

MDWAM EXAMPLE 1.



Figure 1. Example of a depressional wetland in Frederick County (blue polygon). Note the historic ditch that keeps the seasonal inundation at a lower level. The darker blue line illustrates the receiving ditch which is a man altered tributary from past agricultural use.



Figure 2. Illustration of the WAA (light blue), 500' buffer (thick red), and 1000' aquatic context (thin red) polygons. The red markers indicate aquatic resources to which the WAA is connected.



Figure 3. This is the largest vegetation community in the WAA which is forested. The historic ditch lowers the level of inundation in most of the WAA, but the area remains seasonally saturated. The area is dominated by silver maple (*Acer saccharinum*) with a very sparse understory.



Figure 4. A central semi open area represents a second, but much smaller community where inundation is extended into the growing season. This area was also dominated by *Acer saccharinum* but due to high mortality of Green Ash (*Fraxinus pennsylvanica*), increased light penetration has enabled the central areas to be dominated by swamp rose mallow (*Hibiscus moschatus*).

October 7, 2025 – MDWAM WETLAND SCORING FORM

Project/Site ID: Nolands Ferry C&O Canal Park _____

Assessment Dates: 11-13-2020

Delineation Dates: 11-13-2020 Project Type: Testing Linear Non-Linear Mitigation (Creation Restoration Enhancement)

Evaluators: Plewa, Gaimaro, Ozburn, Neff, Tiralla

Wetland ID/Name: WAA3NF1-2 NWI: PFO/SS1E

WAA #: 3 Size: 1.3 (acres)

Wetland Class (HGM): Depression

MDWAM Regional: none

Ecoregion: CP EMP Aerial Photo Date and Source: June 2022 Google and numerous other google and WRR photography Photos: Yes

Notes: Depression wetland with two distinct communities, forested perimeter, and herbaceous central area. Historic ditch has silted in and currently has low impact. Wetland is surrounded by former cropland which has transitioned into Oldfield habitat dominated by various grasses and goldenrod and significant patches of shrub cover. Numerous spoil piles are located at the boundaries of the fields and the wetland. These were likely from historic clearing activities. Updated to reflect latest MDWAM data form.

LANDSCAPE CORE ELEMENT

Aquatic Context metric – Confirm in office review. See figures in section 2.3.1.1 for examples.

Describe barriers or alterations that prevent connection: _____ No barriers.
Total aquatic resources within 1,000 feet of WAA to which wetland connects (minimum size \geq 0.02 acres): 5 streams 10 wetlands 0 ponds
Score: 4

Buffer – Evaluate to 500 feet from WAA boundary. Confirm in office review and field check. A micro delineation of buffer types is unnecessary, users should delineate the major units to provide a qualitative estimate of the buffer community potential. See figures in Section 2.3.1.2 for examples

Buffer Type/Description – total buffer area \sim 32 acres	Score (See Narratives)	Percentage	Subtotal
1. Mid to late deciduous forest \sim 16 acres	4	50	2.0
2. Low to early successional forest 1.6 acres	3	5	0.15
3. Low successional - old field habitat (reverting agricultural lands) \sim 6.9 acres	2	21	0.43
4. Unmanaged herbaceous rangeland – mixed species \sim 7.7 acres	1	24	0.24
5.			
			Score: 2.8

HYDROLOGY CORE ELEMENT

Water source metric – Identify the dominant water sources and degree of natural or unnatural/artificial influence (Confirm in office review for watershed).

Natural Source: Precipitation Groundwater Overland flow Overbank flow/stream discharge Beaver activity Other: _____
Unnatural/Manipulated Source/Controls: Impoundment Outfall Irrigation/pumping Fill Ditching/Channelization Other Artificial influence or control.
Watershed/Drainage Area controls: Development Irrigated agriculture Wastewater treatment plant Impoundment Stormwater retention Change to flow/circulation from roads/ditching Other: _____
Degree of artificial influence/control: Complete High Low None. Wetland created/restored/enhanced: Sustainable/replicates natural Controlled
Comments: historic ditching has a minimal effect on source _____ Score: 3

Hydroperiod metric – Determine the natural variability and/or recent alteration of the duration, frequency, and magnitude of inundation/saturation.

Evaluate the hydroperiod including natural variation: Precipitation: typical atypical (deficit surplus) Source: MARF _____
 High variation Low variation Evidence: redox features high in the soil profile, large deciduous tree species suggesting high ET rates, low carbon storage
Direct evidence of alteration: Natural: Logjam Channel migration Other: elm ash borer – lowered ET rates _____
Human: Diversions Ditches/swales Levees Impoundments Other: _____
Riverine (active floodplain only): Recent channel in-stability/dis-equilibrium (Degradation or Aggradation) Stable Channel _____
Indirect evidence of alteration: Wetland plant stress Plant morphology Upland species encroachment Plant Community Soil morphology None
Change/Alteration of hydroperiod: Due to natural events Human influences (None Slight or High) largely recovered from ditching _____
Degree hydroperiod of wetland created/restored(replicates natural patterns): _____
Lacustrine fringe on human impoundment: High variability Low variability Recent changes to hydroperiod
Comments: ash mortality has probably extended the hydroperiod somewhat _____ Score: 2

Hydrologic flow metric – Movement of water to or from surrounding area and openness to water moving through the WAA (flow and circulation).

