agriculture, Natural Resource Conservation Service).

The Aden, Calverton, Delanco, Dulles, Hatboro and Rowland series are moderately well drained to poorly drained soils formed from alluvial sediments or residuum from red beds or micaceous crystalline rocks. The Hatboro series occurs on floodplains and the Calverton series has very slow permeability (United States Department of Agriculture, Natural Resource Conservation Service).

The Urban Land-Udorthents Complex represents soils that have been disturbed by fill and/or covered by buildings or pavement, as is the case in the area where it is mapped as the area is existing taxiway/parking for the airport.

Field observations confirmed that Airport soils had a fine loamy texture (silt loam, silty clay loam and/or clay loam) and were largely derived from red parent materials. Portions of the Airport soils appeared to contain numerous textures and colors within a single profile, indicating they were likely derived from fill deposited during the construction of the Airport. Soils information specific to wetland and upland sample stations is located within datasheets in **Appendix A** of this report.

3.3 Aquatic Resource Desktop Review

The Site occurs within the Broad Run Watershed (HUC 12: 020700100504) (Prince William County (PWC), n.d.), whereby the Broad Run crosses the AOI from west to east and is bridged/culverted under the airport runway and taxiway (**Figure 3**). The Cannon Branch borders the AOI to the east, flowing from north to south and subsequently merging with the Broad Run (**Figure 3**). The FEMA 100-year floodplain associated with these streams also occurs within the AOI (**Figure 4**) and most of the Site south of the Broad Run is mapped as floodplain, as well as infields to the north and the eastern portion of the AOI adjacent to the Cannon Branch. The NWI wetland layer mapped numerous features within the AOI that contain a variety of palustrine and riverine classifications (**Figure 3**).

4.0 WETLAND & STREAM DELINEATION RESULTS

During the field investigations, DRG identified seventeen wetland areas (**Table 2**) and eight streams (**Table 3**) within the current AOI, as well as three wetlands in former project AOIs (**Table 4**). A summary of documented habitat conditions within these features as well as corresponding upland habitats is provided in **Sections 4.1, 4.2**, and **4.3** below. Please refer to the Delineated Features Map (**Figure 5**) for the location of the delineated features and sample station locations. Habitat and biological conditions specific to sampling locations within each wetland are found on datasheets in **Appendix A**. Photographs of each wetland and stream within the AOI are presented in **Appendix B**. Qualifications of the individuals who participated in the stream and wetland delineations and development of this report are provided in **Appendix C**.

TABLE 2. WETLANDS AND WETLAND HABITATS IDENTIFIED WITHIN THE CURRENT PROJECT AOI

FIELD DESIGNATION	COWARDIN CODE[1]	HGM CODE	DELINEATED AREA (AC.)
Wetland A	PFO	Riverine	3.050
Wetland B	PEM	Depressional	0.127
Wetland C	PEM	Depressional	0.138
Wetland D	PEM	Depressional	0.065
Wetland I	PEM	Depressional	0.014
Wetland K	PEM	Depressional	0.050

Table 2. WETLANDS AND WETLAND HABITATS INDENTIFIED WITHIN THE AOI, Continued			
Wetland L	PEM	Depressional	0.014
Wetland M	PEM	Depressional	0.007
Wetland N	PEM	Depressional	0.013
Wetland P	PFO	Riverine	0.097
Wetland Q (includes QA/B and QC)	PEM	Riverine	0.076
Wetland R/S	PFO	Riverine	0.213
Wetland T	PEM (with minor PFO/PSS fringes)	Depressional/Riverine	0.395
Wetland U	PEM	Riverine	0.047
Wetland V	PEM	Depressional/Riverine	0.007
Wetland W	PFO	Depressional/Riverine	0.011
Wetland X (includes XA, XB, XC and XD)	PEM	Depressional	11.9

TABLE 3. STREAMS IDENTIFIED WITHIN THE AOI				
FIELD DESIGNATION	**COWARDIN CODE[1]**	**STREAM TYPE**	**WATERS TYPE[2]**	**DELINEATED LENGTH (FT.)**
Stream H (Broad Run)	R2UB1	Perennial	TNW	1,170
Stream HB	R4SB4	Intermittent	RPW	78
Stream J	R2UB1	Perennial	RPW	1,095
Stream O (Cannon Branch)	R2UB1	Perennial	TNW	2,648
Stream OA	R4SB3	Intermittent	RPW	283
Stream OB	R4SB6	Intermittent	RPW	56
Stream OC	R4SB3	Intermittent	RPW	166
Stream OD	R4SB3	Intermittent	RPW	56

TABLE 4. WETLANDS AND WETLAND HABITATS IDENTIFIED WITHIN FORMER PROJECT AOIS			
FIELD DESIGNATION	**COWARDIN CODE[1]**	**HGM CODE**	**DELINEATED AREA (AC.)**
Wetland E	PEM	Depressional	0.471
Wetland F	PEM	Depressional/Riverine	0.042
Wetland G	PEM	Depressional	0.051

[1] PEM=Palustrine Emergent Wetland; PSS=Palustrine Scrub-Shrub Wetland; PFO=Palustrine Forested Wetland; R2UB1 = Riverine, lower perennial, unconsolidated bottom, cobble-gravel; R4RBx = Riverine, intermittent, rock bottom, excavated; R4SB3 = Riverine, intermittent, streambed, cobble-gravel; R4SB4 = Riverine, intermittent, streambed, sand; and R4SB6r = Riverine, intermittent, streambed, organic, artificial.

[2] TNW = Traditional Navigable Waters are those that have the potential to be used for interstate or foreign commerce, including waters that contain "occasional natural obstructions or portages" and those that may not be navigable "at all seasons… or all states of water" (United States Environmental Protection Agency, 2017).
RPW = Relatively Permanent Waters are those that have surface flow for all or some portions of the year.
NRPW = Non-Relatively Permanent Waters are those that are considered ephemeral and flow only after rain events.

4.1 Wetlands

Listed below are summary descriptions of the wetland habitats evaluated. These descriptions are based on data collected at sampling locations and general observations made throughout the wetland area.

Wetlands A, P, R/S, T, U, V, and W consist of palustrine forested (PFO) and palustrine emergent (PEM) wetlands occurring within the floodplain of Cannon Branch. Wetlands A, P, T, and R/S are adjacent to Cannon Branch (Stream O). Wetland T is a depressional swale that becomes a stream outside of the AOI. Wetland U receives stormwater input from the roadside and Wetland U, Wetland T and Wetland R/S are directly connected to Cannon Branch by way of small intermittent channels (Streams OA, OB, and OC). Wetlands W and V are small, isolated, depressional wetlands that likely formed due to disturbance.

The dominant tree canopy within the forested portion of these wetlands consisted of red maple (*Acer rubrum,* FAC), American hophornbeam (*Ostrya virginiana,* FACU), and pin oak (*Quercus palustris*, FACW), while the shrub layer contained blackhaw viburnum (*Viburnum prunifolium*, FACU), American hornbeam (*Carpinus caroliniana,* FAC), and American holly (*Ilex opaca*, FACU). The dominant herb stratum included lizard's tail (*Saururus cernuus*, OBL), common rush (*Juncus effusus*, FACW), broadleaf cattail (*Typha latifolia,* OBL), Nepalese browntop (*Microstegium vimineum,* FAC), sweet woodreed (*Cinna arundinacea,* FACW), mannagrass (*Glyceria sp.*), and an unknown grass. Japanese honeysuckle (*Lonicera japonica,* FACU) and roundleaf greenbrier (*Smilax rotundifolia*, FAC) dominated the woody vine stratum. Examined soils met the following hydric soil indicators: hydrogen sulfide (A4), red parent material (F21), and depleted matrix (F3). Hydrology indicators included surface water, high water table, saturation, algal mats or crust, water-stained leaves, iron deposits, geomorphic position, drainage patterns, FAC-neutral test, sediment deposits, and hydrogen sulfide odor.

Wetlands B, C, D, E, F, G, I, K, L, M, and N are PEM depressional wetlands located within the airport infields and outer fields. Wetland F would also be considered a riverine wetland due to weak lateral flow. Wetland F is a fringe wetland adjacent to a stream that contained flowing water outside of the AOI. The wetlands were dominated by herbaceous species, most notably woolgrass (*Scirpus cyperinus*, FACW), common rush, tapered rosette grass (*Dichanthelium acuminatum,* FAC), switchgrass (*Panicum virgatum,* FAC), curly dock (*Rumex crispus,* FAC), barnyardgrass (*Echinochloa crus-galli*, FAC), and reed canarygrass (*Phalaris arundinacea,* FACW). Wetland F additionally contained black elderberry (*Sambucus nigra,* FAC) in small amounts. Examined soils met the following hydric soil indicators: redox depressions (F8), red parent material (F21), and depleted matrix (F3). Hydrology indicators included surface water, saturation, water-stained leaves, geomorphic position, FAC-neutral test, high water table, and algal mat or crust.

Wetland Q represents several pockets of PEM wetland (Wetlands QA, QB and QC) that have formed within a concrete-lined ditch that drains water to the east of the main taxiway. This ditch contained flowing water in which broadleaf cattail had taken root. Hydric soil indicators for hydrogen sulfide (A4) and 2-centimeter muck (A10) were observed. Hydrology indicators included surface water, saturation, water-stained leaves, hydrogen sulfide odor, drainage patterns, geomorphic position, and FAC-neutral test.

Wetland X occurs in a depressional area where a bypass channel had been dug to reroute Broad Run for previous construction projects. The depressional area is still evident in the landscape, as the central portion of the area reviewed lies at a lower elevation than the eastern and western sides. One main wetland area occurs through the central portion of the channel (Wetland X) where evidence of recent flooding was observed and small wetland pockets and swales occur along the sides (Wetlands XA, XB, XC and XD). The central portion of the bypass channel was the wettest, often containing several inches of standing water. Frogs and wading birds were observed utilizing these areas. Slightly upgradient from the standing water, the area contained emergent hydrophytic vegetation, including common rush, poverty rush (*Juncus tenuis*, FAC), reed canarygrass, shallow sedge (*Carex lurida*, OBL), green bulrush (*Scirpus atrovirens*, OBL), yellow nutsedge (*Cyperus esculentus*, FACW), crimsoneyed rosemallow (*Hibiscus moscheutos*, OBL), Virginia wildrye (*Elymus virginicus*, FACW), and small carpetgrass (*Arthraxon hispidus*, FAC). Willow (*Salix* spp., OBL/FACW) saplings were also observed in areas where mowing has not prevented them from establishing. Examined soils met red parent material (F21) and depleted matrix (F3) hydric soil indicators. Hydrology indicators included surface water, high water table, saturation, algal mats or crust, water-stained leaves, geomorphic position, drainage patterns, FAC-neutral test, and sediment deposits.

4.2 Upland Habitats

Upland communities observed within the AOI included mixed hardwood forest and mowed/maintained lawn, often within active airport areas (infields, and along runways and taxiways). In areas where maintained lawn occurred, the dominant species were broomsedge bluestem (*Andropogon virginicus,* FACU)*,* Indiangrass (*Sorghastrum nutans,* FACU) and other unidentified grasses. The mixed hardwood forest canopy included mockernut hickory (*Carya tomentosa,* UPL), American hornbeam, eastern hophornbeam, eastern red cedar (*Juniperus virginiana,* FACU), tree-of-heaven (*Ailanthus altissima*, FACU), pawpaw (*Asimina triloba*, FAC), flowering dogwood (*Cornus florida*, FACU), and common hackberry (*Celtis occidentalis*, FACU). The shrub layer consisted of blackhaw viburnum, multiflora rose (*Rosa multiflora*, FACU), and American holly. The herb and woody vine stratum consisted of Japanese honeysuckle, sericea lespedeza (*Lespedeza cuneata*, FACU), smooth brome (*Bromus inermis*, UPL), hedge false bindweed (*Calystegia sepium*, FAC), devil's darning needles (*Clematis virginiana*, FAC), Canada thistle (*Cirsium arvense*, FACU), sweet woodreed, Virginia wildrye, and eastern bottlebrush grass (*Elymus hystrix,* UPL). The upland soils had a fine loamy texture (silt loam, silty clay loam and/or clay loam) and high chroma colors varying from 10YR 3/6, 7.5YR 4/4, 2.5YR 4/6, et al.

Sample stations not exhibiting hydrophytic vegetation, hydric soil, and/or wetland hydrology were classified as upland. Please refer to the field data sheets provided in **Appendix A** for additional information specific to the upland conditions documented within the AOI.

4.3 Streams

Eight streams were observed within the AOI, including the Cannon Branch and Broad Run. Descriptive summaries of each stream habitats are as follows:

Stream O is a perennial stream (Cannon Branch) that flows along the eastern boundary of the AOI from north to south. This stream is about 25 feet wide and contained clear water flowing over a gravel/cobble substrate. The banks were approximately two to three feet high and showed significant signs of erosion and exposed soil in some areas. The stream contained approximately 90% canopy cover dominated by sweet birch (*Betula lenta*, FAC), American sycamore (*Platanus occidentalis*, FACW), tree-of-heaven, and common hackberry.

Streams OA, OB, OC, and OD are small tributaries to the Cannon Branch. They averaged between two to four feet in width and contained one to six inches of clear water flowing over a mud/cobble or organic substrate. The streams had an average bank height of two to three feet. These streams all contained approximately 90% canopy cover. Streams OA, OC and OD appeared to receive runoff from Wakeman Drive, of which the water further distributes into downgradient wetlands noted in **Section 4.1**, ultimately entering Stream O (Cannon Branch).

Stream H (Broad Run) is a perennial stream that flows east to west through the center of the AOI. It is bridged/culverted underneath the airport runway and taxiway. Stream H is about 40 to 50 feet in width and contained approximately three feet of murky water flowing over a mud substrate during the observation. The banks were approximately three to four feet deep and contained large stones armoring the southern side, whereas the northern banks remained natural and consisted of sandy deposits. The canopy cover was approximately 20% and contained American sycamore and honey-locust (*Gleditsia triacanthos*). **Stream HB** is a small intermittent channel that drains into Stream H from the north.

Stream J is a concrete lined ditch that contained approximately one foot of flowing water during the observation. Portions of the ditch have accumulated enough organic substrate to support wetland vegetation, and these areas were separately delineated as wetlands (see the description of Wetland Q above).

5.0 SUMMARY AND CONCLUSIONS

This report presents an unverified wetland delineation and streams (Waters of the United States) determination of the Site based on the author's scientific opinion. Formal determination of jurisdiction regarding wetlands and waters of the United States can only be determined by the USACE (and/or state agencies) with the submittal of a jurisdictional determination request by the Site applicant. Delineations were completed in accordance with the *1987 USACE Wetland Delineation Manual* and the Eastern Mountains and Piedmont Regional Supplement. Aquatic resources described within this report are those which were identified within current and former AOIs evaluated during Site visits on March 11- 14, 2024; June 4-5, 2025, and July 7-8, 2025. All depictions and accounts described within this report are

based on Site conditions and field observations made at the time of the investigation.

Wetland delineation studies are generally conducted in order to support permit applications for various projects but are not necessarily indicative of specific projects or areas proposed for disturbance. Wetlands can be subject to national, state, and/or local regulations that can vary in regulatory scrutiny across political and agency boundaries. Aquatic resource boundaries identified in the field will be considered preliminary unless confirmed by federal, state and/or municipal agencies (jurisdictional determination or otherwise). Preliminary boundaries of aquatic resources are acceptable for permitting; however, final determination rests solely at the discretion of the government entity or entities, and this determination may occur at any point during the permit process. The decision may depend on the applicable law or regulations governing the decision. As scientists, DRG cannot guarantee any government ruling and cannot accept responsibility for any change in law or regulation.

6.0 REFERENCES

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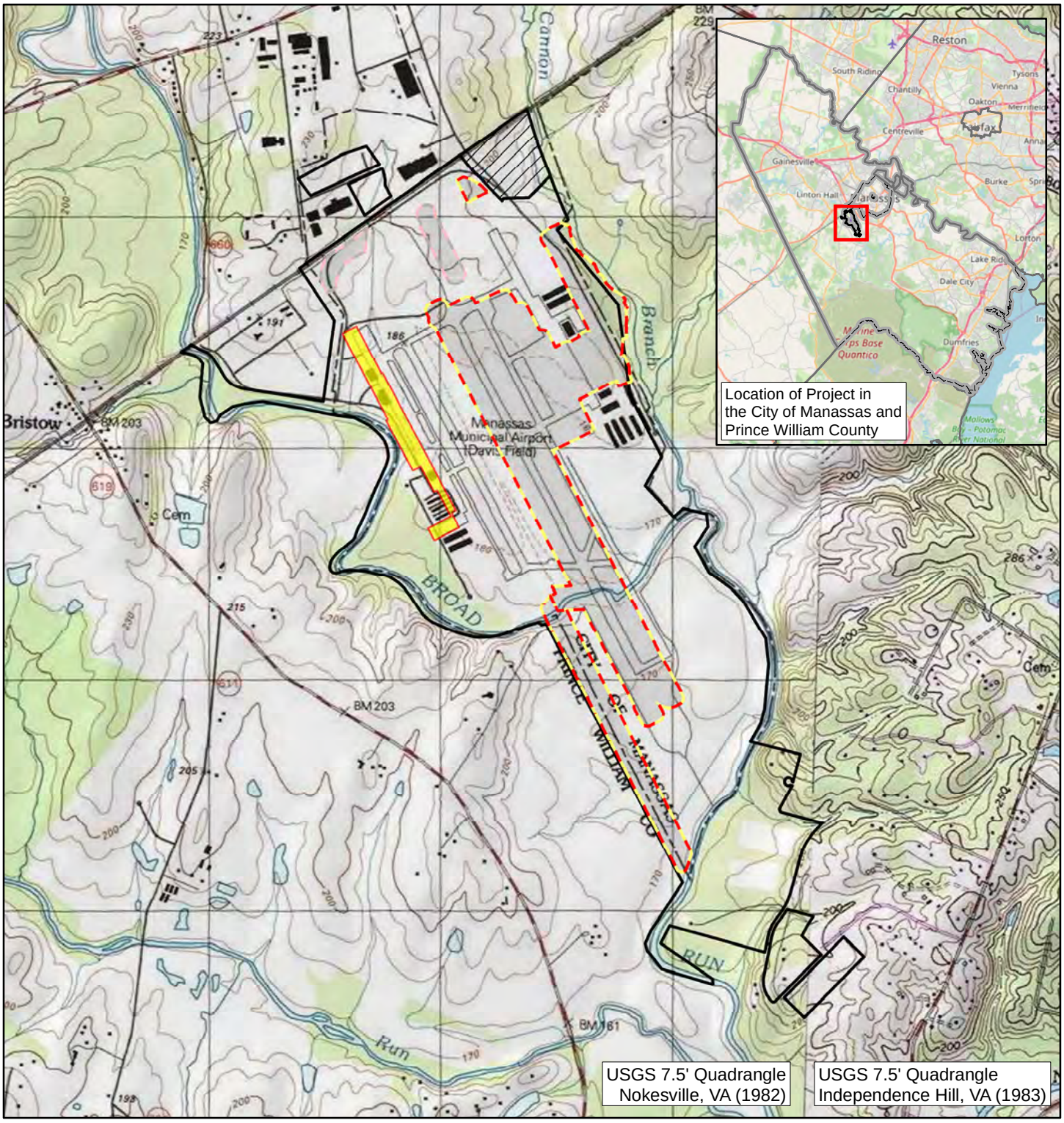
FIGURES



Service Layer Credits: © OpenStreetMap (and) contributors, CC-BY-SA
Copyright:© 2013 National Geographic Society, i-cubed

N

0 0.5 1 Kilometers

0 0.25 0.5 Miles

Project 23-98001.001, Version: 2/11/2026 @ 12:11:32 PM

LEGEND

- Airport Property
- Amazon Data Center Parcel
- Area of Investigation, Current Projects
- Former Projects, No Longer Active
- Paved Construction Area, No Assessment Required

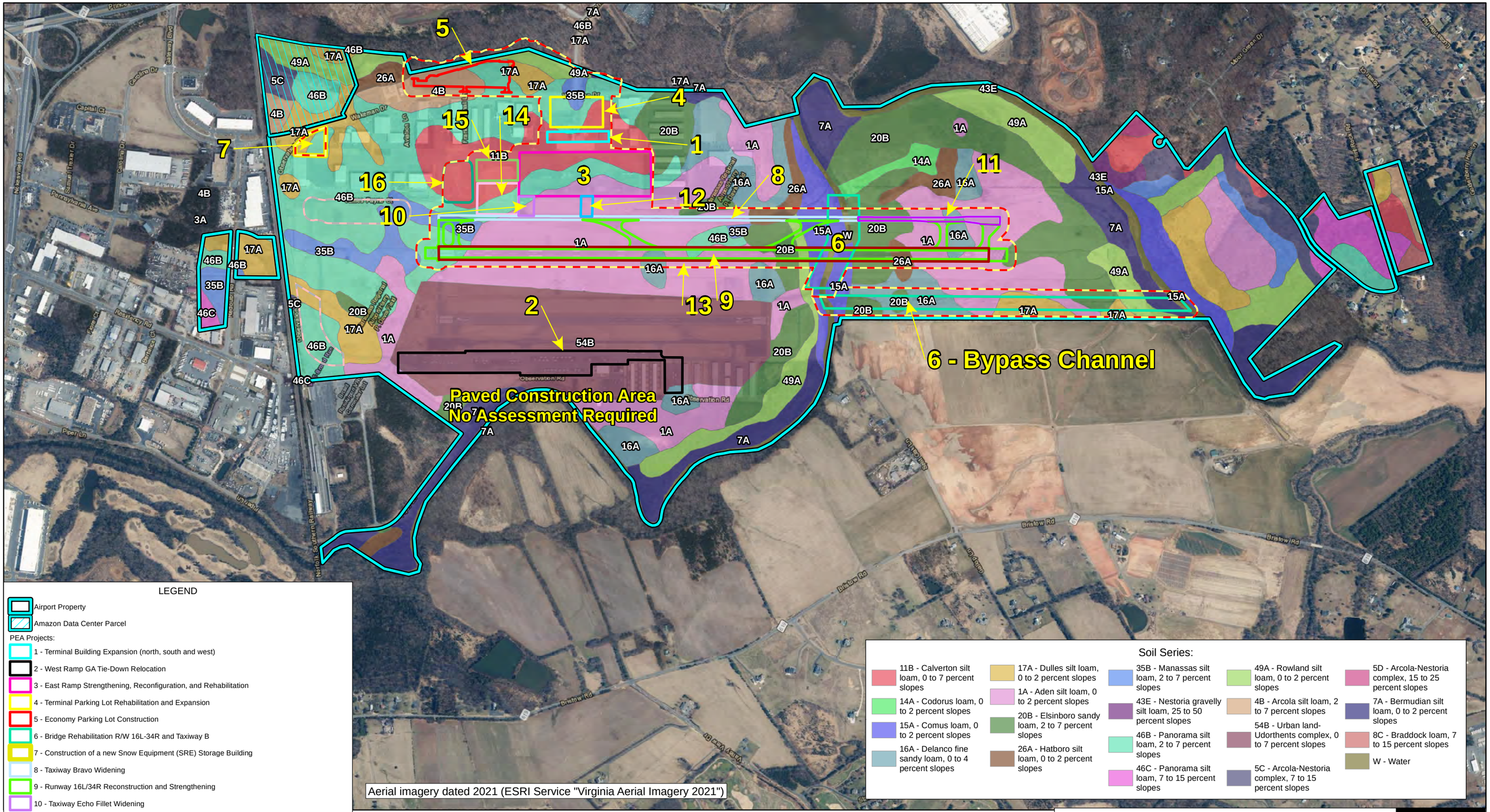
The Manassas Regional Airport (HEF) FAR 1 Part 139 Certification and Terminal Redevelopment Program

Prince William County and City of Manassas, Virginia

AVION SOLUTIONS GROUP LLC

Project Location
(USGS Nokesville 7.5-minute Quadrangle)

Figure **1**



LEGEND

- Airport Property
- Amazon Data Center Parcel

PEA Projects:

- 1 - Terminal Building Expansion (north, south and west)
- 2 - West Ramp GA Tie-Down Relocation
- 3 - East Ramp Strengthening, Reconfiguration, and Rehabilitation
- 4 - Terminal Parking Lot Rehabilitation and Expansion
- 5 - Economy Parking Lot Construction
- 6 - Bridge Rehabilitation R/W 16L-34R and Taxiway B
- 7 - Construction of a new Snow Equipment (SRE) Storage Building
- 8 - Taxiway Bravo Widening
- 9 - Runway 16L/34R Reconstruction and Strengthening
- 10 - Taxiway Echo Fillet Widening
- 11 - Taxiway B Reconstruction and Strengthening (South of the Bridge)
- 12 - Construction of a new East Ramp Taxiway
- 13 - Runway 16L/34R Widening
- 14 - Aircraft Deicing Pad and Apron Expansion between Taxiways D and E
- 15 - Construction of new Expanded East Ramp and Taxilane between Taxiways Delta and Echo
- 16 - Construction of a new ARFF Facility
- Area of Investigation, Current Projects
- Former Projects, No Longer Active

Soil Series:

- 11B - Calverton silt loam, 0 to 7 percent slopes
- 14A - Codorus loam, 0 to 2 percent slopes
- 15A - Comus loam, 0 to 2 percent slopes
- 16A - Delanco fine sandy loam, 0 to 4 percent slopes
- 17A - Dulles silt loam, 0 to 2 percent slopes
- 1A - Aden silt loam, 0 to 2 percent slopes
- 20B - Elsinboro sandy loam, 2 to 7 percent slopes
- 26A - Hatboro silt loam, 0 to 2 percent slopes
- 35B - Manassas silt loam, 2 to 7 percent slopes
- 43E - Nestoria gravelly silt loam, 25 to 50 percent slopes
- 46B - Panorama silt loam, 2 to 7 percent slopes
- 46C - Panorama silt loam, 7 to 15 percent slopes
- 49A - Rowland silt loam, 0 to 2 percent slopes
- 4B - Arcola silt loam, 2 to 7 percent slopes
- 54B - Urban land-Udorthents complex, 0 to 7 percent slopes
- 5C - Arcola-Nestoria complex, 7 to 15 percent slopes
- 5D - Arcola-Nestoria complex, 15 to 25 percent slopes
- 7A - Bermudian silt loam, 0 to 2 percent slopes
- 8C - Braddock loam, 7 to 15 percent slopes
- W - Water

0 200 400 Meters

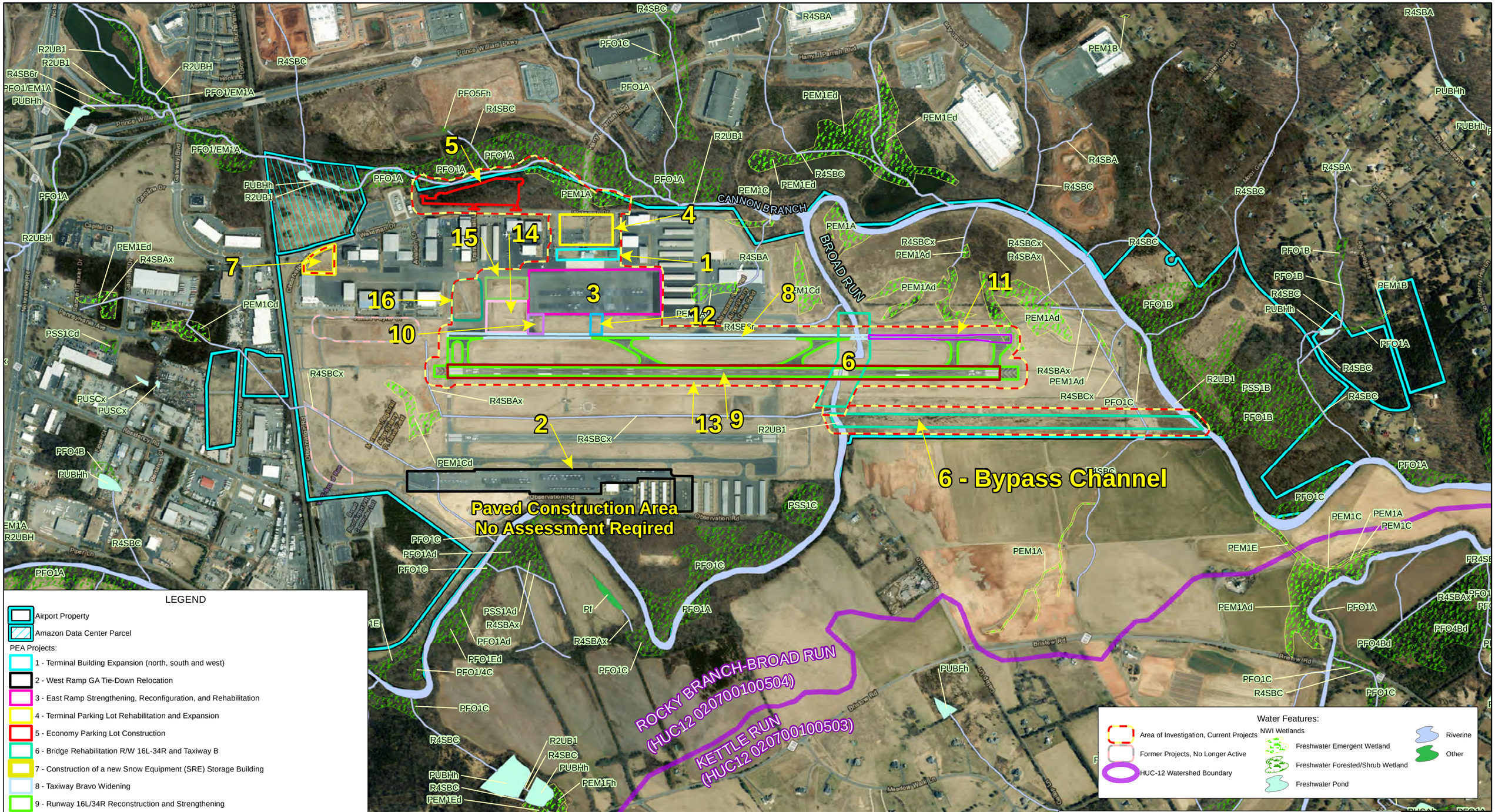
0 500 1,000 Feet

AVION SOLUTIONS GROUP LLC

Manassas Regional Airport PART 139 Certification and Terminal Redevelopment

Figure 2

Airport Soils, Natural Resource Conservation Service (NRCS) Soil Survey Geographic Database (SSURGO)



LEGEND

- Airport Property
- Amazon Data Center Parcel

PEA Projects:

1. 1 - Terminal Building Expansion (north, south and west)
2. 2 - West Ramp GA Tie-Down Relocation
3. 3 - East Ramp Strengthening, Reconfiguration, and Rehabilitation
4. 4 - Terminal Parking Lot Rehabilitation and Expansion
5. 5 - Economy Parking Lot Construction
6. 6 - Bridge Rehabilitation R/W 16L-34R and Taxiway B
7. 7 - Construction of a new Snow Equipment (SRE) Storage Building
8. 8 - Taxiway Bravo Widening
9. 9 - Runway 16L/34R Reconstruction and Strengthening
10. 10 - Taxiway Echo Fillet Widening
11. 11 - Taxiway B Reconstruction and Strengthening (South of the Bridge)
12. 12 - Construction of a new East Ramp Taxiway
13. 13 - Runway 16L/34R Widening
14. 14 - Aircraft Deicing Pad and Apron Expansion between Taxiways D and E
15. 15 - Construction of new Expanded East Ramp and Taxilane between Taxiways Delta and Echo
16. 16 - Construction of a new ARFF Facility
- Project #6 - Bypass Channel

Wetland classification for NWI based on Cowardin, L.M., V. Carter V., F.C. Golet, and E.T. LaRoe.
1979 Classification of Wetlands and Deepwater Habitats of the United States.
U.S. Fish and Wildlife Service Report No. FWS/OBS/- 79/31. Washington, D.C.

0 200 400 Meters

0 500 1,000 Feet

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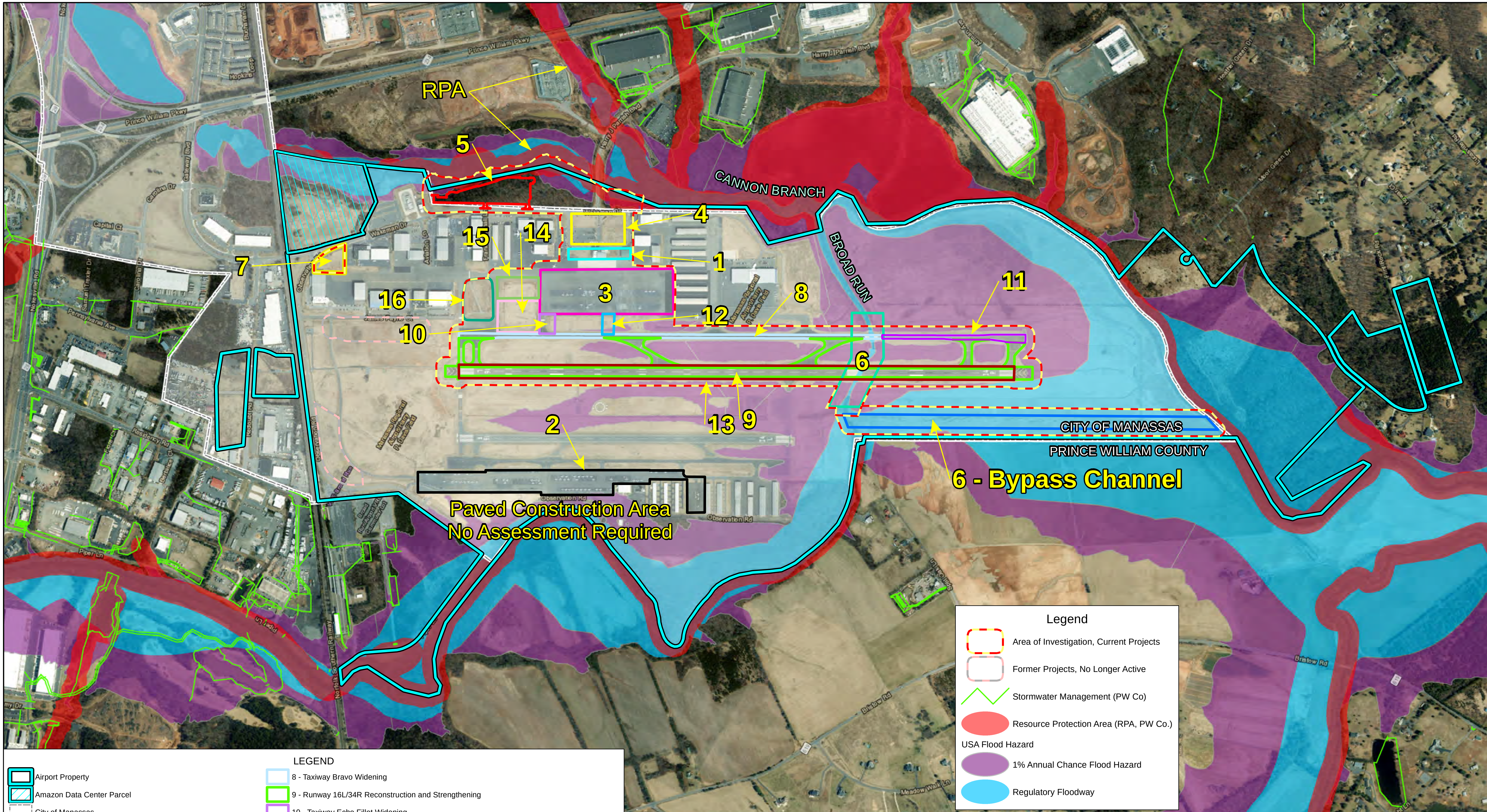
Figure 3

Manassas Regional Airport PART 139 Certification and Terminal Redevelopment

NWI Water Features and Watersheds on the Airport

Project 23-98001.002, Version: 4/19/2026 @ 11:48:37 AM



LEGEND

- Airport Property
- Amazon Data Center Parcel
- City of Manassas

PEA Projects:

- 1 - Terminal Building Expansion (north, south and west)
- 2 - West Ramp GA Tie-Down Relocation
- 3 - East Ramp Strengthening, Reconfiguration, and Rehabilitation
- 4 - Terminal Parking Lot Rehabilitation and Expansion
- 5 - Economy Parking Lot Construction
- 6 - Bridge Rehabilitation R/W 16L-34R and Taxiway B
- 7 - Construction of a new Snow Equipment (SRE) Storage Building
- 8 - Taxiway Bravo Widening
- 9 - Runway 16L/34R Reconstruction and Strengthening
- 10 - Taxiway Echo Fillet Widening
- 11 - Taxiway B Reconstruction and Strengthening (South of the Bridge)
- 12 - Construction of a new East Ramp Taxiway
- 13 - Runway 16L/34R Widening
- 14 - Aircraft Deicing Pad and Apron Expansion between Taxiways D and E
- 15 - Construction of new Expanded East Ramp and Taxilane between Taxiways Delta and Echo
- 16 - Construction of a new ARFF Facility
- Project #6 - Bypass Channel

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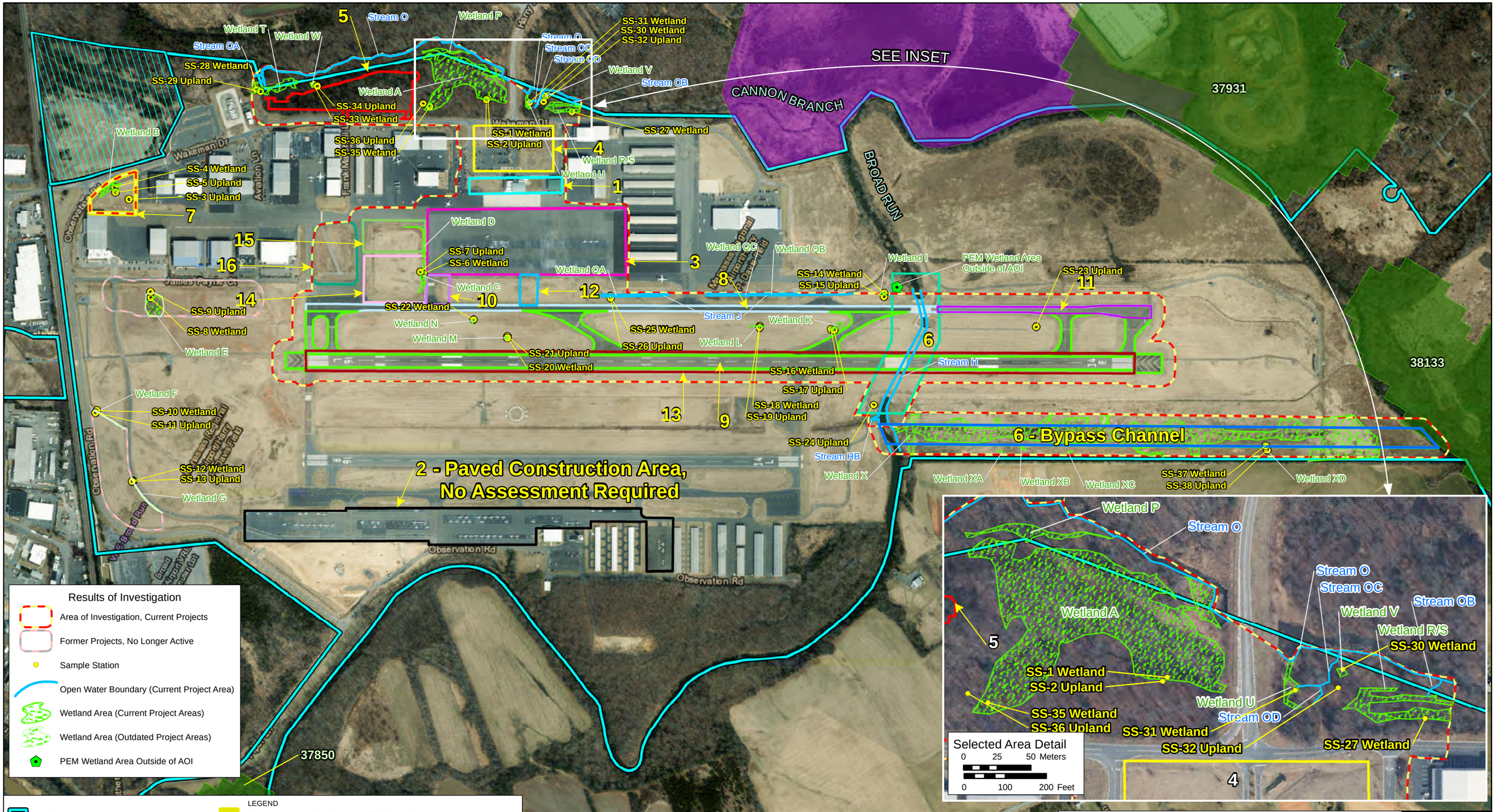
Manassas Regional Airport PART 139 Certification and Terminal Redevelopment