Flow: Inlets: # _____ Outlets: #1 Signs of water movement to or from WAA: none _____
Restrictions: None Levee Berm/dam Diversion Ditch-Side Cast Road w/culverts Other: _____
Magnitude of water movement into, through and out of the wetland (check indicators below): High Moderate Low _____
High flow through: Floodplain Drift deposits Drainage patterns Sediment deposits Partially buried debris/trunks Scour Other: _____
Low flow through: High landscape position Stagnant water Closed contours Debris dams Constricted Outlet Surface Roughness Other: _____
Comments: this is fill and spill only under extreme conditions _____ Score: 1

Surface drainage feature metric: Identify and describe all natural and man-made or man-altered surface drainage features (**SDF**) present within the WAA which potentially impact wetland hydrology and or wetland function and circle impact potential to the WAA (High-Moderate-Low). SDFs are defined as confined features with OHWM and or bed and banks. Indiscrete flow patterns are not considered (e.g., wetland drainage patterns, erosional features, etc.). Provide rational below or on separate report.

SDF Types present: None Stream channel # _____ Ditch/swale # 1 _____ Diversion # _____ Other _____
 SDF(s) exhibits (circle degree High-Moderate-Low): channel instability/migration(H-M-L) active incision/downcutting(H-M-L) bank instability(H-M-L) raw unvegetated or vertical banks(H-M-L) highly erodible materials(H-M-L) lacks vertical controls(H-M-L) excessive deposition/bar development(H-M-L) historic channel alteration(H-M-L) proximity to WAA that presents potential impact to hydrology(Low) coarse textured soils(high hydraulic conductivity)
 Restrictions associated with SDF cause backwater flooding within WAA: Type: levee fill/side cast culvert/bridge Other _____

Timing: Recent (\leq 5 years) Historic

Negative effect to: flow and circulation within WAA redirects or confines flows into/through WAA reduced water table level of inundation No Impact

Rationale: it is likely the pool elevation of the depression is somewhat lower than originally. However, it was determined that the ongoing impact is likely minimal.

Score: 3

SOILS CORE ELEMENT

Soil organic carbon (average multiple sample scores, round to one decimal). See Section 2.2.5.2, for additional guidance regarding multiple samples	Sample Score		
	#1	#2	#3
Total thickness of organic soil and mucky modified layer(s) \geq 2"	5	5	5
Total thickness of organic soil and mucky modified layer(s) $<$ 2", OR Dark (matrix value \leq 3 and chroma \leq 2) mineral surface layer(s) \geq 10" thick	4	4	4
Dark (matrix value \leq 3 and chroma \leq 2) mineral surface layer(s) only, \geq 4" and $<$ 10" thick	3	3	3
Dark (matrix value \leq 3 and chroma \leq 2) mineral surface layer(s) only, \geq 1" and $<$ 4" thick	2	2	2
Mineral surface layer(s) (any thickness) have matrix value and chroma combinations of 4/1, 4/2, 4/3, 4/4, 3/3, or 3/4. No organic soil and mucky modified layer(s) layers within 16"	1	1	1
Mineral surface layer(s) only (any thickness) with matrix values $>$ 4 OR chromas $>$ 4. No organic soil and mucky modified layer(s) layers within 16"	0	0	0
Average score of samples (if multiple samples within the WAA)			
Additional point added in any riverine subclasses			
Average of all samples/round to one decimal			
Score: 1.4			

Biogeochemical cycling metric: See Section 2.2.5.2, for additional guidance regarding multiple samples.

Sample#	Sub-Metric Scores				<i>Use this formula for each sample and average the number of samples (round all scores to one decimal)</i>
	Redox Concentrations	Micro Topography	Soil Organic Matter	Herbaceous Cover	
1	4	2	2	3	$[0.75 \times (4 + 2 + 2 + 3)] - 2 = 6.25$ Sample Score 1
2	4	2	2	3	$[0.75 \times (4 + 2 + 2 + 3)] - 2 = 6.25$ Sample Score 2
3	-	-	-	-	$[0.75 \times (+ + +)] - 2 =$ Sample Score 3
					Average of all samples
					Score: 6.3

Sedimentation metric – Deposition of excess sediment due to human actions (in the WAA). Confirm in office review for landscape.

Landscape with stress that could lead to excess sedimentation: Yes No

Landscape position: High Low

Magnitude of recent runoff/flooding events: High Low None

Percent of WAA with excess sediment deposition: none

Sand deposits: ____ % of area _____ average thickness

Silt/clay deposits: ____ % of area _____ average thickness

Observation of deposits: Frequent Common Occasional Infrequent Rare None

*Lacustrine fringe only: Upper end of impoundment Degrades wetland Contributes to wetland processes

Score: 4

Soil modification metric – Physical changes by human activities. Confirm in office review for past.

Level of modification (low) Level of recovery (high) No detectable modifications

Type: Agricultural use (Plowing Discing Harrowing) Logging Mining Filling Grading Dredging Off-road vehicles

Other: _____

Percent of WAA with soil modification: Recent _____ % Historic $<$ 5% Describe: some historic piles of fill noted likely from land clearing for the adjacent historical agricultural activities. No longer active.

Indicators of past modification: None Low organic matter Lack of soil structure Removal of horizons Compaction (platy structure) Ap horizon

Dramatic change in texture/color Heterogeneous mixture Recent Alluvium (e.g., legacy sediments) Stratified layers Soil subsidence Fill

Other: _____

Comments: minimal fill encroachment into the wetland

Score: 4

PHYSICAL STRUCTURE CORE ELEMENT

Topographic complexity metric – See figures in Section 2.3.4.1 Record % micro-topography and % of WAA for each elevation gradient. For multiple gradients, multiply the % of micro-topography by the % of the WAA for each gradient and sum the results to find the overall %.