State and Local Water Features in the Vicinity of the Airport

Figure 4

Project 23-98001.002, Version: 4/19/2026 @ 11:58:16 AM



Results of Investigation

- Area of Investigation, Current Projects
- Former Projects, No Longer Active
- Sample Station
- Open Water Boundary (Current Project Area)
- Wetland Area (Current Project Areas)
- Wetland Area (Outdated Project Areas)
- PEM Wetland Area Outside of AOI

LEGEND

- Airport Property
- Amazon Data Center Parcel
- Ecological Core C5: General
- VDOT Wetlands Mitigation Bank

PEA Projects:

- 1 - Terminal Building Expansion (north, south and west)
- 2 - West Ramp GA Tie-Down Relocation
- 3 - East Ramp Strengthening, Reconfiguration, and Rehabilitation
- 4 - Terminal Parking Lot Rehabilitation and Expansion
- 5 - Economy Parking Lot Construction
- 6 - Bridge Rehabilitation R/W 16L-34R and Taxiway B
- 7 - Construction of a new Snow Equipment (SRE) Storage Building
- 8 - Taxiway Bravo Widening
- 9 - Runway 16L/34R Reconstruction and Strengthening
- 10 - Taxiway Echo Fillet Widening
- 11 - Taxiway B Reconstruction and Strengthening (South of the Bridge)
- 12 - Construction of a new East Ramp Taxiway
- 13 - Runway 16L/34R Widening
- 14 - Aircraft Deicing Pad and Apron Expansion between Taxiways D and E
- 15 - Construction of new Expanded East Ramp and Taxilane between Taxiways Delta and Echo
- 16 - Construction of a new ARFF Facility
- Project #6 - Bypass Channel

0 200 400 Meters

0 500 1,000 Feet

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Figure 5

Manassas Regional Airport (HEF) Proposed Part 139 Certification and Terminal Redevelopment Project Environmental Assessment

Delineated Features

Project 23-98001.002, Version: 4/20/2026 @ 10:45:15 AM

APPENDIX A

SAMPLE STATION DATASHEETS

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-11

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS1-wetland

Investigator(s): J. Morgan, L. Dancer, K. Kusant, K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): S 148 Lat: 38.727117 Long: -77.510438 Datum: WGS 84

Soil Map Unit Name: 49A - Rowland silt loam, 0 to 2 percent slopes NWI classification: PFO1A

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✔	**No** ___	**Is the Sampled Area within a Wetland?**	Yes ✔	No ___
Hydric Soil Present?	Yes ✔	No ___			
Wetland Hydrology Present?	Yes ✔	No ___			

Remarks:

This sample station was collected within the PFO portion of Wetland A, which occurs within the floodplain of the Cannon Branch (Stream O). Small PEM enclosures occur closer to the top of bank of Cannon Branch. This sample station is also represetative of Wetland P, a linear PFO wetland that occurs between Wetland A and Cannon Branch on the northern end of Wetland A.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✔ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✔ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✔	No _____	Depth (inches): 0
Water Table Present?	Yes ✔	No _____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✔	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No _____

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS1-wetland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	50	✔	FAC
2.			FACW
3.			
4.			
5.			
6.			
7.			
	50 = Total Cover		
50% of total cover: 25.00	20% of total cover: 10.00		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Carpinus caroliniana	40	✔	FAC
2. Ilex opaca	30	✔	FACU
3. Asimina triloba	10		FAC
4.			
5.			
6.			
7.			
8.			
9.			
	80 = Total Cover		
50% of total cover: 40.00	20% of total cover: 16.00		
Herb Stratum (Plot size: 5 ft r)			
1. Smilax rotundifolia	15	✔	FAC
2. Saururus cernuus	15	✔	OBL
3. Impatiens capensis	5		FACW
4.			FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	35 = Total Cover		
50% of total cover: 17.50	20% of total cover: 7.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1. Lonicera japonica	10	✔	FACU
2.			
3.			
4.			
5.			
	10 = Total Cover		
50% of total cover: 5.00	20% of total cover: 2.00		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.66 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	05	x 2 =	10
FAC species	115	x 3 =	345
FACU species	40	x 4 =	160
UPL species	0	x 5 =	0
Column Totals:	175 (A)		530 (B)

Prevalence Index = B/A = 3.02

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS1-wetland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 5	10YR 4/2	97	10YR 4/4	3	C	M	Silt Loam	
5 - 8	10YR 4/1	95	10YR 6/4	5	C	M	Silt Loam	
8 - 18	5Y 5/1	92	10YR 4/6	8	C	M	Silty Clay	Texture is silty clay with gravel
-								
-								
-								
-								
-								
-								

[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)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** ✔ **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-11

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS2-upland

Investigator(s): J. Morgan, L. Dancer, K. Kusant, K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): None Slope (%): 5

Subregion (LRR or MLRA): S 148 Lat: 38.727132 Long: -77.510485 Datum: WGS 84

Soil Map Unit Name: 46B - Panorama silt loam, 2 to 7 percent slopes NWI classification: PFO1A

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

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

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

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

Hydrophytic Vegetation Present?	Yes ___	**No ✔**	**Is the Sampled Area within a Wetland?**	Yes ___	No ✔
Hydric Soil Present?	Yes ___	No ✔			
Wetland Hydrology Present?	Yes ___	No ✔			

Remarks:

This sample station was collected upgradient from Wetland A, and occurs in the upland forest to the west of Wetland A and the Cannon Branch (Watercourse O). This sample station is also representative of the upland adjacent to Wetland P, which occurs to the northeast of Wetland A.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✔	Depth (inches):_____
Water Table Present?	Yes _____	No ✔	Depth (inches):_____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches):_____

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS2-upland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Carya tomentosa	50	✔	UPL
2. Carpinus caroliniana	40	✔	FAC
3.			
4.			
5.			
6.			
7.			
	90 = Total Cover		
50% of total cover: 45.00	20% of total cover: 18.00		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Viburnum prunifolium	15	✔	FACU
2. Cornus florida	5	✔	FACU
3. Asimina triloba	5	✔	FAC
4. Ilex opaca	5	✔	FACU
5.			
6.			
7.			
8.			
9.			
	30 = Total Cover		
50% of total cover: 15.00	20% of total cover: 6.00		
Herb Stratum (Plot size: 5 ft r)			
1. Claytonia virginica	2		FAC
2. Hedera helix	1		FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	3 = Total Cover		
50% of total cover: 1.50	20% of total cover: 0.60		
Woody Vine Stratum (Plot size: 30 ft r)			
1. Smilax rotundifolia	15	✔	FAC
2. Lonicera japonica	5	✔	FACU
3.			
4.			
5.			
	20 = Total Cover		
50% of total cover: 10.00	20% of total cover: 4.00		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 37.50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	62	x 3 =	186
FACU species	31	x 4 =	124
UPL species	50	x 5 =	250
Column Totals:	143 (A)		560 (B)

Prevalence Index = B/A = 3.91

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS2-upland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 3	7.5YR 4/4	50					Silty Clay Loam	Dual Matrix
0 - 3	7.5YR 4/2	50					Silty Clay Loam	Dual Matrix
3 - 18	7.5YR 4/4	100					Silty Clay 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)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-12

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS3-upland

Investigator(s): J. Morgan, L. Dancer, K. Kusant, K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR or MLRA): S 148 Lat: 38.732508 Long: -77.517385 Datum: WGS 84

Soil Map Unit Name: 46B - Panorama silt loam, 2 to 7 percent slopes NWI classification:

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

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

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

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

Hydrophytic Vegetation Present?	Yes ___	**No ✔**	**Is the Sampled Area within a Wetland?**	Yes ___	No ✔
Hydric Soil Present?	Yes ___	No ✔			
Wetland Hydrology Present?	Yes ✔	No ___			

Remarks:

This sample station was collected within an upland area adjacent to the airport boundary that contained saturated soils and surface water. Soils appeared to be comprised of fill material with a high clay content, as multiple clay soils were observed mixed together.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✔ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✔	No ___	Depth (inches): 2
Water Table Present?	Yes ___	No ✔	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ✔	No ___	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No ___

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

Remarks:

High clay content soils appear to be perching water in this area. A true water table was not detected.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS3-upland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft r)			
1. Andropogon virginicus	65	✔	FACU
2. Grass sp.	20	✔	
3. Phalaris arundinacea	10		FACW
4. Taraxacum officinale	5		FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50.00	20% of total cover: 20.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	0	x 3 =	0
FACU species	70	x 4 =	280
UPL species	0	x 5 =	0
Column Totals:	80 (A)		300 (B)

Prevalence Index = B/A = 3.75

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

Hydrophytic vegetation were not dominant.

SOIL Sampling Point: SS3-upland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	10YR 5/3	80	7.5YR 5/6	20	C	PL / M	Clay Loam	
6 - 18	2.5Y 6/3	45	10YR 3/3	10	C	M	Clay Loam	Dual Matrix
6 - 18	10YR 3/3	45					Clay Loam	Dual Matrix
-								
-								
-								
-								
-								
-								

[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)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** ✔

Remarks:

Soils did not have a low enough chroma to meet hydric soil criteria.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-12

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS4-wetland

Investigator(s): J. Morgan, L. Dancer, K. Kusant, K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): None Slope (%): 1

Subregion (LRR or MLRA): S 148 Lat: 38.723888 Long: -77.517294 Datum: WGS 84

Soil Map Unit Name: 1A - Aden silt loam, 0 to 2 percent slopes NWI classification:

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✔	No ___	**Is the Sampled Area within a Wetland?**	Yes ✔	No ___
Hydric Soil Present?	Yes ✔	No ___			
Wetland Hydrology Present?	Yes ✔	No ___			

Remarks:

This sample station is representative of Wetland B, a PEM depressional wetland in a mowed portion of the airport.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✔ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✔	No ____	Depth (inches): 3
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

High clay content soils appear to be perching water in this area. A true water table was not detected.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS4-wetland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft r)			
1. Rumex crispus	25	✔	FAC
2. Phalaris arundinacea	25	✔	FACW
3. Juncus effusus	20	✔	FACW
4. Echinochloa crus-galli	10		FAC
5. Grass sp.	5		
6.			
7.			
8.			
9.			
10.			
11.			
	85 = Total Cover		
50% of total cover: 42.50	20% of total cover: 17.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	45	x 2 =	90
FAC species	35	x 3 =	105
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	80 (A)		195 (B)

Prevalence Index = B/A = 2.43

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS4-wetland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 8	10YR 5/2	85	10YR 4/6	10	C	M	Clay Loam	
0 - 8	10YR 5/2		10YR 3/2	5	D	M	Clay Loam	
8 - 12	7.5YR 4/3		7.5YR 4/6	20	C	M	Clay Loam	
12 - 18	10YR 5/4	100					Clay 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)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** ✔ **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-12

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS5-upland

Investigator(s): J. Morgan, L. Dancer, K. Kusant, K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 1

Subregion (LRR or MLRA): S 148 Lat: 38.732818 Long: -77.517401 Datum: WGS 84

Soil Map Unit Name: 46B - Panorama silt loam, 2 to 7 percent slopes NWI classification:

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

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

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

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

Hydrophytic Vegetation Present?	Yes ___	**No ✔**	**Is the Sampled Area within a Wetland?**	Yes ___	No ✔
Hydric Soil Present?	Yes ___	No ✔			
Wetland Hydrology Present?	Yes ___	No ✔			

Remarks:

This sample station was collected in the upland area adjacent to Wetland B. This area is regularly mowed for airport maintenance activities.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✔

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS5-upland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft r)			
1. Grass sp.	45	✔	
2. Cardamine hirsuta	10	✔	FACU
3. Taraxacum officinale	10	✔	FACU
4. Lamium purpureum	10	✔	UPL
5. Plantago lanceolata	5		UPL
6. Setaria pumila	5		FAC
7. Hieracium pilosella	5		UPL
8. Allium vineale	5		FACU
9. Hypochaeris radicata	5		UPL
10.			
11.			
	100 = Total Cover		
50% of total cover: 50.00	20% of total cover: 20.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	5	x 3 =	15
FACU species	25	x 4 =	100
UPL species	25	x 5 =	125
Column Totals:	55 (A)		240 (B)

Prevalence Index = B/A = 4.36

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS5-upland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	7.5YR 4/6	100					Silt Loam	
6 - 18	7.5YR 5/6	100					Silty Clay 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)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-12

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS6-wetland

Investigator(s): J. Morgan, L. Dancer, K. Kusant, K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR or MLRA): S 148 Lat: 38.726487 Long: -77.515269 Datum: WGS 84

Soil Map Unit Name: 46B - Panorama silt loam, 2 to 7 percent slopes NWI classification:

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✔	**No** ___	**Is the Sampled Area within a Wetland?**	Yes ✔	No ___
Hydric Soil Present?	Yes ✔	No ___			
Wetland Hydrology Present?	Yes ✔	No ___			

Remarks:

This sample station is representative of Wetlands C and D, which are PEM wetlands that occur as vegetated swales surrounding one of the airport infield areas. The two wetlands are the same hydrologic feature, but are separated by an area filled to create a dirt access into the infield. This area is regularly mowed for airport maintenance activities.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✔ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✔ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✔	No ____	Depth (inches): 2
Water Table Present?	Yes ✔	No ____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS6-wetland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft r)			
1. Scirpus cyperinus	25	✔	FACW
2. Echinochloa crus-galli	20	✔	FAC
3. Grass sp.	20	✔	
4. Juncus tenuis	15		FAC
5. Eleocharis palustris	10		OBL
6. Juncus effusus	5		FACW
7. Andropogon virginicus	5		FACU
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50.00	20% of total cover: 20.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	30	x 2 =	60
FAC species	35	x 3 =	105
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	80 (A)		195 (B)

Prevalence Index = B/A = 2.43

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SS6-wetland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 2	5YR 4/3	95	2.5YR 4/6	5	C	M	Silty Clay Loam	
2 - 12	2.5YR 4/6	85	7.5YR 2/1	15	C	M	Silty Clay	Manganese concentrations were present
12 - 18	2.5YR 4/6	100					Silty Clay	
-								
-								
-								
-								
-								
-								

[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)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ✔ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** ✔ **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-12

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS7-upland

Investigator(s): J. Morgan, L. Dancer, K. Kusant, K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Berm Local relief (concave, convex, none): Convex Slope (%): 5

Subregion (LRR or MLRA): S 148 Lat: 38.726565 Long: -77.515271 Datum: WGS 84

Soil Map Unit Name: 46B - Panorama silt loam, 2 to 7 percent slopes NWI classification:

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

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

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

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

Hydrophytic Vegetation Present?	Yes ___	**No ✔**	**Is the Sampled Area within a Wetland?**	Yes ___	No ✔
Hydric Soil Present?	Yes ___	No ✔			
Wetland Hydrology Present?	Yes ___	No ✔			

Remarks:

This sample station represents the upland surrounding Wetlands C and D. It occurs on a mowed berm that comprises one of the infield areas at the airport.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✔ Depth (inches): ____

Water Table Present? Yes ____ No ✔ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No ✔ Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✔

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS7-upland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft r)			
1. Andropogon virginicus	30	✔	FACU
2. Unidentified grasses	20	✔	
3. Setaria pumila	15		FAC
4. Symphyotrichum pilosum	10		FAC
5. Trifolium repens	10		FACU
6. Veronica persica	10		UPL
7. Lespedeza cuneata	5		FACU
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50.00	20% of total cover: 20.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	25	x 3 =	75
FACU species	45	x 4 =	180
UPL species	10	x 5 =	50
Column Totals:	80 (A)		305 (B)

Prevalence Index = B/A = 3.81

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SS7-upland

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 8	2.5YR 4/6	100					Silty Clay Loam	Texture is silty clay loam with gravel
9 -								Gravel Refusal
-								
-								
-								
-								
-								
-								
-								

[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)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Gravel/Fill

Depth (inches): 9

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-12

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS8-wetland

Investigator(s): J. Morgan, L. Dancer, K. Kusant, K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR or MLRA): S 148 Lat: 38.731116 Long: -77.519352 Datum: WGS 84

Soil Map Unit Name: 46B - Panorama silt loam, 2 to 7 percent slopes NWI classification:

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✔	No ___	**Is the Sampled Area within a Wetland?**	Yes ✔	No ___
Hydric Soil Present?	Yes ✔	No ___			
Wetland Hydrology Present?	Yes ✔	No ___			

Remarks:

This sample station is representative of Wetland E, a PEM wetland located within a mowed portion of the airport infields.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✔ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✔	No ____	Depth (inches): 6
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

High clay content soils appear to be perching water in this area. A true water table was not detected.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS8-wetland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft r)			
1. Juncus effusus	60	✔	FACW
2. Grass 1 sp.	10		
3. Grass 2 sp.	10		
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	80 = Total Cover		
50% of total cover: 40.00	20% of total cover: 16.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	60	x 2 =	120
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	60 (A)		120 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS8-wetland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	2.5Y 3/4	80	5Y 4/2	5	D	M	Clay Loam	
0 - 6	2.5Y 3/4	80	5Y 5/6	5	C	M	Clay Loam	
0 - 6	2.5Y 3/4	80	10YR 3/2	10	D	M	Clay Loam	
6 - 12	10Y 7/1	50	5Y 5/8	50			Clay Loam	Dual Matrix
-								
-								
-								
-								
-								

[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)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ✔ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** ✔ **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-12

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS9-upland

Investigator(s): J. Morgan, L. Dancer, K. Kusant, K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR or MLRA): S 148 Lat: 38.731186 Long: -77.519217 Datum: WGS 84

Soil Map Unit Name: 46B - Panorama silt loam, 2 to 7 percent slopes NWI classification:

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

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

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

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

Hydrophytic Vegetation Present?	Yes ___	**No ✔**	**Is the Sampled Area within a Wetland?**	Yes ___	No ✔
Hydric Soil Present?	Yes ___	No ✔			
Wetland Hydrology Present?	Yes ___	No ✔			

Remarks:

This sample station is representative of the upland area surrounding Wetland E. This area consists of mowed grass within an airport infield.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✔

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS9-upland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft r)			
1. Sorghastrum nutans	40	✔	FACU
2. Andropogon virginicus	25	✔	FACU
3. Juniperus virginiana	15		FACU
4. Potentilla norvegica	2		FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	82 = Total Cover		
50% of total cover: 41.00	20% of total cover: 16.40		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	82	x 4 =	328
UPL species	0	x 5 =	0
Column Totals:	82 (A)		328 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS9-upland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	2.5YR 3/4	100					Clay Loam	Gravelly
6 - 12	10YR 5/6	100					Clay 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)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-12

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS10-wetland

Investigator(s): J. Morgan, L. Dancer, K. Kusant, K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Riverine Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR or MLRA): S 148 Lat: 38.730936 Long: -77.522624 Datum: WGS 84

Soil Map Unit Name: 17A - Dulles silt loam, 0 to 2 percent slopes NWI classification: R4SBCx

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✔	No ___	**Is the Sampled Area within a Wetland?**	Yes ✔	No ___
Hydric Soil Present?	Yes ✔	No ___			
Wetland Hydrology Present?	Yes ✔	No ___			

Remarks:

This sample station is representative of Wetland F, a PEM wetland that occurs in a depressional swale. Outside of the Project Area, defined bed and bank and flowing water were observed within the center of the wetland.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✔ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ✔ Drift Deposits (B3)
- ✔ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✔ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✔	No ____	Depth (inches): 3
Water Table Present?	Yes ✔	No ____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS10-wetland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Sambucus nigra	25	✔	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	25 = Total Cover		
50% of total cover: 12.50	20% of total cover: 5.00		
Herb Stratum (Plot size: 5 ft r)			
1. Phalaris arundinacea	80	✔	FACW
2. Juncus effusus	10		FACW
3. Scirpus cyperinus	5		FACW
4. Toxicodendron radicans	5		FAC
5. Asclepias incarnata	5		OBL
6.			
7.			
8.			
9.			
10.			
11.			
	105 = Total Cover		
50% of total cover: 52.50	20% of total cover: 21.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	95	x 2 =	190
FAC species	30	x 3 =	90
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	130 (A)		285 (B)

Prevalence Index = B/A = 2.19

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS10-wetland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 4	10YR 3/2	90	5YR 4/6	10	C	M	Silty Clay Loam	
4 - 15	5YR 4/2	82	5YR 4/6	15	C	M	Clay Loam	
4 - 15	5YR 4/2	82	5YR 5/2	3	D	M	Clay Loam	
15 - 18	10YR 4/3	98	7.5YR 4/6	2	C	M	Silty Clay 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)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ✔ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** ✔ **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-12

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS11-upland

Investigator(s): J. Morgan, L. Dancer, K. Kusant, K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR or MLRA): S 148 Lat: 38.730941 Long: -77.522693 Datum: WGS 84