Of Elevation gradients present: 2 Evidence of gradients: Plant assemblages Level of saturation/inundation Path of water flow Slope

Micro-topography (surface roughness) of WAA: >50% 30-49% 10-29% <10%

Types: Depression Pools Burrows Swales Wind-thrown tree holes Mounds Islands Variable shorelines Partially buried debris Debris jams Plant hummocks/roots Other: _____

Score: 4

Edge complexity metric – Initiate in office review but adjust based on field observations/delineation. See example figures in Section 2.3.4.2 to evaluate irregularity of wetland boundary and variability in vertical structure. Abutting habitats must border 30% or more of the WAA boundary.

WAA is: Surrounded by uplands In seasonal floodplain Abutting other wetland types Has edge vertical structure variation (Low)

Horizontal variability: High Moderate Low None variability is very minimal _____

Score: 1

Physical habitat richness metric – See definitions and table in Section 2.3.4.3 for habitat types applicable to each wetland type. Located in the WAA or within 25 feet of the WAA boundary.

Concentric high-water marks Secondary channels Seasonally inundated swales Un-vegetated pools Un-vegetated flats Vegetated islands Slope with undercut, slump, or overhang Rock piles with voids Plant hummocks/vegetated mounds Submerged/floating vegetation Dense herbaceous cover Brambles/thickets Mature/late-successional stage of plant community (>24" DBH) Drift deposits/organic debris Brush piles Fallen logs Stumps/ Standing snags Wind-thrown trees Tree root cavities Nesting cavities/dens Other _____

of Physical habitat types present (wetland type sensitive - see narrative table): % 7

Score: 4

BIOTIC STRUCTURE CORE ELEMENT

Plant strata metric – Use applicable wetland delineation regional supplement and wetland determination data form(s) 4 strata approach.

Number of plant strata: ≥ 4 3 2 1 0 Strata present: herbaceous shrub/sapling tree woody vines

Score: 4

Species richness metric – Use data from determination data form(s) to count species with 5% or more relative cover in a stratum. Species should be counted only once for all observations within the WAA.

Number of species across all strata and determination data forms (count species once) plus additional significant species (provide rationale for additional species outside plots). Plot Species 7 + Additional species (outside sample plots) 0 = Total species richness 7 Rationale for additional species: NA

Score: 3

Non-native/Invasive Infestation metric – Use data from determination data form(s) and additional observations. See tables in section 2.3.5.3.2 for examples.

Average total relative cover of non-native/invasive species across all strata and determination data forms: <1 %

4 = <1% 3 = 1-10% 2 = 11-25% 1 = 26-50% 0 = 51-100%

Additional species cover outside plots are included (must be growing in the wetland) Rationale: _____

Score: 4

Interspersion metric – Confirm in office review. Use figure in section 2.3.5.4.2 to determine the degree of interspersion of plant zones (≥ 5% of WAA).

Degree of horizontal/plan view interspersion: High Moderate Low None

Score: 2

Herbaceous cover metric – Estimate only herbaceous plant cover for entire WAA.

Total cover of herbaceous, emergent and submergent plants: > 75% 51-75% 26-50% ≤ 25%

Score: 3

Vegetation alterations metric – Unnatural (human-caused) stressors. Confirm in office review for past.

Type (Check those applicable and circle R for recent or P for past): Cropping R/P Disking-plowing R/P Land clearing/leveling R/P Mowing/shredding R/P Silviculture R/P Logging R/P Cutting Past Trampling R/P Herbicide treatment R/P Herbivory R/P Disease R/P Chemical spill R/P Pollution R/P Grazing R/P Woody debris removal R/P Fire R/P Other R/P: high mortality from emerald ash borer which has opened up the canopy resulting in the large patch of herbaceous growth. It is likely the canopy will recover but will result in different species composition. The wetland would appear to have recovered from any logging activity.

Percent of WAA with recent vegetation alteration: 40% Severity of alteration: High Moderate Low

Percent of WAA with past vegetation alteration: no estimate % Degree of recovery: Complete High Moderate Low

Alteration to improve wetland (degree of natural community recovery): _____

Rationale: _____

Score: 2

Plant life forms metric - Life forms represent ≥ 5% of WAA.

Bryophytes (mosses, liverworts, hornworts) Coniferous Trees Deciduous Broadleaf Trees Evergreen Broadleaf Trees Ferns Grasses Herbs Lichens or Fungi Sedges/Rushes Shrubs Vines Floating/SAV

Total Number of Plant Life Forms: ≥ 6 = 4 4 or 5 = 3 3 = 2 1 or 2 = 1 0=0

Score: 3

October 7, 2025 – MDWAM WETLAND FINAL SCORING FORM

Project/Site ID: Nolands Ferry C&O Canal Park _____

Assessment Dates: 11-13-2020

Delineation Dates: 11-13-2020 Project Type: Testing Linear Non-Linear Mitigation (Creation Restoration Enhancement)

Evaluators: Plewa, Gaimaro, Ozburn, Neff, Tiralla

Wetland ID/Name: WAA3NF1-2 NWI: PFO/SS1E

WAA #: 3 Size: 1.3 (acres)

Wetland Class (HGM): Depression

MDWAM Regional Subclass: none

Ecoregion: CP EMP Aerial Photo Date and Source: June 2022 Google and numerous other google and WRR photography Photos: Yes

Notes: Updated to reflect latest MDWAM data form.