Soil Map Unit Name: 17A - Dulles silt loam, 0 to 2 percent slopes NWI classification: R4SBCx

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

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

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

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

Hydrophytic Vegetation Present?	Yes ___	**No ✔**	**Is the Sampled Area within a Wetland?**	Yes ___	No ✔
Hydric Soil Present?	Yes ___	No ✔			
Wetland Hydrology Present?	Yes ___	No ✔			

Remarks:

This sample station represents the upland conditions surrounding Wetland F. This area contains grasses that are regularly mowed for airport maintenance activities. This wetland area is mapped by NWI as riverine, due to the adjacent stream, which occurs outside of the Area of Investigation.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✔

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS11-upland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft r)			
1. Grass sp.	40	✔	
2. Sorghastrum nutans	25	✔	FACU
3. Hieracium caespitosum	10		UPL
4. Andropogon virginicus	10		FACU
5. Lespedeza cuneata	5		FACU
6. Taraxacum officinale	5		FACU
7. Geranium pusillum	5		UPL
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50.00	20% of total cover: 20.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	45	x 4 =	180
UPL species	15	x 5 =	75
Column Totals:	60 (A)		255 (B)

Prevalence Index = B/A = 4.25

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS11-upland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 14	7.5YR 5/4	100					Silty Clay Loam	
14 - 18	7.5YR 4/6	100					Silty Clay 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)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-12

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS12-wetland

Investigator(s): J. Morgan, L. Dancer, K. Kusant, K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Ditch Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR or MLRA): S 148 Lat: 38.729575 Long: -77.523759 Datum: WGS 84

Soil Map Unit Name: 46B - Panorama silt loam, 2 to 7 percent slopes NWI classification:

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✔	No ___	**Is the Sampled Area within a Wetland?**	Yes ✔	No ___
Hydric Soil Present?	Yes ✔	No ___			
Wetland Hydrology Present?	Yes ✔	No ___			

Remarks:

This sample station was collected within Wetland G, which is a PEM roadside ditch traveling alongside an unmarked road within the airport. The area is regularly mowed for airport maintenance.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✔ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✔ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✔	No ____	Depth (inches): 0.5
Water Table Present?	Yes ✔	No ____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS12-wetland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Rosa multiflora	15	✔	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	15 = Total Cover		

50% of total cover: 7.50 20% of total cover: 3.00

Herb Stratum (Plot size: 5 ft r)			
1. Grass sp.	45	✔	
2. Panicum virgatum	25	✔	FAC
3. Echinochloa crus-galli	15		FAC
4. Juncus effusus	15		FACW
5. Lespedeza cuneata	5		FACU
6. Lonicera japonica	5		FACU
7.			
8.			
9.			
10.			
11.			
	110 = Total Cover		

50% of total cover: 55.00 20% of total cover: 22.00

Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	15	x 2 =	30
FAC species	40	x 3 =	120
FACU species	25	x 4 =	100
UPL species	0	x 5 =	0
Column Totals:	80 (A)		250 (B)

Prevalence Index = B/A = 3.12

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS12-wetland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	10YR 4/3	90	5YR 5/6	10	C	M	Silty Clay Loam	
6 - 18	2.5Y 4/2	90	10YR 5/8	10	C	M	Silty Clay	
-								
-								
-								
-								
-								
-								
-								

[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)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** ✔ **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-12

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS13-upland

Investigator(s): J. Morgan, L. Dancer, K. Kusant, K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): None Slope (%): 5

Subregion (LRR or MLRA): S 148 Lat: 38.72959 Long: -77.523781 Datum: WGS 84

Soil Map Unit Name: 46B - Panorama silt loam, 2 to 7 percent slopes NWI classification:

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

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

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

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

Hydrophytic Vegetation Present?	Yes ___	**No ✔**	**Is the Sampled Area within a Wetland?**	Yes ___	No ✔
Hydric Soil Present?	Yes ___	No ✔			
Wetland Hydrology Present?	Yes ___	No ✔			

Remarks:

This sample station represents the upland surrounding Wetland G and occurs in an area regularly mowed for airport maintenance activities.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✔

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS13-upland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft r)			
1. Grass sp.	35	✔	
2. Andropogon virginicus	15	✔	FACU
3. Setaria pumila	15	✔	FAC
4. Sorghastrum nutans	10		FACU
5. Juniperus virginiana	5		FACU
6. Lonicera japonica	5		FACU
7. Potentilla simplex	5		FACU
8. Plantago lanceolata	5		UPL
9. Rudbeckia hirta	5		FACU
10.			
11.			
	100 = Total Cover		
50% of total cover: 50.00	20% of total cover: 20.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	15	x 3 =	45
FACU species	45	x 4 =	180
UPL species	5	x 5 =	25
Column Totals:	65 (A)		250 (B)

Prevalence Index = B/A = 3.84

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS13-upland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 8	7.5YR 5/6	100					Silty Clay Loam	
8 - 18	10YR 5/4	92	10YR 3/2	5	D	M	Silty Clay Loam	
8 - 18	10YR 5/4	92	7.5YR 5/8	3	C	M	Silty Clay 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)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-13

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS14-wetland

Investigator(s): J. Morgan, L. Dancer, K. Kusant, K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): None Slope (%): 3

Subregion (LRR or MLRA): S 148 Lat: 38.718068 Long: -77.509756 Datum: WGS 84

Soil Map Unit Name: 15A - Comus loam, 0 to 2 percent slopes NWI classification:

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✔	No ___	**Is the Sampled Area within a Wetland?**	Yes ✔	No ___
Hydric Soil Present?	Yes ✔	No ___			
Wetland Hydrology Present?	Yes ✔	No ___			

Remarks:

This sample station was collected within Wetland I, a PEM sloping wetland that occurs upgradient to the floodplain of Broad Run.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✔ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✔	No ____	Depth (inches): 2
Water Table Present?	Yes ✔	No ____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS14-wetland

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft r)			
1. Phalaris arundinacea	40	✔	FACW
2. Juncus effusus	15	✔	FACW
3. Vernonia noveboracensis	10		FACW
4. Setaria pumila	10		FAC
5. Lycopus americanus	10		OBL
6. Sparganium americanum	5		OBL
7. Rumex crispus	5		FAC
8. Persicaria maculosa	5		FACW
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50.00	20% of total cover: 20.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	70	x 2 =	140
FAC species	15	x 3 =	45
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS14-wetland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 12	5YR 4/3	90	5YR 5/6	5	C	M	Silty Clay Loam	
0 - 12	5YR 4/3	90	5YR 4/2	5	D	M	Silty Clay Loam	
12 - 18	7.5YR 4/3	90	7.5YR 5/6	10	C	M	Silty Clay 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)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ✔ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** ✔ **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-13

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS15-upland

Investigator(s): J. Morgan, L. Dancer, K. Kusant, K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR or MLRA): S 148 Lat: 38.718031 Long: -77.509842 Datum: WGS 84

Soil Map Unit Name: 15A - Comus loam, 0 to 2 percent slopes NWI classification:

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

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

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

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

Hydrophytic Vegetation Present?	Yes ___	**No ✔**	**Is the Sampled Area within a Wetland?**	Yes ___	No ✔
Hydric Soil Present?	Yes ___	No ✔			
Wetland Hydrology Present?	Yes ___	No ✔			

Remarks:

This sample station represents the upland conditions upgradient of Wetland I. This area consists of mowed grass and occurs next to the airport taxiway, north of Broad Run.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✔

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS15-upland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft r)			
1. Grass sp.	85	✔	FACU
2. Rubus allegheniensis	10		FACU
3. Lonicera japonica	5		FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50.00	20% of total cover: 20.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	100	x 4 =	400
UPL species	0	x 5 =	0
Column Totals:	100 (A)		400 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SS15-upland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 15	7.5YR 4/4	100					Clay Loam	Mixed fill in profile
-								
-								
-								
-								
-								
-								
-								
-								

[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)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-13

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS16-wetland

Investigator(s): J. Morgan, L. Dancer, K. Kusant, K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 1

Subregion (LRR or MLRA): S 148 Lat: 38.718645 Long: -77.511263 Datum: WGS 84

Soil Map Unit Name: 20B - Elsinboro sandy loam, 2 to 7 percent slopes NWI classification:

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✔	No ___	**Is the Sampled Area within a Wetland?**	Yes ✔	No ___
Hydric Soil Present?	Yes ✔	No ___			
Wetland Hydrology Present?	Yes ✔	No ___			

Remarks:

This sample station represents Wetland K, a PEM wetland located within a depressional area of the airport infield. This wetland is regularly mowed for airport maintenance activities.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 6

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

Precipitation accumulates in this area due to an underlying clay layer; no true water table was observed.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS16-wetland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft r)			
1. Cyperus sp.	40	✔	
2. Juncus effusus	35	✔	FACW
3. Nostoc communis	25	✔	
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50.00	20% of total cover: 20.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	35	x 2 =	70
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	35 (A)		70 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS16-wetland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 12	7.5YR 4/4	80	10YR 5/4	10	C	M	Clay Loam	
0 - 12	7.5YR 4/4	80	7.5YR 4/6	10	C	M	Clay Loam	Refusal
-								
-								
-								
-								
-								
-								
-								

[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)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ✔ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Clay

Depth (inches): 12

Hydric Soil Present? **Yes** ✔ **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-13

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS17-upland

Investigator(s): J. Morgan, L. Dancer, K. Kusant, K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 1

Subregion (LRR or MLRA): S 148 Lat: 38.718585 Long: -77.511241 Datum: WGS 84

Soil Map Unit Name: 20B - Elsinboro sandy loam, 2 to 7 percent slopes NWI classification:

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

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

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

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

Hydrophytic Vegetation Present?	Yes ___	**No ✔**	**Is the Sampled Area within a Wetland?**	Yes ___	No ✔
Hydric Soil Present?	Yes ___	No ✔			
Wetland Hydrology Present?	Yes ___	No ✔			

Remarks:

This sample station was collected within the upland surrounding Wetland K. It is a mowed area within of the airport infields.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✔ Depth (inches): ____

Water Table Present? Yes ____ No ✔ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No ✔ Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✔

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS17-upland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft r)			
1. Grass sp.	70	✔	
2. Taraxacum officinale	10		FACU
3. Geranium pusillum	10		UPL
4. Trifolium repens	5		FACU
5. Potentilla simplex	5		FACU
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50.00	20% of total cover: 20.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	20	x 4 =	80
UPL species	10	x 5 =	50
Column Totals:	30 (A)		130 (B)

Prevalence Index = B/A = 4.33

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS17-upland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 12	5YR 4/4	100					Silty Clay Loam	
12 - 15	7.5YR 4/4	85	5YR 5/8	10	C	M	Silty Clay	
12 - 15	7.5YR 4/4	85	5YR 4/4	5	C	M	Silty Clay	
15 - 18	5YR 5/8	85	5YR 4/4	10	C	M	Silty Clay	
15 - 18	5YR 5/8	85	5YR 6/4	5	C	M	Silty Clay	
-								
-								
-								
-								

[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)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** ✔

Remarks:

Redoximorphic features appear too low in the profile for this to meet F21.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-13

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS18-wetland

Investigator(s): J. Morgan, L. Dancer, K. Kusant, K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR or MLRA): S 148 Lat: 38.719952 Long: -77.512122 Datum: WGS 84

Soil Map Unit Name: 35B - Manassas silt loam, 2 to 7 percent slopes NWI classification:

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✔	No ___	**Is the Sampled Area within a Wetland?**	Yes ✔	No ___
Hydric Soil Present?	Yes ✔	No ___			
Wetland Hydrology Present?	Yes ✔	No ___			

Remarks:

This sample station was collected within Wetland L, a PEM wetland located within the airport infield. This wetland is regularly mowed for airport maintenance activities.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✔ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✔ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✔	No ____	Depth (inches): 0.5
Water Table Present?	Yes ✔	No ____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS18-wetland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft r)			
1. Echinochloa crus-galli	25	✔	FAC
2. Dichanthelium acuminatum	25	✔	FAC
3. Juncus effusus	15		FACW
4. Phalaris arundinacea	10		FACW
5. Scirpus cyperinus	10		FACW
6. Grass sp.	10		
7. Potentilla simplex	5		FACU
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50.00	20% of total cover: 20.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	35	x 2 =	70
FAC species	50	x 3 =	150
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	90 (A)		240 (B)

Prevalence Index = B/A = 2.66

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS18-wetland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 4	7.5YR 4/4	90	5YR 3/4	5	C	M	Sandy Clay Loam	
0 - 4	7.5YR 4/4	90	5YR 5/8	5	C	M	Silty Clay Loam	
4 - 14	5YR 4/3	80	5YR 5/6	15	C	M	Silty Clay	
4 - 14	5YR 4/3	80	5YR 5/8	5	C	M	Silty Clay	
14 - 18	7.5YR 5/2	70	2.5YR 5/8	15	C	M	Silty Clay	
14 - 18	7.5YR 5/2	70	5YR 2.5/1	15	D	M	Silty Clay	
-								
-								
-								

[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)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ✔ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** ✔ **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-13

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS19-upland

Investigator(s): J. Morgan, L. Dancer, K. Kusant, K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR or MLRA): S 148 Lat: 38.719943 Long: -77.512155 Datum: WGS 84

Soil Map Unit Name: 35B - Manassas silt loam, 2 to 7 percent slopes NWI classification:

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

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

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

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

Hydrophytic Vegetation Present?	Yes ___	**No ✔**	**Is the Sampled Area within a Wetland?**	Yes ___	No ✔
Hydric Soil Present?	Yes ___	No ✔			
Wetland Hydrology Present?	Yes ___	No ✔			

Remarks:

This sample station was collected within the upland surrounding Wetland L, within the airport infield. The area is regularly mowed for airport maintenance activities.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✔

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS19-upland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft r)			
1. Grass sp.	80	✔	FACU
2. Andropogon virginicus	15		FACU
3. Trifolium repens	5		FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50.00	20% of total cover: 20.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	100	x 4 =	400
UPL species	0	x 5 =	0
Column Totals:	100 (A)		400 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SS19-upland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 2	5YR 3/4	100					Clay Loam	
2 - 10	5YR 4/6	100					Clay Loam	
10 - 18	10YR 5/6	100					Clay	
-								
-								
-								
-								
-								
-								

[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)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-13

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS20-wetland

Investigator(s): J. Morgan, L. Dancer, K. Kusant, K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR or MLRA): S 148 Lat: 38.724344 Long: -77.515646 Datum: WGS 84

Soil Map Unit Name: 1A - Aden silt loam, 0 to 2 percent slopes NWI classification:

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✔	**No** ___	**Is the Sampled Area within a Wetland?**	Yes ✔	No ___
Hydric Soil Present?	Yes ✔	No ___			
Wetland Hydrology Present?	Yes ✔	No ___			

Remarks:

The sample station was collected within Wetland M, a PEM wetland located within the airport infield. This wetland is regularly mowed for airport maintenance activities.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✔ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✔	No ____	Depth (inches): 2
Water Table Present?	Yes ✔	No ____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS20-wetland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft r)			
1. Grass sp.	55	✔	
2. Dichanthelium acuminatum	25	✔	FAC
3. Danthonia spicata	5		UPL
4. Juncus effusus	5		FACW
5. Rumex crispus	5		FAC
6. Andropogon virginicus	5		FACU
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50.00	20% of total cover: 20.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	30	x 3 =	90
FACU species	5	x 4 =	20
UPL species	5	x 5 =	25
Column Totals:	45 (A)		145 (B)

Prevalence Index = B/A = 3.22

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS20-wetland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 4	5YR 5/4	90	5YR 5/8	10	C	M	Silty Clay Loam	
4 - 18	2.5YR 4/4	75	2.5YR 4/8	15	C	M	Silty Clay Loam	
4 - 18	2.5YR 4/4	75	5YR 5/2	10	D	M	Silty Clay 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)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ✔ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** ✔ **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-13

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS21-upland

Investigator(s): J. Morgan, L. Dancer, K. Kusant, K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR or MLRA): S 148 Lat: 38.72436 Long: -77.515612 Datum: WGS 84

Soil Map Unit Name: 1A - Aden silt loam, 0 to 2 percent slopes NWI classification:

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

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

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

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

Hydrophytic Vegetation Present?	Yes ___	**No ✔**	**Is the Sampled Area within a Wetland?**	Yes ___	No ✔
Hydric Soil Present?	Yes ___	No ✔			
Wetland Hydrology Present?	Yes ___	No ✔			

Remarks:

This sample station was collected upgradient from Wetland M, within the airport infield. This area is regularly mowed for airport maintenance. This sample station is also representative of the upland areas surrounding Wetland N.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✔

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS21-upland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft r)			
1. Grass sp.	85	✔	
2. Andropogon virginicus	5		FACU
3. Rumex crispus	5		FAC
4. Juniperus virginiana	1		FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	96 = Total Cover		
50% of total cover: 48.00	20% of total cover: 19.20		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	5	x 3 =	15
FACU species	6	x 4 =	24
UPL species	0	x 5 =	0
Column Totals:	11 (A)		39 (B)

Prevalence Index = B/A = 3.54

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS21-upland

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 18	5YR 4/4	100					Silty Clay 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)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-13

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS22-wetland

Investigator(s): J. Morgan, L. Dancer, K. Kusant, K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 1

Subregion (LRR or MLRA): S 148 Lat: 38.72513 Long: -77.515672 Datum: WGS 84

Soil Map Unit Name: 1A - Aden silt loam, 0 to 2 percent slopes NWI classification:

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✔	No ___	**Is the Sampled Area within a Wetland?**	Yes ✔	No ___
Hydric Soil Present?	Yes ✔	No ___			
Wetland Hydrology Present?	Yes ✔	No ___			

Remarks:

This sample station was collected within Wetland N, a PEM wetland located within the airport infield. The area is regularly mowed for airport maintenance.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✔ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✔ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ✔	No ____	Depth (inches): 6
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 6

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS22-wetland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft r)			
1. Grass sp.	40	✔	
2. Scirpus cyperinus	35	✔	FACW
3. Juncus effusus	15		FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	90 = Total Cover		
50% of total cover: 45.00	20% of total cover: 18.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	50	x 2 =	100
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	50 (A)		100 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS22-wetland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 12	10YR 4/2	80	5YR 5/4	10	C	M	Clay Loam	
0 - 12	10YR 4/2	80	10YR 5/6	10	C	M	Clay Loam	
12 - 18	10Y 5/1	90	5YR 4/6	10	C	M	Clay 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)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ✔ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** ✔ **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-14

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS23-upland

Investigator(s): J. Morgan, L. Dancer, K. Kusant, K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR or MLRA): S 148 Lat: 38.71501 Long: -77.508559 Datum: WGS 84

Soil Map Unit Name: 1A - Aden silt loam, 0 to 2 percent slopes NWI classification:

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

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

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

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

Hydrophytic Vegetation Present?	Yes ___	**No ✔**	**Is the Sampled Area within a Wetland?**	Yes ___	No ✔
Hydric Soil Present?	Yes ___	No ✔			
Wetland Hydrology Present?	Yes ___	No ✔			

Remarks:

This sample station represents an upland area within an airport infield where the installation of a windsock appears to have resulted in compaction and an increase in water accumulation. The area does not have hydrophytic vegetation, hydric soils or wetland hydrology and therefore was classified as an upland. This area is regularly mowed due to airport maintenance.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✔

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS23-upland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft r)			
1. Grass sp.	60	✔	
2. Unknown sp.	20	✔	
3. Potentilla simplex	10		FACU
4. Trifolium repens	10		FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50.00	20% of total cover: 20.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	20 (A)		80 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS23-upland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 3	10YR 5/4	70	10YR 4/6	30	C	M	Clay Loam	
3 - 15	10YR 4/6	100					Clay 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)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** ✔

Remarks:

Although redox features were detected in the upper three inches of the soil profile, the chroma color is too high to meet hydric soil conditions. Ponding was not observed and thus indicator F8 was not suggested.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-14

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS24-upland

Investigator(s): J. Morgan, K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR or MLRA): S 148 Lat: 38.717119 Long: -77.512443 Datum: WGS 84

Soil Map Unit Name: 15A - Comus loam, 0 to 2 percent slopes NWI classification:

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

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

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

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

Hydrophytic Vegetation Present?	Yes ___	**No ✔**	**Is the Sampled Area within a Wetland?**	Yes ___	No ✔
Hydric Soil Present?	Yes ___	No ✔			
Wetland Hydrology Present?	Yes ___	No ✔			

Remarks:

This sample station was collected within the upland adjacent to a portion of Broad Run. It consisted of grasses regularly mowed for airport maintenance.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✔

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS24-upland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft r)			
1. Sorghastrum nutans	80	✔	FACU
2. Lespedeza cuneata	5		FACU
3. Andropogon virginicus	5		FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	90 = Total Cover		
50% of total cover: 45.00	20% of total cover: 18.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	90	x 4 =	360
UPL species	0	x 5 =	0
Column Totals:	90 (A)		360 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS24-upland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 4	10YR 3/3	80	10YR 4/2	10	D	M	Silt Loam	
0 - 4	10YR 3/3	80	7.5YR 4/4	10	C	M	Silt Loam	
4 - 15	10YR 3/3	50					Silt Loam	
4 - 15	7.5YR 4/4	50					Silt Loam	Dual Matrix
-								
-								
-								
-								
-								

[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)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** ✔

Remarks:

Chroma is not low enough for hydric soil indicators to be met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-14

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS25-wetland

Investigator(s): J. Morgan, K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Riverine Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR or MLRA): S 148 Lat: 38.722932 Long: -77.513363 Datum: WGS 84

Soil Map Unit Name: 1A - Aden silt loam, 0 to 2 percent slopes NWI classification: R2UBHx

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✔	**No** ___	**Is the Sampled Area within a Wetland?**	Yes ✔	No ___
Hydric Soil Present?	Yes ✔	No ___			
Wetland Hydrology Present?	Yes ✔	No ___			

Remarks:

This sample station represents Wetlands Q, QA/B, and QC, which are PEM areas that have formed within a manmade concrete lined ditch. This area is mapped as a riverine feature via NWI (R2UBHx). Stormwater from the airport is routed into this ditch, which contained flowing water during the observation.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✔ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ✔ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✔ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✔	No ____	Depth (inches): 6-12
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

A water table was not noted because water is sitting on top of a concrete lined feature.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS25-wetland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft r)			
1. Typha latifolia	20	✔	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	20 = Total Cover		
50% of total cover: 10.00	20% of total cover: 4.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	20 (A)		20 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS25-wetland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 12	10YR 2/1	100					Muck	watery muck
-								
-								
-								
-								
-								
-								
-								
-								

[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)
- ✔ Black Histic (A3)
- ✔ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ✔ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Concrete

Depth (inches): 12

Hydric Soil Present? **Yes** ✔ **No** ___

Remarks:

Soils consisted of muck-filled rooted masses situated within the concrete lined feature. Water was actively flowing through the wetland/soils.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-14

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS26-upland

Investigator(s): J. Morgan, K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 20

Subregion (LRR or MLRA): S 148 Lat: 38.722901 Long: -77.513406 Datum: WGS 84

Soil Map Unit Name: 1A - Aden silt loam, 0 to 2 percent slopes NWI classification:

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

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

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

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

Hydrophytic Vegetation Present?	Yes ___	**No ✔**	**Is the Sampled Area within a Wetland?**	Yes ___	No ✔
Hydric Soil Present?	Yes ___	No ✔			
Wetland Hydrology Present?	Yes ___	No ✔			

Remarks:

This sample station occurs on the slope upgradient of the concrete lined ditch that contained Wetlands Q, QA/B, and QC. This area is regularly mowed for airport maintenance.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✔

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS26-upland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft r)			
1. Lespedeza cuneata	40	✔	FACU
2. Grass sp.	40	✔	
3. Potentilla norvegica	15		FACU
4. Ranunculus bulbosus	5		FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50.00	20% of total cover: 20.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	5	x 3 =	15
FACU species	55	x 4 =	220
UPL species	0	x 5 =	0
Column Totals:	60 (A)		235 (B)

Prevalence Index = B/A = 3.91

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SS26-upland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	10YR 3/3	100					Silt Loam	
6 - 12	5YR 4/6	90	10YR 5/4	10	C	M	Clay Loam	Color differences are likely due to mixed fill material and not redox. Refusal was encountered at 12 inches
-								
-								
-								
-								
-								
-								
-								

[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)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Gravel/Fill

Depth (inches): 12

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-14

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS-27 Wetland

Investigator(s): J. Morgan/K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): S 148 Lat: 38.7254837 Long: -77.50965751 Datum: WGS 84

Soil Map Unit Name: 46B - Panorama silt loam, 2 to 7 percent slopes NWI classification:

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✔	**No** ___	**Is the Sampled Area within a Wetland?**	Yes ✔	No ___
Hydric Soil Present?	Yes ✔	No ___			
Wetland Hydrology Present?	Yes ✔	No ___			

Remarks:

This PFO wetland (Wetland R/S) occurs in the riparian zone along the Cannon Branch (Watercourse O). The wetland becomes a channel (intermittent Watercourse OB) and outlets directly into Cannon Branch.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✔ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ✔ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ✔ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✔ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✔	No ____	Depth (inches): 0.5
Water Table Present?	Yes ✔	No ____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS-27 Wetland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ostrya virginiana	30	✔	FACU
2. Quercus palustris	25	✔	FACW
3. Acer rubrum	15		FAC
4. Quercus bicolor	15		FACW
5.			
6.			
7.			
	85 = Total Cover		
50% of total cover: 42.50	20% of total cover: 17.00		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Viburnum prunifolium	35	✔	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	35 = Total Cover		
50% of total cover: 17.50	20% of total cover: 7.00		
Herb Stratum (Plot size: 5 ft r)			
1. Cinna arundinacea	25	✔	FACW
2. Microstegium vimineum	25	✔	FAC
3. Graminoid sp.	15	✔	
4. Juncus effusus	10		FACW
5.			FACW
6.			
7.			
8.			
9.			
10.			
11.			
	75 = Total Cover		
50% of total cover: 37.50	20% of total cover: 15.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1. Lonicera japonica	10	✔	FACU
2.			
3.			
4.			
5.			
	10 = Total Cover		
50% of total cover: 5.00	20% of total cover: 2.00		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	75	x 2 =	150
FAC species	40	x 3 =	120
FACU species	75	x 4 =	300
UPL species	0	x 5 =	0
Column Totals:	190 (A)		570 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS-27 Wetland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 5	2.5YR 3/3	100					Silt Loam	
5 - 7	5YR 3/4	90	7.5YR 2.5/2	10	D	M	Silt Loam	
7 - 18	7.5YR 4/3	90	7.5YR 4/6	10	C	M	Silt 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)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ✔ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ✔ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** ✔ **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-14

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS28-wetland

Investigator(s): L. Dancer and K. Kusant Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR or MLRA): S 148 Lat: 38.731342 Long: -77.513233 Datum: WGS 84

Soil Map Unit Name: 26A - Hatboro silt loam, 0 to 2 percent slopes NWI classification: N/A

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✔	No ___	**Is the Sampled Area within a Wetland?**	Yes ✔	No ___
Hydric Soil Present?	Yes ✔	No ___			
Wetland Hydrology Present?	Yes ✔	No ___			

Remarks:

This sample station was collected within Wetland T, a PEM wetland that contained minor PFO and PSS fringe areas. This wetland occurs within the floodplain of the Cannon Branch.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✔ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✔ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ✔ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✔ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✔	No _____	Depth (inches): 1
Water Table Present?	Yes ✔	No _____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✔	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No _____

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

Remarks:

Drains to the Cannon Branch via a pipe.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS28-wetland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft r)			
1. Juncus effusus	35	✔	FACW
2. Typha latifolia	25	✔	OBL
3. Vernonia noveboracensis	10		FACW
4. Microstegium vimineum	10		FAC
5. Phalaris arundinacea	10		FACW
6. Symphyotrichum lateriflorum	5		FACW
7. Asclepias incarnata	5		OBL
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50.00	20% of total cover: 20.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	60	x 2 =	120
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		180 (B)

Prevalence Index = B/A = 1.80

Hydrophytic Vegetation Indicators:

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SS28-wetland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 8	5YR 4/4	85	2.5YR 4/6	15	C	M	Silty Clay Loam	Soils somewhat inconsistent - some small upland inclusions throughout.
8 - 18	2.5YR 4/3	85	5YR 5/8	10	C	M	Silty Clay	Texture is silty clay with gravel
8 - 18	2.5YR 4/3	85	5YR 4/2	5	D	M	Silty Clay	Texture is silty clay with gravel
-								
-								
-								
-								
-								
-								

[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)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ✔ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✔ **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-14

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS29-upland

Investigator(s): L. Dancer, K. Kusant Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR or MLRA): S 148 Lat: 38.731252 Long: -77.513222 Datum: WGS 84

Soil Map Unit Name: 26A - Hatboro silt loam, 0 to 2 percent slopes NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ___	**No** ✔	**Is the Sampled Area within a Wetland?**	Yes ___	No ✔
Hydric Soil Present?	Yes ___	No ✔			
Wetland Hydrology Present?	Yes ___	No ✔			

Remarks:

This sample station was collected within the upland forest surrounding Wetland T. The area includes the floodplain of Cannon Branch.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS29-upland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Asimina triloba	25	✔	FAC
2. Juniperus virginiana	15	✔	FACU
3. Quercus palustris	10	✔	FACW
4.			
5.			
6.			
7.			
	50 = Total Cover		
50% of total cover: 25.00	20% of total cover: 10.00		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Rosa multiflora	10	✔	FACU
2. Rubus occidentalis	10	✔	UPL
3. Elaeagnus umbellata	5		UPL
4. Lindera benzoin	5		FAC
5.			
6.			
7.			
8.			
9.			
	30 = Total Cover		
50% of total cover: 15.00	20% of total cover: 6.00		
Herb Stratum (Plot size: 5 ft r)			
1. Phalaris arundinacea	20	✔	FACW
2. Microstegium vimineum	20	✔	FAC
3. Pycnanthemum muticum	15	✔	FAC
4. Dactylis glomerata	15	✔	FACU
5. Andropogon virginicus	15	✔	FACU
6. Solanum dulcamara	5		FAC
7. Alliaria petiolata	5		FACU
8. Polystichum acrostichoides	2		FACU
9. Claytonia virginica	2		FAC
10.			
11.			
	99 = Total Cover		
50% of total cover: 49.50	20% of total cover: 19.80		
Woody Vine Stratum (Plot size: 30 ft r)			
1. Lonicera japonica	5	✔	FACU
2. Toxicodendron radicans	5	✔	FAC
3.			
4.			
5.			
	10 = Total Cover		
50% of total cover: 5.00	20% of total cover: 2.00		

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 12 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	30	x 2 =	60
FAC species	77	x 3 =	231
FACU species	67	x 4 =	268
UPL species	15	x 5 =	75
Column Totals:	189 (A)		634 (B)

Prevalence Index = B/A = 3.35

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS29-upland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	2.5YR 4/4	100					Silty Clay Loam	
6 - 18	2.5YR 5/6	99	2.5YR 4/2	1	C	M	Sandy Clay 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)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** ✔

Remarks:

Redox Concentration are too few to meet F21.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-14

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS30-wetland

Investigator(s): J. Morgan, K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): S 148 Lat: 38.726126 Long: -77.509638 Datum: WGS 84

Soil Map Unit Name: 7A - Bermudian silt loam, 0 to 2 percent slopes NWI classification: PFO1A

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✔	**No** ___	**Is the Sampled Area within a Wetland?**	Yes ✔	No ___
Hydric Soil Present?	Yes ✔	No ___			
Wetland Hydrology Present?	Yes ✔	No ___			

Remarks:

This sample station was collected within Wetland V, a small, isolated PEM wetland. This wetland appears to have been formed due to an historic excavation.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✔ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✔	No _____	Depth (inches): 2
Water Table Present?	Yes ✔	No _____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✔	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No _____

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS30-wetland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft r)			
1. Carex sp.	40	✔	
2. Cinna arundinacea	30	✔	FACW
3. Lonicera japonica	5		FACU
4. Claytonia virginica	5		FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	80 = Total Cover		
50% of total cover: 40.00	20% of total cover: 16.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	30	x 2 =	60
FAC species	5	x 3 =	15
FACU species	05	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	40 (A)		95 (B)

Prevalence Index = B/A = 2.37

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS30-wetland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	5YR 3/3	70	5YR 3/1	30	D	M	Silt Loam	
6 - 12	5YR 4/4	85	10YR 4/6	15	C	M	Silt Loam	
12 - 18	10YR 6/2	80	10YR 4/6	20	C	M	Silt 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)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ✔ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ✔ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** ✔ **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-14

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS31-wetland

Investigator(s): J. Morgan, K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): None Slope (%): 5

Subregion (LRR or MLRA): S 148 Lat: 38.726333 Long: -77.509993 Datum: WGS 84

Soil Map Unit Name: 35B - Manassas silt loam, 2 to 7 percent slopes NWI classification: PEM1A

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✔	No ___	**Is the Sampled Area within a Wetland?**	Yes ✔	No ___
Hydric Soil Present?	Yes ✔	No ___			
Wetland Hydrology Present?	Yes ✔	No ___			

Remarks:

This sample station was collected within Wetland U, a sloping PEM wetland that contains some trees. This wetland receives stormwater runoff from Wakeman Drive and the airport and directly connects to Cannon Branch.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✔ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ✔ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✔ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✔	No _____	Depth (inches): 6
Water Table Present?	Yes ✔	No _____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✔	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No _____

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS31-wetland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft r)			
1. Cinna arundinacea	60	✔	FACW
2. Glyceria striata	30	✔	OBL
3. Juncus effusus	10		FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50.00	20% of total cover: 20.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	70	x 2 =	140
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		170 (B)

Prevalence Index = B/A = 1.70

Hydrophytic Vegetation Indicators:

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS31-wetland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	5YR 4/3	100					Silt Loam	
6 - 12	10YR 5/2	80	10YR 4/6	15	C	M	Silt Loam	
6 - 12	10YR 5/2	80	10YR 2/2	5	D	M		
-								
-								
-								
-								
-								
-								

[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)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** ✔ **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-14

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS32-upland

Investigator(s): J. Morgan, K. Wojnicki Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): None Slope (%): 5

Subregion (LRR or MLRA): S 148 Lat: 38.726091 Long: -77.509795 Datum: WGS 84

Soil Map Unit Name: 46B - Panorama silt loam, 2 to 7 percent slopes NWI classification: PEM1A

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

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

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

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

Hydrophytic Vegetation Present?	Yes ___	**No ✔**	**Is the Sampled Area within a Wetland?**	Yes ___	No ✔
Hydric Soil Present?	Yes ___	No ✔			
Wetland Hydrology Present?	Yes ___	No ✔			

Remarks:

This sample station was collected within the uplands located in the center of Wetland R/S, Wetland U and Wetland V, within the forested floodplain of Cannon Branch.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✔	Depth (inches):_____
Water Table Present?	Yes _____	No ✔	Depth (inches):_____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches):_____

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS32-upland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ailanthus altissima	40	✔	FACU
2. Celtis occidentalis	10	✔	FACU
3.			
4.			
5.			
6.			
7.			
	50 = Total Cover		
50% of total cover: 25.00	20% of total cover: 10.00		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Rosa multiflora	25	✔	FACU
2. Lonicera japonica	15	✔	FACU
3. Alliaria petiolata	5		FACU
4.			
5.			
6.			
7.			
8.			
9.			
	45 = Total Cover		
50% of total cover: 22.50	20% of total cover: 9.00		
Herb Stratum (Plot size: 5 ft r)			
1. Elymus hystrix	30	✔	UPL
2. Elymus virginicus	30	✔	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	60 = Total Cover		
50% of total cover: 30.00	20% of total cover: 12.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 16.66 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	30	x 2 =	60
FAC species	0	x 3 =	0
FACU species	95	x 4 =	380
UPL species	30	x 5 =	150
Column Totals:	155 (A)		590 (B)

Prevalence Index = B/A = 3.80

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS32-upland

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 2	5YR 3/3	100					Silt Loam	
2 - 12	5YR 4/6	100					Silt Loam	Refusal at 12
-								
-								
-								
-								
-								
-								
-								

[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)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Gravel

Depth (inches): 12

Hydric Soil Present? **Yes** ____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-14

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS33-wetland

Investigator(s): L. Dancer, K. Kusant Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR or MLRA): S 148 Lat: 38.730367 Long: -77.512383 Datum: WGS 84

Soil Map Unit Name: 4B - Arcola silt loam, 2 to 7 percent slopes NWI classification:

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✔	No ___	**Is the Sampled Area within a Wetland?**	Yes ✔	No ___
Hydric Soil Present?	Yes ✔	No ___			
Wetland Hydrology Present?	Yes ✔	No ___			

Remarks:

This sample station was collected within Wetland W, a small PFO depressional wetland located near a manhole.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ✔	No ____	Depth (inches): 5
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 1

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS33-wetland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	70	✔	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	70 = Total Cover		
50% of total cover: 35.00	20% of total cover: 14.00		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft r)			
1. Cinna arundinacea	10	✔	FACW
2. Juncus effusus	10	✔	FACW
3. Lonicera japonica	5	✔	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	25 = Total Cover		
50% of total cover: 12.50	20% of total cover: 5.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	20	x 2 =	40
FAC species	70	x 3 =	210
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	95 (A)		270 (B)

Prevalence Index = B/A = 2.84

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS33-wetland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 5	7.5YR 4/3	80	2.5YR 4/8	15	C	M	Silty Clay Loam	
0 - 5	7.5YR 4/3	80	5YR 5/8	5	C	M	Silty Clay Loam	
5 - 12	2.5YR 4/4	80	2.5YR 5/2	10	D	M	Silty Clay Loam	Texture is silty clay loam with gravel
5 - 12	2.5YR 4/4	80	5YR 6/8	10	C	M	Silty Clay Loam	Gravel Refusal at 12+ inches.
-								
-								
-								
-								
-								

[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)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ✔ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Gravel

Depth (inches): 12

Hydric Soil Present? **Yes** ✔ **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2024-03-14

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS34-upland

Investigator(s): L. Dancer, K. Kusant Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Mound Local relief (concave, convex, none): None Slope (%): 2

Subregion (LRR or MLRA): S 148 Lat: 38.73029 Long: -77.512374 Datum: WGS 84

Soil Map Unit Name: 4B - Arcola silt loam, 2 to 7 percent slopes NWI classification:

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

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

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

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

Hydrophytic Vegetation Present?	Yes ___	**No ✔**	**Is the Sampled Area within a Wetland?**	Yes ___	No ✔
Hydric Soil Present?	Yes ___	No ✔			
Wetland Hydrology Present?	Yes ___	No ✔			

Remarks:

The sample point was collected within the upland surrounding Wetland W. This area consists of the floodplain forest adjacent to Cannon Branch.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✔

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS34-upland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus virginiana	15	✔	FACU
2. Ulmus americana	10	✔	FACW
3. Quercus palustris	10	✔	FACW
4. Diospyros virginiana	5		FAC
5.			
6.			
7.			
	40	= Total Cover	
50% of total cover: 20.00	20% of total cover: 8.00		

Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Viburnum prunifolium	15	✔	FACU
2. Ilex opaca	5	✔	FACU
3. Berberis thunbergii	5	✔	FACU
4. Rosa multiflora	5	✔	FACU
5.			
6.			
7.			
8.			
9.			
	30	= Total Cover	
50% of total cover: 15.00	20% of total cover: 6.00		

Herb Stratum (Plot size: 5 ft r)			
1. Lonicera japonica	10	✔	FACU
2. Cinna arundinacea	10	✔	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	20	= Total Cover	
50% of total cover: 10.00	20% of total cover: 4.00		

Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	30	x 2 =	60
FAC species	5	x 3 =	15
FACU species	55	x 4 =	220
UPL species	0	x 5 =	0
Column Totals:	90 (A)		295 (B)

Prevalence Index = B/A = 3.27

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SS34-upland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 18	5YR 4/4	100					Silty Clay 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)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2025-06-05

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS35-wetland

Investigator(s): J. Morgan Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR or MLRA): S 148 Lat: 38.727935 Long: -77.511606 Datum: WGS 84

Soil Map Unit Name: 4B - Arcola silt loam, 2 to 7 percent slopes NWI classification:

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✔	**No** ___	**Is the Sampled Area within a Wetland?**	Yes ✔	No ___
Hydric Soil Present?	Yes ✔	No ___			
Wetland Hydrology Present?	Yes ✔	No ___			

Remarks:

This sample station was collected within a forested section of Wetland A. This wetland forms where a culvert under Harry Parrish Blvd outlets and forms small drainage patterns. The area immediately downgradient of the culvert meets wetland criteria.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✔ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS35-wetland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	50	✔	FAC
2. Carya tomentosa	30	✔	UPL
3. Ulmus americana	10		FACW
4.			
5.			
6.			
7.			
	90 = Total Cover		
50% of total cover: 45.00	20% of total cover: 18.00		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Viburnum prunifolium	5	✔	FACU
2. Lindera benzoin	5	✔	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	10 = Total Cover		
50% of total cover: 5.00	20% of total cover: 2.00		
Herb Stratum (Plot size: 5 ft r)			
1. Pilea pumila	25	✔	FACW
2. Cinna arundinacea	10	✔	FACW
3. Boehmeria cylindrica	10	✔	FACW
4. Cardamine impatiens	5		FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	50 = Total Cover		
50% of total cover: 25.00	20% of total cover: 10.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1. Smilax rotundifolia	30	✔	FAC
2. Toxicodendron radicans	5		FAC
3.			
4.			
5.			
	35 = Total Cover		
50% of total cover: 17.50	20% of total cover: 7.00		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	55	x 2 =	110
FAC species	95	x 3 =	285
FACU species	5	x 4 =	20
UPL species	30	x 5 =	150
Column Totals:	185 (A)		565 (B)