Core Element	Metric	Metric score	Core Element Score	Core Element Score	
Landscape	Aquatic context	4	Sum of metric scores 6.8 / 8 x 15	12.75	
	Buffer	2.8			
Hydrology	Water source	3	Sum of metric scores 10 / 16 x 30	18.75	
	Hydroperiod	2			
	Hydrologic flow	1			
	Surface drainage features	3			
Soils	Organic carbon storage	1.4	Sum of metric scores 9 / 23 x 15	10.24	
	Biogeochemical cycling	6.3			
	Sedimentation	4			
	Soil modification	4			
Physical Structure	Topographic complexity	4	Sum of metric scores 9 / 12 x 20	11.4	
	Edge complexity	1			
	Physical habitat richness	4			
Biotic Structure	Plant strata	4	Sum of metric scores 21 / 28 x 20	15.0	
	Species richness	3			
	Non-native/invasive infestation	4			
	Interspersion	2			
	Herbaceous cover	3			
	Vegetation alterations	2			
	Plant life forms	3			
Sum of core element scores = Base MDWAM wetland score:				68.14	
Additional points for unique resources = overall MDWAM wetland score x 0.10 if:					
<input type="checkbox"/> Non-tidal wetlands of special state concern <input type="checkbox"/> Areas with populations (>20%) of the following species: Bald cypress, Atlantic white cedar, red spruce, balsam fir, or American larch <input type="checkbox"/> Delmarva Bay <input type="checkbox"/> Peatlands (histic epipedon or histosol present)				0	
Additional points for limited habitats = overall MDWAM wetland score x 0.05 if:				0	
<input type="checkbox"/> Dominated by native trees greater than 24-inch diameter at breast height <input type="checkbox"/> Dominated by hard mast (i.e., acorns and nuts) producing native species in the tree strata <input type="checkbox"/> Large wetland tracts or corridors > 20 acres				0	
Sum of overall wetland scores plus additional points = total overall MDWAM wetland score (round to whole number)				68	

Attach representative site photographs:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: MDWAM Field Testing – Nolands Ferry C&O Canal Park

City/County: Frederick

Sampling

Date: 11-13-2020

Applicant/Owner: National Park Service

State: MD

Sampling

Point: **WAA3-1**

Investigator(s): Plewa, Gaimaro, Ozburn, Neff, Tiralla _____ Section, Township, Range: N/A _____

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

Subregion: LRR: S _____ MLRA: 148 _____ Lat: 39°14'11.23"N _____ Long: 77°27'38.88"W _____ Datum: A _____

Soil Map Unit Name: Melvin _____ NWI classification: PFO/SS1E _____

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

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

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (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 X	Hydric Soil Present? Yes X	Wetland Hydrology Present? Yes X	Is the Sampled Area within a Wetland? Yes
<p>Remarks: area has experienced precipitation deficit over the past 90 and 365 days. Two heavy precipitation events in the past two weeks. This site has been historically impacted by a drainage ditch. The ditch has silted in somewhat and appears to have low ongoing impact.</p>			

HYDROLOGY

Wetland Hydrology Indicators: <small>Primary Indicators (minimum of one is required; check all that apply)</small>		Secondary Indicators (minimum of two required)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)	<input checked="" type="checkbox"/> Sparingly Vegetated Concave Surface (B8)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)	<input checked="" type="checkbox"/> Moss Trim Lines (B16)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input checked="" type="checkbox"/> Crayfish Burrows (C8)
<input checked="" type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	<input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Geomorphic Position (D2)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Microtopographic Relief (D4)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)		
<input type="checkbox"/> Iron Deposits (B5)			
Inundation Visible on Aerial Imagery (B7)			
Water-Stained Leaves (B9)			
Aquatic Fauna (B13)			

Field Observations:		Wetland Hydrology Present? Yes	
Surface Water Present?	Yes X _____ No _____ Depth (inches): 0-12 _____		
Water Table Present?	Yes X _____ No _____ Depth (inches): 4 _____		
Saturation Present? (includes capillary fringe)	Yes X _____ No _____ Depth (inches): 0 _____		

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

FULL RANGE OF GOOGLE AND WRR AERIAL PHOTOGRAPHY

Remarks:

approximately 2 inches of rain within the past 24-28 hours
 soil pit located outside of standing water

Precipitation supporting data: APT MARF Other

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WAA3-1

<u>Tree Stratum</u> (Plot size: 30' radius)				Absolute Dominant Indicator			
				% Cover	Species?	Status	
1. <i>Acer saccharinum</i> silver maple	60	Y	FacW				
2. <i>Quercus palustris</i> pin oak	18	Y	FacW				
3. _____	_____	_____	_____				
4. <i>Fraxinus pennsylvanica</i> (dead – not quantified)	NA	NA	FacW				
5. _____	_____	_____	_____				
6. _____	_____	_____	_____				
7. _____	_____	_____	_____				
				78	= Total Cover		
50% of total cover: 39				20% of total cover: 15.6			
<u>Sapling/Shrub Stratum</u> (Plot size: 15' radius)							
1. unkown	1	no	?				
2. _____	_____	_____	_____				
3. <i>Fraxinus pennsylvanica</i> (dead – not quantified)	_____	_____	_____				
4. _____	_____	_____	_____				
5. _____	_____	_____	_____				
6. _____	_____	_____	_____				
7. _____	_____	_____	_____				
8. _____	_____	_____	_____				
9. _____	_____	_____	_____				
				NA	= Total Cover		
50% of total cover: _____				20% of total cover: _____			
<u>Herb Stratum</u> (Plot size: 5' radius)							
1. <i>Carex lupulina</i> hop sedge	15	Y	OBL				
2. <i>Persicaria hydropiper</i> marsh pepper	4	Y	OBL				
3. <i>Saururus cernuum</i> lizards tail	1	_____	OBL				
5. <i>Lycopus Americanum</i> water horehound	trace	_____	OBL				
6. <i>Persicaria pensylvanica</i>	trace	_____	FacW				
7. <i>Bohemeria cylindrica</i> false nettle	trace	_____	FacW				
8. <i>Arthraxon hispidus</i> carp grass	trace	_____	Fac				
9. <i>Quercus palustris</i> pin oak	trace	_____	FacW				
10. <u>unknown</u> broadleaf	trace	_____	?				
11. _____	_____	_____	_____				
				20	= Total Cover		
50% of total cover: 10				20% of total cover: 4			
<u>Woody Vine Stratum</u> (Plot size: 30' radius)							
1. <i>Toxicodendron radicans</i>	9	Y	Fac				
2. _____	_____	_____	_____				
3. _____	_____	_____	_____				
4. _____	_____	_____	_____				
5. _____	_____	_____	_____				
				9	= Total Cover		
50% of total cover: _____				20% of total cover: _____			
Remarks: (Include photo numbers here or on a separate sheet.)							
Morphological adaptations observed on multiple age classes of maples and ashes. High ash mortality							
MORPHOLOGICAL PLANT ADAPTATIONS: <input checked="" type="checkbox"/> shallow roots <input checked="" type="checkbox"/> fluted trunks <input checked="" type="checkbox"/> flared/buttressed trunks <input type="checkbox"/> elevated root wads/trunks							
Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A) Total Number of Dominant Species Across All Strata: 5 (B) Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)							
Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____							
Hydrophytic Vegetation Indicators: 1 - Rapid Test for Hydrophytic Vegetation X 2 - Dominance Test is >50% 3 - Prevalence Index is $\leq 3.0^1$ 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? <input checked="" type="checkbox"/> Yes							

SOIL Nolands Ferry C&O Canal Park

Sampling Point: **WAA3-1**

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: MDWAM Field Testing – Nolands Ferry C&O Canal Park City/County: Frederick Sampling Date: 11-13-2020
 Applicant/Owner: National Park Service State: MD Sampling Point: WAA3-2
 Investigator(s): Plewa, Gaimaro, Ozburn, Neff, Tiralla _____ Section, Township, Range: N/A _____
 Landform (hillslope, terrace, etc.): depression _____ Local relief (concave, convex, none): concave _____ Slope (%): 0 _____
 Subregion: LRR: S _____ MLRA: 148 _____ Lat: 39°14'8.43"N _____ Long: -77°27'35.30"W _____ Datum: NA _____
 Soil Map Unit Name: Melvin _____ NWI classification: PFO/SS1E _____

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

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

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (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 X Hydric Soil Present? Yes X Wetland Hydrology Present? Yes X	Is the Sampled Area within a Wetland? Yes <small>Remarks: area has experienced precipitation deficit over the past 90 and 365 days. Two heavy precipitation events in the past two weeks. This site has been historically impacted by a drainage ditch. The ditch has silted in somewhat and appears to have low ongoing impact.</small>
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HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
<small>Primary Indicators (minimum of one is required; check all that apply)</small>		
<input checked="" type="checkbox"/> Surface Water (A1)		<input checked="" type="checkbox"/> True Aquatic Plants (B14)
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input checked="" type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Surface Soil Cracks (B6)
<input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input checked="" type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Aquatic Fauna (B13)		<input checked="" type="checkbox"/> Moss Trim Lines (B16)
Field Observations:		<input type="checkbox"/> Dry-Season Water Table (C2)
Surface Water Present? Yes X _____ No _____ Depth (inches): 0-2 _____		<input type="checkbox"/> Crayfish Burrows (C8)
Water Table Present? Yes X _____ No _____ Depth (inches): 4 _____		<input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
Saturation Present? Yes X _____ No _____ Depth (inches): 0 _____ (includes capillary fringe)		<input type="checkbox"/> Stunted or Stressed Plants (D1)
<small>Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:</small>		
FULL RANGE OF GOOGLE AND WRR AERIAL PHOTOGRAPHY		
<small>Remarks:</small> <p>approximately 2 inches of rain within the past 24-28 hours</p> <p>soil pit located outside of standing water</p>		
<small>Precipitation supporting data: <input type="checkbox"/> APT <input checked="" type="checkbox"/> MARF <input type="checkbox"/> Other</small>		

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: **WAA3-2**

Tree Stratum (Plot size: 30' radius)		Absolute Dominant Indicator % Cover Species? Status			Dominance Test worksheet:	
1. <i>Acer saccharinum</i> silver maple		45	Y	FacW	Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)	
2. many dead <i>Fraxinus pennsylvanica</i> (not quantified)		NA	NA	FacW	Total Number of Dominant Species Across All Strata: 2 (B)	
3.					Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)	
4.					Prevalence Index worksheet:	
5.					Total % Cover of:	Multiply by:
6.					OBL species	x 1 =
7.					FACW species	x 2 =
		45			FAC species	x 3 =
					FACU species	x 4 =
					UPL species	x 5 =
					Column Totals:	(A) (B)
					Prevalence Index = B/A =	
Hydrophytic Vegetation Indicators:						
— 1 - Rapid Test for Hydrophytic Vegetation						
X 2 - Dominance Test is >50%						
— 3 - Prevalence Index is $\leq 3.0^1$						
— 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)						
— Problematic Hydrophytic Vegetation ¹ (Explain)						
1Indicators 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						
Remarks: (Include photo numbers here or on a separate sheet.)						
Morphological adaptations observed on multiple age classes of maples and ashes. High ash mortality						
Vegetation meets the Rapid Test Indicator. However, plants were quantified to provide data for MDWAM assessment data forms.						
Azolla (Mosquito fern) and Lemma were abundant but not included in the herb quantification.						
Adventitious roots observed on hibiscus.						
MORPHOLOGICAL PLANT ADAPTATIONS: <input checked="" type="checkbox"/> shallow roots <input checked="" type="checkbox"/> fluted trunks <input checked="" type="checkbox"/> flared/buttressed trunks <input type="checkbox"/> elevated root wads/trunks						