Prevalence Index = B/A = 3.05

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS35-wetland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 4	7.5YR 3/3	100					Silt Loam	
4 - 10	7.5YR 4/4	90	7.5YR 5/3	10	C	M	Silt Loam	
10 - 12	2.5YR 4/3	90	10YR 4/6	10	C	M	Silt Loam	
-								Gravel Refusal at 12+ inches.
-								
-								
-								
-								
-								

[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)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ✔ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Gravel

Depth (inches): 12

Hydric Soil Present? **Yes** ✔ **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas /Prince William County Sampling Date: 2025-06-05

Applicant/Owner: Manassas Regional Airport State: Virginia Sampling Point: SS36-upland

Investigator(s): J. Morgan Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): None Slope (%): 6

Subregion (LRR or MLRA): S 148 Lat: 38.728038 Long: -77.511674 Datum: WGS 84

Soil Map Unit Name: 4B - Arcola silt loam, 2 to 7 percent slopes NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ___	**No ✔**	**Is the Sampled Area within a Wetland?**	Yes ___	No ✔
Hydric Soil Present?	Yes ___	No ✔			
Wetland Hydrology Present?	Yes ___	No ✔			

Remarks:

The sample point was collected within the upland upgradient of a depressional swale carrying stormwater into Wetland A.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS36-upland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Carya tomentosa	30	✔	UPL
2. Ulmus americana	10	✔	FACW
3. Acer rubrum	10	✔	FAC
4.			
5.			
6.			
7.			
	50	= Total Cover	
50% of total cover: 25.00	20% of total cover: 10.00		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Viburnum prunifolium	10	✔	FACU
2. Rosa multiflora	5	✔	FACU
3.			
4.			FACU
5.			
6.			
7.			
8.			
9.			
	15	= Total Cover	
50% of total cover: 7.50	20% of total cover: 3.00		
Herb Stratum (Plot size: 5 ft r)			
1. Microstegium vimineum	15	✔	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	15	= Total Cover	
50% of total cover: 7.50	20% of total cover: 3.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1. Parthenocissus quinquefolia	10	✔	FACU
2.			
3.			
4.			
5.			
	10	= Total Cover	
50% of total cover: 5.00	20% of total cover: 2.00		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 42.85 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	25	x 3 =	75
FACU species	1510	x 4 =	6040
UPL species	30	x 5 =	150
Column Totals:	1575 (A)		6285 (B)

Prevalence Index = B/A = 3.99

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS36-upland

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 2	10YR 3/3	100					Silt Loam	
2 - 12	10YR 4/4	100					Silt 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)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas / Prince William Sampling Date: 2025-07-08

Applicant/Owner: Avion Solutions Group, LLC State: Virginia Sampling Point: SS37-wetland

Investigator(s): J. Morgan Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 1

Subregion (LRR or MLRA): S 148 Lat: 38.70970297 Long: -77.5083048 Datum: WGS 84

Soil Map Unit Name: 1A - Aden silt loam, 0 to 2 percent slopes NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✔	**No** ___	**Is the Sampled Area within a Wetland?**	Yes ✔	No ___
Hydric Soil Present?	Yes ✔	No ___			
Wetland Hydrology Present?	Yes ✔	No ___			

Remarks:

This sample point was collected in PEM Wetland XD, in a small pocket wetland that has formed on the terrace adjacent to where a bypass channel had been dug for a prior reroute of the Broad Run. Small wetland pockets similar to this one were observed adjacent to Wetland X, which occurs in the central portion of the where the bypass channel was dug.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✔ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes ✔ No _____

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS37-wetland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft r)			
1. Juncus tenuis	35	✔	FAC
2. Juncus effusus	20	✔	FACW
3. Scirpus atrovirens	10		OBL
4. Carex lurida	10		OBL
5. Lespedeza cuneata	5		FACU
6. Hibiscus moscheutos	5		OBL
7. Arthraxon hispidus	5		FAC
8. Cyperus esculentus	5		FACW
9. Diodia virginiana	5		FACW
10.			
11.			
	100 = Total Cover		
50% of total cover: 50.00	20% of total cover: 20.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	30	x 2 =	60
FAC species	40	x 3 =	120
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	100 (A)		225 (B)

Prevalence Index = B/A = 2.25

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS37-wetland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 7	7.5YR 4/2	70	7.5YR 4/4	30	C	M	Silt Loam	
7 - 12	10YR 6/2	70	10YR 5/6	30	C	M	Silt 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)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ✔ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** ✔ **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: HEF Program Projects City/County: Manassas / Prince William Sampling Date: 2025-07-08

Applicant/Owner: Avion Solutions Group, LLC State: Virginia Sampling Point: SS38-upland

Investigator(s): J. Morgan Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 1

Subregion (LRR or MLRA): S 148 Lat: 38.709627 Long: -77.508379 Datum: WGS 84

Soil Map Unit Name: 1A - Aden silt loam, 0 to 2 percent slopes NWI classification:

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

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

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

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

Hydrophytic Vegetation Present?	Yes ___	**No ✔**	**Is the Sampled Area within a Wetland?**	Yes ___	No ✔
Hydric Soil Present?	Yes ___	No ✔			
Wetland Hydrology Present?	Yes ___	No ✔			

Remarks:

This sample point was collected outside of Wetland X, on the upland terrace adjacent to where a bypass channel had been dug for a prior reroute of the Broad Run.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✔

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SS38-upland

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft r)			
1. Andropogon virginicus	35	✔	FACU
2. Juncus tenuis	20		FAC
3. Lespedeza cuneata	20		FACU
4. Scirpus atrovirens	15		OBL
5. Cyperus esculentus	10		FACW
6. Arthraxon hispidus	5		FAC
7.			
8.			
9.			
10.			
11.			
	105 = Total Cover		
50% of total cover: 52.50	20% of total cover: 21.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	10	x 2 =	20
FAC species	25	x 3 =	75
FACU species	55	x 4 =	220
UPL species	0	x 5 =	0
Column Totals:	105 (A)		330 (B)

Prevalence Index = B/A = 3.14

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

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

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: SS38-upland

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	10YR 3/6	100					Silt Loam	
6 - 11	10YR 4/4	55	7.5YR 5/6	45			Silt Loam	Dual Matrices are present
11 - 15	2.5Y 5/4	70	2.5Y 6/2	30	D	M	Silt 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)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: N/A

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** ✔

Remarks:

APPENDIX B

PHOTOGRAPHS

Photograph 1 – Representative PFO datapoint for Wetland A (SS-1), view east. (03/11/2024)

Photograph 2 – Representative upland datapoint for Wetland A (SS-2), view north. (03/11/2024)

Photograph 3 – View east of Wetland A, where it occurs adjacent to Cannon Branch (Stream O), near flag AA2. (03/11/2024)

Photograph 4 – View north of the downstream side of the bridge over Cannon Branch (Stream O). (03/14/2024)

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Photograph 5 – Upland depressional area in mowed lawn that experiences some inundation but lacks hydric soils (SS-3), view west. (03/12/2024)

Photograph 6 – View south of PEM Wetland B (SS-4), located within a mowed lawn adjacent to Wakeman Drive. (03/12/2024)

Photograph 7 – View east of the mowed upland area (SS-5) adjacent to Wetland B (visible in background). (03/12/2024)

Photograph 8 – View southeast of PEM Wetland C (SS-6). (03/12/2024)

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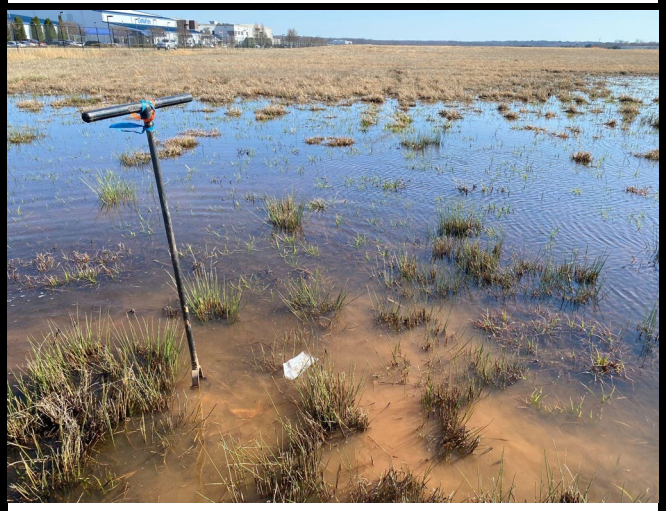
Photograph 9 – View northwest of PEM swale Wetland D (represented by SS-6). (03/12/2024)

Photograph 10 – View north, of the representative upland datapoint for Wetland C and Wetland D (SS-7). (03/12/2024)

Photograph 11 – View west of infield drainageway north of Wetlands C and D. (03/12/2024)



Photograph 12 – View east of PEM Wetland E (SS-8), occurring within a mowed depressional area. (03/12/2024)

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Photograph 12 – View east of a representative upland datapoint for Wetland E (SS-9). (03/12/2024)

Photograph 13 – View southeast of a drainageway adjacent to Wetland E. (03/12/2024)

Photograph 14 – View east, of PEM Wetland F (SS-10), a riparian wetland that follows a mapped NHD stream flowing outside the AOI. (03/12/2024)

Photograph 15 – View north, where Wetland F and the associated stream flow under Observation Road. The photograph shows the representative upland datapoint for Wetland F (SS-11). (03/12/2024)

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Photograph 16 – View south of stream corridor adjacent to Wetland F, but outside of the AOI. (03/12/2024)

Photograph 17 – View south, of PEM Wetland G, located in a ditch near an unnamed road within the airport (SS-12). (03/12/2024)

Photograph 18 – View north, of the representative upland datapoint for Wetland G (SS-13). (03/12/2024)

Photograph 19 – View southeast of PEM Wetland I (SS-14). (03/13/2024)

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Photograph 20 – View northwest of the representative upland datapoint for Wetland I (SS-15). (03/13/2024)

Photograph 21 – View north and downstream of Taxiway B where Broad Run (Stream H) passes under. (03/13/2024)

Photograph 22 – View southwest and upstream of Broad Run (Stream H) from Taxiway B. (03/14/2024)

Photograph 23 – View west of PEM Wetland K (SS-16), occurring between Taxiway B and Runway 16L/34R. (03/13/2024)

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Photograph 24 – View east of the representative upland datapoint for Wetland K (SS-17). (03/13/2024)

Photograph 25 – View north of PEM Wetland L (SS-18), a swale occurring in the center of the mowed infield. (03/13/2024)

Photograph 26 – View west of the representative upland datapoint for Wetland L (SS-19). (03/13/2024)

Photograph 27 – View northeast of PEM Wetland M (SS-20), within a mowed infield depression. (03/13/2024)

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Photograph 28 – View southeast, of the representative upland datapoint for Wetland M (SS-21) and Wetland N. (03/13/2024)

Photograph 29 – View east of PEM Wetland N (SS-22), occurring within the mowed airport infield. (03/13/2024)

Photograph 30 – View south of upland SS-23. This area was investigated due to saturated soils but did not meet all three wetland criteria. (03/14/2024)

Photograph 31 – View southeast of upland SS-24. This area was investigated due to vegetation but did not meet all three wetland criteria. (03/14/2024)

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Photograph 32 – View east and upstream of Broad Run (Stream H) from Runway 16L/34R. Stream HB is visible in the upper right of photo. (03/14/2024)

Photograph 33 – View southeast where Broad Run (Stream H) enters the culvert under Runway 16L/34R. (03/14/2024)

Photograph 34 – View southeast of a portion of Wetland Q (SS-25), PEM wetland pockets contained within a man-made ditch (Stream J). (03/14/2024)

Photograph 35 – View northwest of the representative upland datapoint for Wetland Q (SS-26). (03/14/2024)

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Photograph 36 – View northeast of Wetland R/S (SS-27), a PFO wetland adjacent to Cannon Branch. (03/14/2024)

Photograph 37 – View west of Stream OB, a small intermittent channel that connects Wetland R/S to Cannon Branch (Stream O). (03/14/2024)

Photograph 38 – View south of the PEM portion of Wetland T (SS-28). (03/14/2024)

Photograph 39 – View northwest of the PFO portion of Wetland T. (03/14/2024)

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Photograph 40 – View south of the representative upland datapoint for Wetland T (SS-29). (03/14/2024)

Photograph 41 – View southeast and downstream of Stream OA, an intermittent channel that connects Wetland T to Cannon Branch (Stream O). (03/14/2024)

Photograph 42 – View northwest of PEM Wetland V (SS-30), an isolated depressional wetland. (03/14/2024)

Photograph 43 – View west of PEM Wetland U (SS-31). This wetland connects directly with Cannon Branch (Stream O). (03/14/2024)

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Photograph 44 – View west of the representative upland datapoint for Wetlands R/S, Wetland U and Wetland V (SS-32). (03/14/2024)

Photograph 45 – View west of Stream OC, an intermittent channel that connects Wetland U to Cannon Branch (Stream O). (03/14/2024)

Photograph 46 – View east of Stream OD, which carries stormwater from Wakeman Dr. into Wetland U and Stream OC. (03/14/2024)

Photograph 47 – View east of the Wetland P swale that connects it to Cannon Branch (Stream O), near flag P19. (03/14/2024)

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Photograph 48 – View north of PFO Wetland W, a small depressional wetland located near a manhole (SS-33). (03/14/2024)

Photograph 49 – View west of the representative upland datapoint for Wetland W (SS-34). (03/14/2024)

Photograph 50 – View southeast of a mowed grassy ditch that conveys water into a culvert under Wakeman Drive, ultimately into Stream OD and Wetland U. (03/13/2024)

Photograph 51 – View northwest of a mowed grassy ditch that conveys water into a culvert under Wakeman Drive, ultimately into Stream OD and Wetland U. (03/13/2024)

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Photograph 52 – View west of the section of PFO Wetland A where stormwater from the airport outlets into the woods east of Wakeman Drive (SS-35). (06/05/2025)

Photograph 53 – View south of the representative wetland datapoint for Wetland X (SS-37). (07/08/2025)

Photograph 54 – View east of the representative uplands surrounding Wetland X (SS-38). (07/08/2025)

Photograph 55 – View south of the southern-most portion of Wetland X, where it occurs south of the airport boundary fence. (07/08/2025)

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APPENDIX C

STAFF QUALIFICATIONS

Education

- M.S., Plant and Soil Sciences, University of Massachusetts Amherst, September 2005 - January 2008 - Concentrations: Plant Ecology/Nutrition, Wetlands, Hydrology, Soil Science, Chemistry.
- B.A., Ecology and Natural Resource Management and Philosophy, Rutgers University, 1998 - 2002

Certifications

- Professional Wetland Delineator Certification, Commonwealth of Virginia, Department of Professional and Occupational Regulation, 2024
- Certified Wetland Scientist, State of New Hampshire, Board of Natural Scientists, December 2019 to Present
- Certified Senior Ecologist, Ecological Society of America, June 2019
- Certified Professional Soil Scientist, Soil Science Society of America, December 2015

Special Training

- 40 Hour HAZWOPER Training, September 2009
- 8 Hour OSHA Refresher Course, 2020-2021
- OSHA 10 Hours Construction Training, 2018

Jamie M. Morgan

Project Manager

Ms. Morgan is experienced in wetland delineation, botanical surveys/plant identification, tree surveys, soil classification, wetland mitigation design and monitoring, threatened and endangered wildlife species habitat assessment and surveys, and environmental permitting for extensive linear projects as well as individual parcels. She is a Certified Professional Soil Scientist, a Certified Senior Ecologist, and has two state Certified Wetland Scientist licenses (Virginia and New Hampshire). She has performed hydrological monitoring with shallow wells and nested piezometers; and water collection from suction lysimeters. Ms. Morgan's laboratory skills include soil sample analysis (pH, texture, exchangeable cations, organic matter, etc.); water analysis (cations, anions, alkalinity, pH, etc.) and plant tissue analysis (major cations).

Ms. Morgan's wetland delineations have supported New Jersey Department of Environmental Protection (NJDEP) Letters of Interpretation and US Army Corps of Engineers (USACE) Jurisdictional Determinations. Ms. Morgan has additionally conducted wetland evaluations in compliance with State regulations as well as associated reporting and permitting in Connecticut, Massachusetts, Pennsylvania, New York, West Virginia and Virginia. Ms. Morgan has prepared NJDEP Freshwater Wetlands, Coastal Zone Management and Flood Hazard Area permits in New Jersey; Wetlands General Permits, Joint Permits and Erosion and Sediment Control General Permits in Pennsylvania; and USACE Nationwide Permits in New Jersey, New York, West Virginia, Ohio and Delaware. She has assisted with the preparation of both State Environmental Quality Review (SEQR) compliance permits and National Environmental Policy Act (NEPA) Environmental Assessments in New York. She has prepared designs and carried out monitoring and compliance reporting to NJDEP and USACE regarding wetland mitigation and tree planting/restoration projects and provided threatened and endangered species surveys for the aforementioned permitting projects.

Relevant Experience

Project: Westchester County Airport Master Plan, Village of Rye Brook, Town/Village of Harrison, Town of North Castle, Westchester County, NY.

Client: Westchester County/Merchant Aviation.

Role: Project Manager

Description: Assisted in the preparation of a SEQR Environmental Impact Statement for updates to the Airport Master Plan. Conducted a site visit to evaluate wetlands/watercourses and habitat for rare, threatened and endangered species noted by the New York State Department of Environmental Conservation (NYSDEC) Natural Heritage Program and the United States Fish and Wildlife Service (USFWS). The summary of this field visit, along with a detailed review of available environmental databases, was compiled into a report that will serve as the natural resources section of the DEIS.

Project: Philadelphia International Airport RS&H Taxiway J Reconstruction Program, Tinicum Township, Delaware County, PA

Client: City of Philadelphia/RS&H.

Role: Environmental Scientist.

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Description: Responsible for conducting a wetland delineation for inclusion in a FAA Categorical Exclusion Document (CATEX) for proposed airport development.

Project: Berkeley Community Solar Project, Berkeley Township Landfill Redevelopment, Berkeley Township, Ocean County, NJ.

Client: CS Energy.

Role: Environmental Scientist.

Description: Responsible for conducting a wetland delineation in accordance with the Federal Manual for Identifying and Delineating Jurisdictional Wetlands (1989), as required by the NJ Pinelands Commission in support of the *NJ Freshwater Wetlands Protection Act* and an endangered and threatened species habitat assessment (including a botanical survey for Knieskern's beaked-rush and a callback survey for Pine Barrens Treefrog) for a proposed solar site. Prepared an EIS for Berkeley Township for the proposed redevelopment.

Project: Sommer Property, Old Bridge Township, Middlesex County, NJ.

Client: ERM.

Role: Project manager

Description: Responsible for conducting a wetland delineation in accordance with the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands (1989)*, as required by the NJDEP under the *NJ Freshwater Wetlands Protection Act* regulations and the *1987 U.S. Army Corps of Engineers Manual for Delineating Jurisdictional Wetlands* and appropriate supplement, as required by the USACE under the Federal *Clean Water Act* regulations. Currently preparing applications to the NJDEP for Freshwater Wetlands General Permits and for a Flood Hazard Area Individual Permit. Currently preparing a pre-construction notification application to the USACE for a Nationwide Permit #38 (cleanup of hazardous and toxic waste).

Project: Henry Kaufmann Campground / Borough of Staten Island, Richmond County, NY.

Client: UJA Federation/Zubatkin Owner Representatives, LLC.

Role: Project Manager.

Description: This project involved proposed improvements to existing infrastructure within a 75-acre campground, including the renovation and expansion of existing shelters, replacement of washroom buildings, renovations to existing swimming pools and changing areas, the construction of new basketball courts, new stormwater improvements, and minor re-grading work. Ms. Morgan was the Project Manager responsible coordination of a tree inventory; delineation of wetlands and watercourses at the site in accordance with Section 404 of the Clean Water Act and the NYSDEC under Article 24 of the New York State Environmental Conservation Law; and documenting the presence and extent of invasive plant species on the site. A request for a Jurisdictional Determination was submitted to determine the regulated wetland boundaries and facilitate the NYSDEC's review of the proposed project. An Invasive Species Management Plan was prepared, which described the invasive species observed during the field investigation, as well as recommendations for manual/mechanical removal, chemical treatments, biological controls, cultural control, and monitoring. A Conservation Benefit Plan was also prepared, which summarized the environmental stewardship activities proposed to improve water quality, native plant diversity, and wildlife at the site in conjunction with the planned campground infrastructure improvements.