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

Morphological adaptations observed on multiple age classes of maples and ashes. High ash mortality

Vegetation meets the Rapid Test Indicator. However, plants were quantified to provide data for MDWAM assessment data forms.

Azolla (Mosquito fern) and Lemma were abundant but not included in the herb quantification.

Adventitious roots observed on hibiscus.

MORPHOLOGICAL PLANT ADAPTATIONS: shallow roots fluted trunks flared/buttressed trunks elevated root wads/trunks

SOIL Nolands Ferry C&O Canal Park

Sampling Point: **WAA3-2**

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 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)
- X 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 Soils³:

- 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)

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

Restrictive Layer (if observed):

Type: Clay Loam _____
Depth (inches): 11 _____

Hydric Soil Present? Yes

Remarks: LRR S MLRA 148

MDWAM EXAMPLE 2:

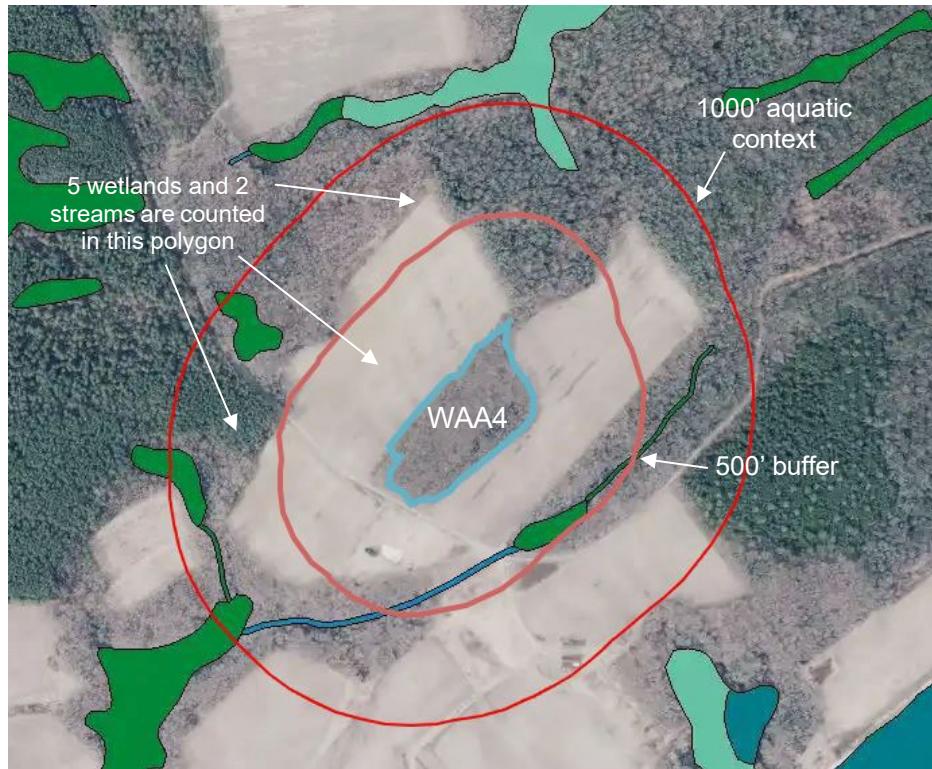


Figure 1. A mineral flat wetland example located Cedar Point State Park in Charles County. This aerial illustrates the WAA (blue polygon), 1000' aquatic context polygon (thin red), and 500' buffer polygon (thick red). There are 5 wetlands and two streams located in this polygon. *Note, field inspection may increase this score if aquatic resources are identified that were undetected from aerial imagery.* This WAA is surrounded by mostly cropland which produces a low score for the buffer metric. Also included are NWI polygons which were used to determine the aquatic context score.

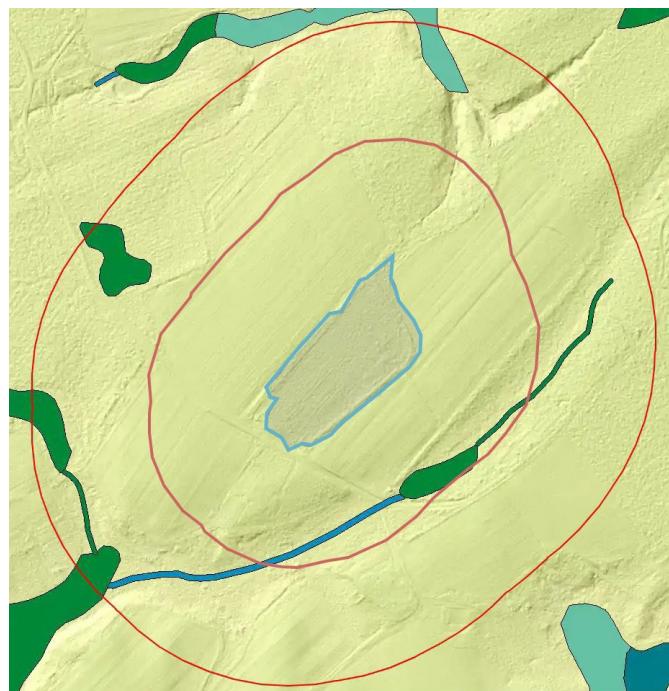


Figure 2. The same area using hill shade LiDAR and NWI mapping.



Figure 3. Photo within WAA4, a mineral flat wetland illustrating a mixed mid to late successional forest with a sparse understory typical of many mineral flats. The area is dominated by *Quercus phellos* and *Q. palustris* with some patches of *Cinna arundinacea* are in the background where the light source is greater. This wetland is a remnant patch of forest surrounded by cropland.



Figure 4. Another shot of WAA4 further illustrating the lack of understory vegetation typical of mineral flat wetlands in the Coastal Plain ecoregion. Note the mixture of larger and smaller trees. While this wetland was larger than 5 acres, only one sample point was used due to the homogeneity of the community.

October 7, 2025 – MDWAM WETLAND SCORING FORM

Project/Site ID: Cedar Point Wildlife Management Area

Assessment /Delineation Date: September 29, 2021

Project Type: Testing Linear Non-Linear Mitigation (Creation Restoration Enhancement) Other _____

Evaluators: Plewa and Gaimaro _____ Wetland ID/Name: PFO1E NWI: PFO1E

WAA #: 4 Size: 5.8 (acres) Wetland Class (HGM): Mineral Flat MDWAM Regional Subclass: Mineral Flat

Ecoregion: CP EMP Aerial Photo Date and Source: NAIP 2018 Google May 2021 Photos: Yes

Notes: Forested block surrounded by cropland. Updated to reflect latest MDWAM data form.

LANDSCAPE CORE ELEMENT

Aquatic Context metric – Confirm in office review. See figures in section 2.3.1.1 for examples.

Describe barriers or alterations that prevent connection: _____ No barriers.
 Total aquatic resources within 1,000 feet of WAA to which wetland connects (minimum size \geq 0.02 acres): 1 streams 5 wetlands 0 ponds Score: 3

Buffer – Evaluate to 500 feet from WAA boundary. Confirm in office review and field check. A micro delineation of buffer types is unnecessary, users should delineate the major units to provide a qualitative estimate of the buffer community potential. See figures in Section 2.3.1.2 for examples

Buffer Type/Description	Score (See Narratives)	Percentage	Subtotal
1. Mid to mature forest	4	21	0.83
2. Oldfield/low successional	2	6	0.12
3. Herbaceous rangeland	1	5	0.04
4. Cropland	0	66	0.0
5. Gravel road and parking area	0	2	0.0
6.			
			Score: 0.99

HYDROLOGY CORE ELEMENT

Water source metric – Identify the dominant water sources and degree of natural or unnatural/artificial influence (Confirm in office review for watershed).

Natural Source: Precipitation Groundwater Overland flow Overbank flow/stream discharge Beaver activity Other: _____
 Unnatural/Manipulated Source/Controls: Impoundment Outfall Irrigation/pumping Fill Ditching/Channelization Other Artificial influence or control.
 Watershed/Drainage Area controls: Development Irrigated agriculture Wastewater treatment plant Impoundment Stormwater retention Change to flow/circulation from roads/ditching Other: _____
 Degree of artificial influence/control: Complete High Low None. Wetland created/restored/enhanced: Sustainable/replicates natural Controlled
 Comments: _____ Score: 4

Hydroperiod metric – Determine the natural variability and/or recent alteration of the duration, frequency, and magnitude of inundation/saturation.

Evaluate the hydroperiod including natural variation: Precipitation: typical atypical (deficit surplus) Source: _____
 High variation Low variation Evidence: _____
 Direct evidence of alteration: Natural: Logjam Channel migration Other: _____
 Human: Diversions Ditches/swales Levees Impoundments Other: _____
 Riverine (active floodplain only): Recent channel in-stability/dis-equilibrium (Degradation or Aggradation) Stable Channel _____
 Indirect evidence of alteration: Wetland plant stress Plant morphology Upland species encroachment Plant Community Soil morphology None
 Change/Alteration of hydroperiod: Due to natural events Human influences (None Slight or High) _____
 Degree hydroperiod of wetland created/restored(replicates natural patterns): _____
 Lacustrine fringe on human impoundment: High variability Low variability Recent changes to hydroperiod
 Comments: _____ Score: 4

Hydrologic flow metric – Movement of water to or from surrounding area and openness to water moving through the WAA (flow and circulation).

Flow: Inlets: # 0 Outlets: # 0 Signs of water movement to or from WAA: none _____
 Restrictions: None Levee Berm/dam Diversion Ditch-Side Cast Road w/culverts Other: _____
 Magnitude of water movement into, through and out of the wetland (check indicators below): High Moderate Low
 High flow through: Floodplain Drift deposits Drainage patterns Sediment deposits Partially buried debris/trunks Scour
 Other: _____ Low flow through: High landscape position Stagnant water Closed contours Debris dams
 Constricted Outlet Surface Roughness Other: _____ Score: 1
 Comments: _____

Surface drainage feature metric: Identify and describe all natural and man-made or man-altered surface drainage features (**SDF**) present within the WAA which potentially impact wetland hydrology and or wetland function and circle impact potential to the WAA (High-Moderate-Low). SDFs are defined as confined features with OHWM and or bed and banks. Indiscrete flow patterns are not considered (e.g., wetland drainage patterns, erosional features, etc.). Provide rational below or on separate report.