Project: Delaware Sand & Gravel Superfund Site, New Castle City, New Castle County, DE

Client: WSP/ Delaware Sand & Gravel Remedial Trust

Role: Project Manager

Performed a wetland delineation in accordance with the Federal Manual (1987) and the appropriate supplement as required by the USACE. Also prepared a wetland delineation report for submission to the client. Prepared and submitted a pre-construction notification application to the USACE for a Nationwide Permit #58 (utility line activities for water and other substances) and an application to DNREC for a Subaqueous Lands Section Permit and an Environmental Impact Assessment to accompany a New Castle County Floodplain application.

Education

- P.S.M. Environmental Science, Stockton University, 2016
- B.S. Conservation & Wildlife Management, Delaware Valley University, 2010

Certifications

- Society of Wetland Scientists, Professional Wetland Scientist, 2021
- NJDEP Bureau of Discharge Prevention, Certified Ecologist/ Ornithologist, 2020
- OSHA 40-hour HAZWOPER, 2017
- Rutgers Certified Wetland Delineator, 2017
- PADI Diver certification

Special Training

- OSHA 8-hour refresher training, 2018-2023
- Identification of Wetland Plants in Winter, Rutgers University, The New Jersey Agricultural Experiment Station, Office of Continuing Professional Education, December 13-14, 2018
- NJDEP Flood Hazard Area Control Act Rules: The Overview, Rutgers University Office of Continuing Professional Education, February 2018
- Rutgers Continuing Education: Wetland Delineation Series, Wetlands Vegetation Identification: North, 2016

Elizabeth Dancer, PWS

Senior Environmental Scientist

Ms. Dancer has extensive experience in performance of ecological surveys in New York, New Jersey, Delaware, Pennsylvania, and other states. She is experienced in wetland delineation, endangered and threatened species surveys, environmental impact analysis, preparation of state NJDEP and federal USACE environmental permit applications, and wetland mitigation site construction and post construction monitoring. Ms. Dancer has performed wetland delineations utilizing the routine methodology outlined in the Federal Manual for Identifying and Delineating Jurisdictional Wetlands (1989), as required by the NJDEP, as well as the 1987 USACE Manual for Delineating Jurisdictional Wetlands, as required by the USACE. Ms. Dancer has performed surveys for State and federally listed endangered and threatened plant and animal species including bald eagle, peregrine falcon, piping plover, bog turtle, freshwater mussels, swamp pink, and Northern long-eared bat. Ms. Dancer has prepared and submitted applications to NJDEP for Letters of Interpretation, Freshwater Wetlands General Permits, Coastal Wetlands/Waterfront Development Individual Permits, Water Quality Certifications, and Coastal Zone Consistency Determinations. She has also prepared and submitted Per-construction Notifications to USACE for Nationwide Permits as well as applications for Jurisdictional Determinations. Ms. Dancer has prepared environmental impact statements (EIS's) in accordance with municipal regulations.

Ms. Dancer has performed freshwater mussel survey, salvage, and relocation services for multiple bridge projects in New Jersey, and New York. She has participated in Phase 1 and Phase 2 bog turtle surveys in New Jersey, New York, Pennsylvania, and Connecticut. She has performed construction monitoring for sites in New Jersey and New York. Ms. Dancer has performed endangered species monitoring, including for swamp pink, piping plover, least tern, black skimmer, osprey, bald eagle, and peregrine falcon.

Relevant Experience

Project: Trenton Mercer Airport- Replacement Terminal Site Investigations, EA & Terminal Preliminary Design, West Trenton, Mercer County, NJ.

Client: County of Mercer/Urban Engineers, Inc.

Role: Environmental Scientist

Description: Ms. Dancer assisted with a wetland delineation at the Trenton Mercer Airport in support of the proposed terminal preliminary design.

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Project: Trenton-Mercer Airport, Ewing & Hopewell Townships, Mercer County, NJ.

Client: County of Mercer/C&S Companies.

Role: Environmental Scientist

Description: Trenton-Mercer Airport is proposing tree removal activities on its property, as well as on adjacent properties within existing flight paths. Ms. Dancer assisted with performing a wetland/SOW delineation of the areas proposed for tree clearing.

Project: Philadelphia International Airport, Tinicum Road Relocation/FAA Documented CATEX Prep., Tinicum Township, Delaware County, PA.

Client: City of Philadelphia, Division of Aviation/C&S Engineers, Inc.

Role: Environmental Scientist

Description: Ms. Dancer assisted with a botanical survey for rare, threatened, and endangered plant species reported as occurring within the proposed road relocation footprint.

Project: Delaware Airpark Runway 9-27 Pratt Farm Wetland Mitigation Project, Town of Cheswold, Kent County, DE.

Client: Delaware River & Bay Authority/C&S Companies.

Role: Environmental Scientist

Description: The Pratt Farm Wetland Mitigation Project is intended to fulfill the compensatory wetland mitigation requirements for the Delaware Airpark Runway 9-27 Expansion Project. DRG was contracted to perform post-construction mitigation monitoring for the 40-acre site over a period of five years. Ms. Dancer assisted with the 2021 fall monitoring and prepared the final annual report.

Project: Groton-New London Airport- Terminal Apron Rehabilitation Project, Town of Groton, New London County, CT.

Client: DY Consultants.

Role: Environmental Scientist

Description: Groton-New London Airport proposed to rehabilitate the terminal apron, which included milling and paving activities on existing pavement and within vegetated areas onsite. Ms. Dancer conducted a two-day passive visual and auditory survey for the presence of nesting grassland birds, including bobolink (*Dolichonyx oryzivorus*), eastern meadowlark (*Sturnella magna*), and grasshopper sparrow (*Ammodramus savannarum*), within and adjacent to the proposed project area limits. The survey was performed using binoculars and a spotting scope. No grassland birds were observed to be breeding within the vicinity of the proposed project area, though eastern meadowlarks were seen flying within another portion of the airport.

Project: Van Wyck Expressway (I-678) Capacity & Access Improvements to JFK Airport Project, Jamaica, Queens County, NY.

Client: NYSDOT/Halmar International.

Role: Environmental Scientist

Description: The Van Wyck Expressway Capacity (VWE) and Improvements to JFK Airport Project is funded by the NJDOT and FHWA, and is intended to increase capacity on the VWE between the Kew Gardens Interchange and JFK Airport in order to improve vehicular access to the airport. Ms. Dancer performed a migratory bird nest survey of all structures within the project study area, as well as within surrounding roadside vegetation communities, to determine if these areas were utilized by birds protected under the Federal Migratory Bird Treaty Act. No nests associated with migratory birds were identified during the survey. Ms. Dancer prepared a letter report of findings, which was submitted to Halmar International.

Appendix O: Water Resources Documents

2. Regulatory Summary

Regulatory Summary – Water Resources

Wetlands

Under the Clean Water Act (CWA) of 1972, Section 404, wetlands are defined as "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (United States Environmental Protection Agency, 2023). The United States Army Corps of Engineers (USACE) requires that an area have hydrophytic vegetation, hydric soils, and wetland hydrology present in order to be considered a wetland and utilizes Regional Supplements to the 1987 Federal Manual (Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, 1987) to assist in the determination of wetland boundaries.

The USACE regulates activities in wetlands that have a relatively permanent surface water connection to traditional navigable waters (TNWs) under Section 404 of the CWA and per the August 29, 2023 revised definition of "waters of the United States" (WOTUS) as a result of the Sackett vs. the EPA decision. This revised definition removes the "significant nexus" test that allows wetlands to be connected based on chemical, physical or biological properties and revises the term "adjacent wetlands" to include only wetlands with a continuous surface connection to a traditional navigable water (Davey Resource Group, 2024).

The Virginia Department of Environmental Quality (VADEQ) administers the Virginia Water Protection (VWP) program which issues permits for impacts to wetlands as regulated under the Clean Water Act. Virginia relies on the NWI mapping to identify potential wetland habitats but utilizes the Wetland Condition Assessment Tool (WetCAT) to provide an estimate for wetland condition. The WetCAT Mapping tool classifies all NWI wetlands mapped at the Airport as having a condition of "somewhat severely stressed." Additionally, the WetCAT indicates a Virginia Department of Transportation (VDOT) Mitigation Site (wetland creation/restoration) of 1,390,827.2 SF occurs downgradient of the Airport, east of the confluence of the Broad Run and Cannon Branch. It is also noted that there are ~33 acres of preserved wetland area in the vicinity of this mitigation site. The WetCAT provides National Landcover Data and maps the majority of the Airport landcover as "developed", with the areas to the east as "natural".

Floodplains

Floodplains are low-lying land areas typically associated with bodies of water that are likely to become inundated during a flooding event. Floodplains serve an important function in retaining stormwater to protect against downstream flooding, property damage, and potential loss of life (Federal Emergency Management Agency, 2022). The size of a floodplain will vary according to the magnitude of the storm event, as determined by the storm reoccurrence interval. For example, a five-year storm has a magnitude that can be expected once every five years or statistically has a 20-percent chance of occurring during any given year. The Federal Emergency Management Agency (FEMA) utilizes a 100-year storm reoccurrence interval for flood preparation. Flooding related to a 100-year storm statistically has a 1-percent chance of occurring during any given year (also known as the base flood) (United States Geological Survey, 2018). A regulatory floodway

is the channel of a watercourse and the adjacent land areas that must be reserved in order to discharge a base flood without cumulatively increasing the peak water surface elevation more than a designated height. It is important to note that reoccurrence intervals can change when there are significant changes in flow patterns in an area or changes in land use due to development, such as converting forested land to a residential development (United States Geological Survey).

EO 11988, Floodplain Management, directs all federal agencies to avoid, to the extent possible, the long and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid the direct and indirect support of floodplain development wherever there is a practicable alternative. DOT Order 5650.2, "Floodplain Management and Protection," outlines the DOT's floodplain management procedures for transportation projects in which the DOT conducts a detailed analysis for any proposed project occuring within the 100-year floodplain. FEMA administers the National Flood Insurance Program under the National Flood Insurance Act of 1968 (NFIP), as well as overseeing the federal floodplain management programs and flood hazard mapping. Federal flood hazard areas are identified on community specific Flood Insurance Rate Maps (FIRM). The Virginia Department of Conservation and Recreation (VDCR) is the State's National Flood Insurance Program coordinating agency and any development must comply with any local laws or ordinances that qualify for this program.

Surface Waters

The CWA stablishes the basic structure for regulating the discharge of pollutants into waters of the United States.9 The sections of the CWA relating to waters of the United States are Section 303(d), Section 404, Section 401, and Section 402, which establishes the National Pollutant Discharge Elimination System (NPDES) permit program. In 1972, amendments to the CWA established federal jurisdiction over "navigable waters" (CWA Section 502(7)) as "waters of the United States". Surface waters (or watercourses, streams, tributaries) are "waters that are characterized by the presence of physical indicators of flow - bed and banks and ordinary high-water mark". Surface waters provide a critical role in the quality and supply of drinking water (United States Environmental Protection Agency, 2024).

The Fish and Wildlife Coordination Act works through the USFWS to evaluate Federal actions and the effects they may have on water resources so the USFWS can provide recommendations that reduce impacts to fish and wildlife. The USFWS was contacted regarding the proposed Project and their response is enclosed in this Environmental Assessment.

The Rivers and Harbors Act of 1899 (RHA) (33 U.S.C. Sec. 401 et seq.) protects "navigable waters" and under Section 10 (33 U.S.C. Sec. 403), prohibits the unauthorized obstruction or alteration of any "navigable waters" of the United States. Navigable waters are waters that must be regarded as public navigable rivers that are currently used or have the potential to be used for commerce or trade on water (United States Department of Environmental Protection).

Federal groundwater protection is provided under the Safe Drinking Water Act (SDWA), recently amended in 1996. The SDWA was established to protect drinking water and its sources, including rivers, lakes, reservoirs, springs, and groundwater wells.

Stormwater is water from rain or snow that does not infiltrate into the soil but travels as overland flow into surface waters. Stormwater carries potential pollutants into surface waters and thus stormwater discharges are regulated through the NPDES process. This process is administered under the VADEQ through the Virginia Pollutant Discharge Elimination System (VPDES) permit. VPDES permits are issued for point source discharges to surface water, municipal storm sewer discharges and industrial stormwater discharge. Sewage discharges with a design volume equal to or greater than one million gallons per day are considered "major" and require EPA review. "Minor" discharges are commercial, small industrial, and sewage discharges of less than one million gallons per day and are authorized under a VPDES Individual Permit. "General" discharges are small volumes of low potency pollutants and are authorized by the VPDES General Permits.

The VADEQ administers the Virginia Water Protection (VWP) program which issues permits for impacts to surface waters as regulated under the Clean Water Act. Under Section 303(d) of the CWA (United States Environmental Protection Agency, 2024), each state is required to identify and make public information on impaired waterbodies. Virginia lists impaired waterbodies as part of the Water Quality Monitoring, Information and Restoration Act (Article 4.01) under the State Water Control Law (Commonwealth of Virginia, n.d.). This process uses chemical and biological stream monitoring to determine these impaired waters. Surface waters cannot be removed from the 303(d) list until the water quality standards are met. The CWA requires that each impaired (non-attaining for pollutants) waterbody is given a priority ranking of high (H), medium (M), or low (L) with the goal of lowering the Total Maximum Daily Load (TMDL) of the pollutant. The prioritization process considers various environmental, social, and political factors. Prioritization criteria include source and parameters of impairment; additional data needs; TMDL complexity and nature; waterbody use and cultural or historic importance; efficiency concerns; watershed management activities; sensitive species concerns; and public interest.

In Virginia Title 9, Chapter 830, regulations pursuant to the Chesapeake Bay Preservation Act (CBPA) designate (9VAC25-830-80) Resource Protection Areas (RPAs) to tidal wetlands, the land adjacent to perennial water bodies and non-tidal wetlands that are connected by surface flow and contiguous to perennial water bodies (Commonwealth of Virginia, n.d.). RPAs consist of a buffer of no less than 100 ft from the aforementioned features. Prince William County has adopted the CBPA, but the City of Manassas has not and therefore RPAs only exist within the portion of the Airport that occurs within the County land. Vegetation within RPAs may be selectively removed for certain projects, including public roads and driveways; however, filling or grading within the buffer is not permitted (Prince William County Virginia, n.d.). The CBPA also designates Resource Management Areas (RMAs), which include sensitive areas, including floodplains and highly eroded soils whereby development projects are required to use best management practices, etc. to control runoff and prevent pollution. All of Prince William County is considering an RMA (Prince William County Virginia, n.d.).

Groundwater

Groundwater serves as an important potable water supply for many individual households, small communities, and larger municipalities. Potential impacts from airport development projects can include reduced groundwater recharge and potential contamination through chemical, toxin, or other pollutant releases. Federal groundwater protection is provided under the Safe Drinking Water Act (SDWA), recently amended in 1996. The SDWA was established to protect drinking water and its sources, including rivers, lakes, reservoirs, springs, and groundwater wells.

The EPA Sole Source Aquifer (SSA) (United States Environmental Protection Agency, 2024) program was established under the SDWA. According to the EPA, a SSA is defined as one that supplies at least 50 percent of the drinking water for its service area, and wherein there is no reasonably available alternative drinking water sources should the aquifer become contaminated. An aquifer is a term used to describe the capability of an underground area to store groundwater. The most productive aquifers are typically those comprised of unconsolidated sediments vs. bedrock. The SSA program allows for EPA review of federally funded projects that have the potential to affect designated SSAs and their source areas. The wellhead protection program was formed via amendments to the SDWA to protect groundwater sources from contamination.

Virginia's Groundwater Characterization Program (GCP) provides an evaluation of groundwater quantity and quality (Virginia Department of Environmental Quality, n.d.). Under Virginia's Title 9, 9VAC25-600-20, areas of groundwater management are declared.

Significance Determination

Wetlands

Wetlands are negatively impacted by construction projects when they cause changes to the hydrology and vegetation of the wetland.

Floodplains

Floodplains are negatively impacted by construction projects when they result in changes to hydrologic patterns and stormwater volumes. These changes can reduce the beneficial values of the floodplain, and result in water pollution. Per FAA Order 1050.1G, the FAA considers an Action "significant" if it "would cause notable and adverse impacts on natural and beneficial floodplain values", by which Federal agencies are directed to "avoid conducting, allowing or supporting actions on the base floodplain unless the agency finds that the base floodplain is the only practicable alternative location."

The base floodplain is the area that would be inundated by a 100-year flood (also known as the 1 percent annual chance flood), as determined by Federal Insurance Rate Maps (FIRM) or a Flood Hazard Boundary Map (FHBM) (United States Department of Transportation, 1979). Natural and beneficial floodplain values are defined as "natural moderation of floods, water quality maintenance, groundwater recharge, fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture and forestry" (United States Department of Transportation, 1979).

Surface Waters

Surface waters are negatively impacted by construction projects when they result in changes to hydrologic patterns, stormwater volumes and/or discharge of pollutants.

Groundwater

Groundwater can be impacted by pollutant spills, reduced infiltration due to increased impervious surfaces, or via groundwater withdrawals.

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Appendix O: Water Resources Documents

3. Pre-Application Meeting with USACE and VADEQ – Meeting Minutes

Pre-Application Teams Meeting with USACE and VADEQ for Manassas Regional Airport (HEF), Part 139 Certification and Terminal Redevelopment Programmatic Environmental Assessment (PEA), City of Manassas, Prince William County, Virginia

Date: October 23, 2025 (initial meeting) and November 13, 2025 (follow-up meeting)

Attendees: Silvia Gazzera – USACE; Meggan Sellers and Margaret Dannemann – VADEQ; Peter Byrne and Carol Weed – Avion Solutions Group (ASG); Jamie Morgan – Davey Resource Group (DRG)

Meeting Minutes

This call was organized by ASG and DRG to discuss with USACE and VADEQ the PEA proposed actions at Manassas Regional Airport (HEF). ASG is preparing the PEA and DRG, under contract to ASG, is completing the NEPA-level Biological and Water Resources evaluations.

Proposed impacts to wetlands and waters were discussed and are summarized as follows:

- Waters: The only waterway impact that would occur from any PEA project would result from the reinforcement of west-side Runway 16L/34R and east-side Taxiway B bridges over Broad Run. The runway and taxiway run parallel to each other. In order to create a dry work area, waters of Broad Run will have to be temporarily re-routed. On the west side of the runway work area, two dams will be emplaced. On the east side of the work area, one temporary dam will be erected east of the taxiway. Broad Run water west of the runway will be diverted into an existing bypass channel. The temporary dam east of the taxiway will prevent the combined waters of Cannon Branch and Broad Run from entering the work area. The bypass channel's diverted water will re-join Broad Run approximately 8,300 feet south (measured via centerline of channel) of the north-end diversion location. A small volume of flow will be pumped under the bridges and released beyond the construction area where it joins with the waters from Cannon Branch. The duration of the construction and dewatering of Broad Run is estimated to be between 5-9 months. Permanent impacts to the streambed or banks are not anticipated, as existing riprap will be removed and an 8" thick mechanically stabilized earth (MSE) wall will be installed on the sides of the existing bridges. The MSE wall will be secured into the channel banks with dowel nails. Rip-rap will be returned after construction leading to similar existing conditions.
- Wetlands: The impacts to wetlands include permanent removal of small, isolated emergent wetlands within the airport infields and temporary impacts to the emergent wetland that occurs where the bypass channel would carry the diverted water from Broad Run.

A summary of the various permitting talking points is below:

Former Permits: The previous actions at HEF that involved work on the runway/taxiway bridges over Broad Run (which also involved use of the same bypass channel to divert the flow), were permitted by VADEQ under VA-WP3-09-1612 and by USACE under 07-SPGP-01.

Permit Expiration: Both the NWPs, SPGP, and VA GPs expire next year and new versions of these will be issued.

- Per USACE, the new NWPs may allow a larger area of impact, possibly reflecting thresholds present in earlier years.
- Per VADEQ, the updates to the GPs should not be very different but should be more seamless.
- If a project is under contract at the time of the SPGP permit expiration, a one-year grace period is allowed to complete the work under the original permit conditions.

Jurisdictional Determination: USACE recommends that a pre-screening form be submitted to initiate the review of delineated wetlands/waters. After review, USACE will issue a letter of agreement on the wetland boundaries. VADEQ will not issue a separate letter but will often use the USACE's concurrence, so two reviews are not necessary.

Future Permit Requirements:

- Broad Run:
    - The USACE would consider the placement of the dams inside Broad Run as "discharge of dredged and fill material" and this would cause the project to fall into regulated impacts and would pull the whole project into regulatory compliance. As these are temporary impacts, the impact area total would not go towards the threshold for USACE, so an individual permit with USACE may not be necessary. The NWP would cover up to ½-acre loss of waters (and multiple NWPs can be used for a given project so long as the ½-acre total is not exceeded) and the SPGP would cover up to 1 acre of permanent impacts. If the project qualifies under a NWP, then it will be evaluated if it also has a 401 water quality certification associated with it that would cover regulatory compliance at the state level.
    - The VADEQ considers regulated impacts any action that changes the physical condition of the water; therefore, areas where Broad Run water levels will be lowered would also be counted towards impacts. Given the dewatering would exceed the 1,500 linear feet allowed under a VADEQ General Permit, an Individual Permit is anticipated.
- Bypass Channel Temporary Wetland Impacts
    - The large wetland associated with the existing bypass channel area would be temporarily impacted by the re-use of that bypass channel. Since these impacts are temporary, they are not subject to the permit thresholds requiring a USACE Individual Permit, and thus would likely be permitted under the NWP or SPGP process.
    - These impacts would count towards the permit thresholds for VADEQ and thus it is estimated an Individual Permit would be required as the large (11.9 acre) wetland that brackets and overarches the bypass channel will be subject to temporary impacts. Since this process requires public comment, obtaining the permit may take a little longer but is not expected to be too cumbersome.
- Isolated Wetland Permanent Impacts
    - The small, isolated wetlands that occur within the airport infields were discussed and the USACE confirmed these would not be regulated by USACE since they are isolated. Permanent impacts associated with these wetlands would not require a USACE permit, but the USACE will need to issue an Approved Jurisdictional Determination, and this must be issued first before the action can take place.
    - The VADEQ would regulate and require a permit for the small, isolated infield wetlands and this impact amount would count towards the VADEQ permit thresholds. Mitigation would be required for the permanent loss of these wetlands in excess of 1/10 of an acre, at a 1:1 ratio. The possibility exists for these wetlands to be unregulated if they are determined to be "Isolated Waters of Minimal Ecological Value" (IWOMEV). However, any IWOMEV wetland has to be less than 1/10 of an acre to be defined as such. Two of the infield wetlands are just over that amount (0.13 and 0.14 acres). Further, VADEQ indicated that determining a wetland to be IWOMEV can be a lengthy and complicated process and they seemed to suggest that the value of pursuing the IWOMEV designation was minimal.
- Submission Process and Timeline
    - All permit and jurisdictional determinations submission is through the RRS system. One application will be submitted that covers both the USACE and VADEQ requirements.
    - Typical permit timeframes for the SPGP were discussed to be less than 130 days since the FAA would have already handled the Section 7 and Section 106 consultation (as they are the lead federal

agency). The USACE Individual Permit has a 130-day timeline due to broader coordination and public notice.

  - Mitigation would be required for the in-place restoration of the wetlands (since it is a temporary impact). It was discussed that ASG/DRG should review the location of wetlands for the original 2009 permit. If new wetlands were created as a result of the original bypass activity, the restoration requirements may be reduced.

- Other
  - It was discussed that typically Virginia Marine Resources Commission (VMRC) may require a permit as it regulates impacts to rivers with a drainage area of greater than 5 square miles. However, that is likely only required if the impacts will incur permanent changes above or below the stream. Since the impacts are the temporary dam placement, then VMRC will issue a statement that this project is exempt from permitting with their agency.
  - It is recommended that at least two weeks before permits are submitted, a new pre-application meeting with USACE, VADEQ and VMRC is conducted to make determinations based on the new SPGP and NWPs that will be issued in 2026, and to discuss updates to the RRS system.

- **The USACE and VADEQ see no reason that the above-mentioned permits would not be authorized so long as all permit conditions are met and proper mitigation, etc. is provided.**

Appendix O: Water Resources Documents

4. Mitigation Bank Credits

Notice: The credit totals shown do **NOT reflect any credit reservations or pending transactions**.
It is the responsibility of potential purchasers to contact the Sponsor and obtain written confirmation of credit availability.

Latitude: 38.721667, **Longitude:** -77.515833

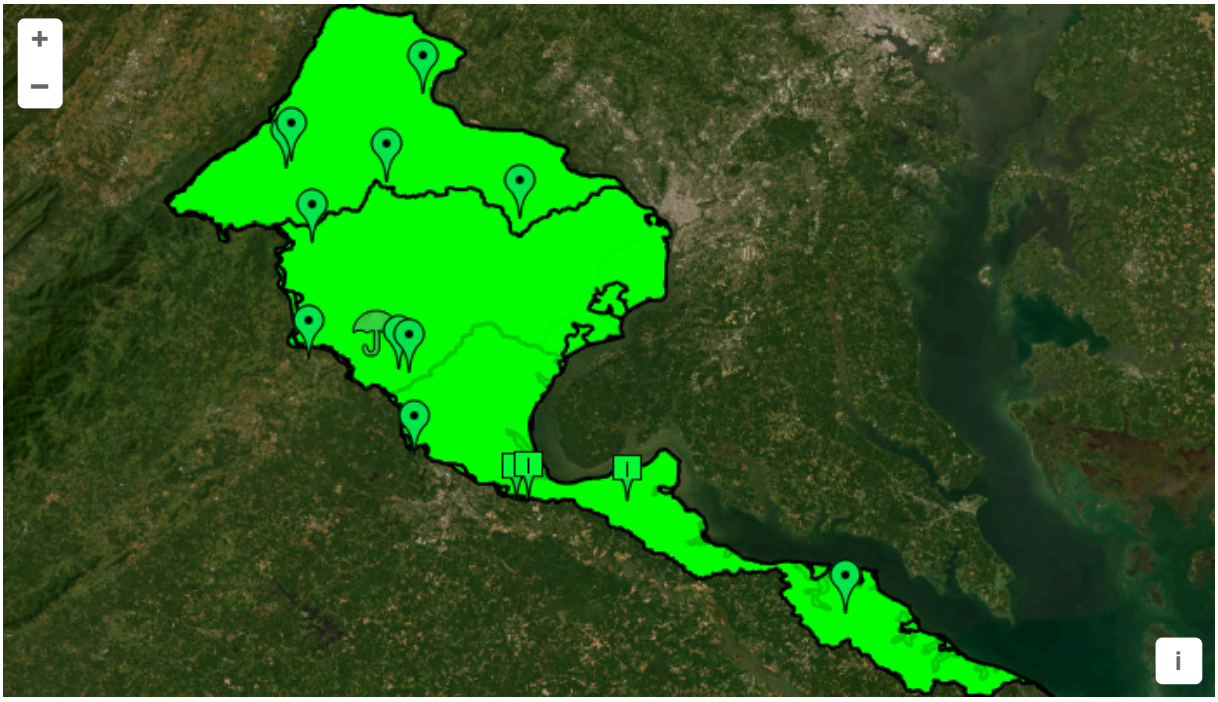
State:	Virginia
County:	Manassas city
8-digit Hydrologic Unit Code:	02070010
USFWS Field Office:	Virginia
USACE District:	Norfolk
NMFS Region:	Northeast
BLM State Office:	Eastern States

Search Criteria for banks, ILF sites, NRDA sites, umbrella sites, BLM project/program sites:
- ONLY approved and public
- with available credits greater than zero
- excluding single client
- with any wetland
- with any stream
- with service areas of rank Primary

Search Criteria for ILF programs:
- ONLY approved and public
- with available advance credits greater than zero
- with any wetland
- with any stream

Banks and Sites in Primary Service Area	15
Banks and Sites in Secondary Service Area	0
Banks and Sites in Tertiary Service Area	0
ILF Program Advance Credits	1

Banks and Sites in Primary Service Area



1) Bank: Laws Ford Mitigation Bank

Bank Type: Private Commercial
Total Acres: 135
Distance to impact: 8 miles from bank location or centroid of bank footprint
USACE Permit No: NAO-2019-02119
Bank States: Virginia
Comments: Wetland mitigation bank in Fauquier and Prince William Counties
Bank Sponsor:
Bank Sponsor POC:

Amy Staley
Consultant
1408 Roseneath Rd. Suite B
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Regulatory Bank Manager:

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Fax: (804) 698-6984 X 069

Credit Type	Credit Classifications	Group Name	Available Credits	Jurisdiction	Assessment Method
Wetland	Wetlands		4.37	Federal	Ratio

Notes:

2) Bank: Foggy Bottom Mitigation Bank Phase II

Bank Type: Private Commercial
Total Acres: 65
Distance to impact: 8 miles from bank location or centroid of bank footprint
USACE Permit No: NAO-2006-7460

Bank States: Virginia

Comments: A wetland mitigation bank that utilizes the Compensatory Ratio Method to assess mitigation credits

Bank Sponsor: **Foggy Bottom LLC,**
c/o Virginia Waters & Wetlands, Inc.
6799 Kennedy Rd, Suite A
Warrenton, VA 20186

Bank Sponsor POC:

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Watershed Consulting PLLC
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Email: erik@watershedva.com
Phone: (804) 304-4659

Andrew Hindman
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Credit Type	Credit Classifications	Group Name	Available Credits	Jurisdiction	Assessment Method
Wetland	Non-Tidal Wetlands		12.77	Federal	Ratio

Notes:

3) Bank: Cedar Run Mitigation Bank

Bank Type: Private Commercial
Total Acres: 743.52
Distance to impact: 9 miles from bank location or centroid of bank footprint
USACE Permit No: NAO-1999-0215
Bank States: Virginia
Comments: Wetland mitigation bank utilizing compensatory mitigation ratio
Bank Sponsor: **Cedar Run Wetlands, LC**
c/o Wetland Studies & Solutions, Inc.
5300 Wellington Branch Drive, Suite 100
Gainesville, VA

Bank Sponsor POC:

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Credit Type **Credit Classifications** **Group Name** **Available Credits** **Jurisdiction** **Assessment Method**

Wetland	Non-Tidal Wetlands	.09	Federal	Ratio

Notes:

4) Bank: Mill Run Mitigation Bank

Bank Type: Private Commercial
Total Acres:
Distance to impact: 15 miles from bank location or centroid of bank footprint
USACE Permit No: NAO-2018-01069
Bank States: Virginia
Comments: Wetland Mitigation Bank in the Potomac River Basin in Fauquier County.
Bank Sponsor: **Mill Run Mitigaiton LLC**
20744 Airmont Road
Bluemont, VA 20151
Phone: (703) 466-5123

Bank Sponsor POC:

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Credit Type	Credit Classifications	Group Name	Available Credits	Jurisdiction	Assessment Method
Wetland	Non-Tidal Wetlands		14.36	Federal	Ratio
Stream	Riverine		1518	Federal	Unified Stream Methodology

Notes:

5) Bank: Northern Virginia Stream Mitigation Bank

Bank Type: Private Commercial
Total Acres:
Distance to impact: 18 miles from bank location or centroid of bank footprint
USACE Permit No: NAO-2007-3620
Bank States: Virginia
Comments: Stream and wetland mitigation bank in Fairfax County in the Potomac River Basin.
Bank Sponsor: **Northern Virginia Stream Restoration, LC**
c/o Wetland Studies & Solutions, Inc.
5300 Wellington Branch Drive, Suite 100
gainesville, VA 20151

Bank Sponsor POC:

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Credit Type	Credit Classifications	Group Name	Available Credits	Jurisdiction	Assessment Method
Stream	Riverine		2277.2	Federal	STREAM

Notes:

6) Bank: Whitewood Farm Mitigation Bank

Bank Type: Private Commercial
Total Acres: 391
Distance to impact: 18 miles from bank location or centroid of bank footprint
USACE Permit No: NAO-2015-01730
Bank States: Virginia
Comments: Wetland and stream mitigation bank in Fauquier County, VA
Bank Sponsor:

Whitewood Farm Mitigation Bank, LLC

Mr. Clarke Ohrstrom
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Phone: (888) 218-8507

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Credit Type	Credit Classifications	Group Name	Available Credits	Jurisdiction	Assessment Method
Wetland	Non-Tidal Wetlands		1.36	Federal	Ratio
Stream	Riverine		14388	Federal	Unified Stream Methodology

Notes:

7) Bank: Hampstead Mitigation Bank

Bank Type: Private Commercial
Total Acres: 311
Distance to impact: 19 miles from bank location or centroid of bank footprint
USACE Permit No: NAO-2010-02260
Bank States: Virginia
Comments: wetland and stream mitigation bank in Stafford County
Bank Sponsor: **Falling Springs, LLC dba Hampstead Mitigation, LLC**
1100 Boulders Parkway, Suite 101
Richmond, VA 23225

Bank Sponsor POC:

Jason Bohdan

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Credit Type	Credit Classifications	Group Name	Available Credits	Jurisdiction	Assessment Method
Stream	Riverine		1	Federal	Unified Stream Methodology

Notes:

8) Bank: Tail Race Mitigation Bank

Bank Type: Private Commercial
Total Acres: 148.5
Distance to impact: 21 miles from bank location or centroid of bank footprint
USACE Permit No: NAO-2018-01012
Bank States: Virginia
Comments: Stream and Wetland Bank in Loudoun County VA
Bank Sponsor: **Tail Race LLC**
20744 Airmont Road
Blumenot, VA 20135

Bank Sponsor POC:

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Credit Type	Credit Classifications	Group Name	Available Credits	Jurisdiction	Assessment Method
Wetland	Non-Tidal Wetlands		22.75	Federal	Ratio

Notes:

9) ILF Site: VARTF PO-7 Crows Nest (Phase 2)

Bank Type: Private Nonprofit
Total Acres: 133
Distance to impact: 26 miles from bank location or centroid of bank footprint
USACE Permit No: NAO-1995-08595
Bank States: Virginia
Comments: Non tidal and tidal wetland and stream preservation project - Project ID PO-7
Bank Sponsor:

The Nature Conservancy of Virginia
652 Peter Jefferson Parkway
Suite 190
Charlottesville, VA 22911

Bank Sponsor POC:

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Credit Type	Credit Classifications	Group Name	Available Credits	Jurisdiction	Assessment Method
Wetland	Tidal Wetlands		.75	Federal	Ratio
Wetland	Non-Tidal Wetlands		7.44	Federal	Ratio

Notes:

10) ILF Site: VARTF PO-6 Crows Nest (Phase 1)

Bank Type: Private Nonprofit
Total Acres: 637
Distance to impact: 27 miles from bank location or centroid of bank footprint
USACE Permit No: NAO-1995-08595
Bank States: Virginia
Comments: Non-tidal wetland, tidal wetland, and stream preservation project - aka Crow's Nest (Stafford Lakes Partnership Phase 1) - Project ID PO-6
Bank Sponsor:

The Nature Conservancy of Virginia
652 Peter Jefferson Parkway
Suite 190
Charlottesville, VA 22911

Bank Sponsor POC:

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Credit Type	Credit Classifications	Group Name	Available Credits	Jurisdiction	Assessment Method
Wetland	Tidal Wetlands		8.25	Federal	Ratio
Wetland	Non-Tidal Wetlands		24.03	Federal	Ratio

Notes:

11) Bank: Rock Hedge Mitigation Bank

Bank Type: Private Commercial
Total Acres: 252
Distance to impact: 28 miles from bank location or centroid of bank footprint
USACE Permit No: NAO-2008-2553
Bank States: Virginia
Comments: Wetland and stream mitigation bank in the Potomac River watershed in Loudoun County.
Bank Sponsor: **Rock Hedge Mitigation Bank, LLC**
20744 Airmont Rd
Attn: Bradley Gable
Bluemont, VA 20135

Bank Sponsor POC:

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Credit Type	Credit Classifications	Group Name	Available Credits	Jurisdiction	Assessment Method
Wetland	Non-Tidal Wetlands		.64	Federal	Ratio
Stream	Riverine		2	Federal	Unified Stream Methodology

Notes:

12) Bank: Dog Branch Mitigation Bank

Bank Type: Private Commercial
Total Acres: 72
Distance to impact: 28 miles from bank location or centroid of bank footprint
USACE Permit No: NAO-2016-02274
Bank States: Virginia
Comments: Stream and Wetland Mitigation Bank in Loudoun County within the Potomac River Basin
Bank Sponsor: **Rock Hedge Mitigation Bank, LLC**
20744 Airmont Rd
Attn: Bradley Gable
Bluemont, VA 20135

Bank Sponsor POC:

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Credit Type	Credit Classifications	Group Name	Available Credits	Jurisdiction	Assessment Method
Wetland	Non-Tidal Wetlands		4.22	Federal	Ratio

Notes:

13) ILF Site: VARTF PO-1 Nash

Bank Type: Private Nonprofit
Total Acres: 152.76
Distance to impact: 33 miles from bank location or centroid of bank footprint
USACE Permit No: NAO-1995-08595
Bank States: Virginia
Comments: Non-tidal wetland and stream restoration/enhancement project aka Caledon (Nash) - Project ID PO-1. Stream work was conducted with pre-USM funds, therefore, stream credits will not be generated.

Bank Sponsor:

The Nature Conservancy of Virginia

652 Peter Jefferson Parkway
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Credit Type	Credit Classifications	Group Name	Available Credits	Jurisdiction	Assessment Method
Wetland	Non-Tidal Wetlands		37.21	Federal	Ratio

Notes:

14) Bank: Limestone Mitigation Bank

Bank Type: Private Commercial
Total Acres: 245
Distance to impact: 33 miles from bank location or centroid of bank footprint
USACE Permit No: NAO-2006-5364
Bank States: Virginia
Bank Sponsor: **Clearwater Mitigation LLC**
4704 Rolfe Road
Richmond, VA 23226
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Bank Sponsor POC:

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Credit Type	Credit Classifications	Group Name	Available Credits	Jurisdiction	Assessment Method
Stream	Riverine		1191	Federal	Unified Stream Methodology

Notes:

15) Bank: Hull Springs Farm Mitigation Bank

Bank Type: Private Commercial
Total Acres: 214.65
Distance to impact: 62 miles from bank location or centroid of bank footprint
USACE Permit No: NAO-2008-3410

Bank States: Virginia

Comments: An approved wetland and stream mitigation bank. Credits were assessed using the mitigation ratio method (wetlands) & Unified Stream Methodology (USM)

Bank Sponsor: **Longwood University Foundation**
Farmville, VA

Bank Sponsor POC:

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Credit Type	Credit Classifications	Group Name	Available Credits	Jurisdiction	Assessment Method
Wetland	Wetlands		2.27	Federal	Ratio

Notes:

ILF Program Advance Credits

1) ILF Program: Virginia Stream and Wetland Mitigation Program (formerly VARTF)

USACE Permit No: NAO-1995-08595
Program States: Virginia
Program Sponsor:

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Credit Type Subdivision	Service Area	Advance Credits
Non-Tidal	Potomac	35.27

	Stream	Potomac	7,072
	Tidal	Potomac	0.198

Notes:

Appendix O: Water Resources Documents

5. Impact Minimization Memorandum

202.481.7685 main

MEMORANDUM

Date: March 20, 2026

To: Peter Byrne

From Steve Treser, P.E., AIA – Walter P Moore

RE: HEF Manassas Airport Impact Minimization

With respect to the question of potential flood impacts on Broad Run resulting from the proposed HEF Manassas Airport expansion, a high-level HEC-RAS based 1D steady flow analysis has been performed to determine any impacts based on the proposed plan. This hydraulic impact analysis of the future development conditions related to the airport expansion identified a potential 0.03-foot impact to both the 1-percent annual chance (100-year) and the 0.2-percent annual chance (500-year) floodplain water surface elevations. These impacts are associated with proposed improvements and are located along the airport bypass channel. This analysis has not yet been finalized as the proposed project does not have a final layout/design at the current date. However, it will be finalized and submitted to the local floodplain administrator(s) before or as part of the permit approval process.

Any unavoidable floodplain encroachment will be minimized and mitigated in accordance with applicable local, state, and floodplain regulations, including measures necessary to offset fill within the floodplain, and not create adverse impacts to water surface elevations outside of the airport property. These measures and the analysis supporting them will be coordinated with the local floodplain administrators of Prince William County and the City of Manassas, as necessary, to ensure no impacts to adjacent property owners.

In addition, potential impacts associated with increased impervious surface area as part of this project will be minimized through implementation of stormwater management and detention measures on-site to control post-development runoff per local stormwater criteria.

Should you have any questions, please don't hesitate to contact us at streser@walterpmoore.com.

Steve Treser, P.E., AIA
Principal

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