SDF Types present: None Stream channel # _____ Ditch/swale # 1 Diversion # _____ Other _____

SDF(s) exhibits (circle degree High-Moderate-Low): channel instability/migration(H-M-L) active incision/downcutting(H-M-L) bank instability(H-M-L) raw unvegetated or vertical banks(H-M-L) highly erodible materials(H-M-L) lacks vertical controls(H-M-L) excessive deposition/bar development(H-M-L) historic channel alteration(H-M-L) proximity to WAA that presents potential impact to hydrology(H-M-L) coarse textured soils(high hydraulic conductivity)

Restrictions associated with SDF cause backwater flooding within WAA: Type: levee fill/side cast culvert/bridge Other _____

Timing: Recent (\leq 5 years) Historic

Negative effect to: flow and circulation within WAA redirects or confines flows into/through WAA reduced water table level of inundation No Impact

Rationale: minimal effect from ditch as it is located outside of the side cast and does not impound water to any degree

Score: 3

SOILS CORE ELEMENT

Soil organic carbon (average multiple sample scores, round to one decimal). See Section 2.2.5.2, for additional guidance regarding multiple samples	Sample Score		
	#1	#2	#3
Total thickness of organic soil and mucky modified layer(s) \geq 2"	5	5	5
Total thickness of organic soil and mucky modified layer(s) $<$ 2", OR Dark (matrix value \leq 3 and chroma \leq 2) mineral surface layer(s) \geq 10" thick	4	4	4
Dark (matrix value \leq 3 and chroma \leq 2) mineral surface layer(s) only, \geq 4" and $<$ 10" thick	3	3	3
Dark (matrix value \leq 3 and chroma \leq 2) mineral surface layer(s) only, \geq 1" and $<$ 4" thick	2	2	2
Mineral surface layer(s) (any thickness) have matrix value and chroma combinations of 4/1, 4/2, 4/3, 4/4, 3/3, or 3/4. No organic soil and mucky modified layer(s) layers within 16"	1	1	1
Mineral surface layer(s) only (any thickness) with matrix values $>$ 4 OR chromas $>$ 4. No organic soil and mucky modified layer(s) layers within 16"	0	0	0
Average score of samples (if multiple samples within the WAA)			
Additional point added in any riverine subclasses			
Average of all samples/round to one decimal			Score: 2

Biogeochemical cycling metric: See Section 2.2.5.2, for additional guidance regarding multiple samples.

Sample#	Sub-Metric Scores				Use this formula for each sample and average the number of samples (round all scores to one decimal)	
	Redox Concentrations	Micro Topography	Soil Organic Matter	Herbaceous Cover		
1	4	3	2	2	$[0.75 \times (4 + 3 + 2 + 2)] - 2 = 6.25$	Sample Score 1 6.25
2	-	-	-	-	$[0.75 \times (+ + +)] - 2 =$	Sample Score 2
3	-	-	-	-	$[0.75 \times (+ + +)] - 2 =$	Sample Score 3
					Average of all samples	
						Score: 6.3

Sedimentation metric – Deposition of excess sediment due to human actions (in the WAA). Confirm in office review for landscape.

Landscape with stress that could lead to excess sedimentation: Yes No

Landscape position: High Low

Magnitude of recent runoff/flooding events: High Low None

Percent of WAA with excess sediment deposition: 0

Sand deposits: ____ % of area _____ average thickness

Silt/clay deposits: ____ % of area _____ average thickness

Observation of deposits: Frequent Common Occasional Infrequent Rare None

*Lacustrine fringe only: Upper end of impoundment Degrades wetland Contributes to wetland processes

Score: 4

Soil modification metric – Physical changes by human activities. Confirm in office review for past.

Level of modification(low) Level of recovery (high) No detectable modifications _____

Type: Agricultural use (Plowing Discing Harrowing) Logging Mining Filling Grading Dredging Off-road vehicles

Other: _____

Percent of WAA with soil modification: Recent ____ % Historic ____ % Describe: Soil disturbance was likely minimal and limited

Indicators of past modification: None Low organic matter Lack of soil structure Removal of horizons Compaction (platy structure) Ap horizon Fill

Dramatic change in texture/color Heterogeneous mixture Recent Alluvium (e.g., legacy sediments) Stratified layers Soil subsidence Fill

Other _____

Comments: _____

Score: 4

PHYSICAL STRUCTURE CORE ELEMENT

Topographic complexity metric – See figures in Section 2.3.4.1 Record % micro-topography and % of WAA for each elevation gradient. For multiple gradients, multiply the % of micro-topography by the % of the WAA for each gradient and sum the results to find the overall %.

Of Elevation gradients present: 1 Evidence of gradients: Plant assemblages Level of saturation/inundation Path of water flow Slope

Micro-topography (surface roughness) of WAA: >50% 30-49% 10-29% <10%

Types: Depression Pools Burrows Swales Wind-thrown tree holes Mounds Islands Variable shorelines Partially buried debris Debris jams Plant hummocks/roots Other: _____

Score: 3

Edge complexity metric – Initiate in office review but adjust based on field observations/delineation. See example figures in Section 2.3.4.2 to evaluate irregularity of wetland boundary and variability in vertical structure. Abutting habitats must border 30% or more of the WAA boundary.

WAA is: Surrounded by uplands In seasonal floodplain Abutting other wetland types Has edge vertical structure variation (Moderate)

Horizontal variability: High Moderate Low None _____

Score: 2

Physical habitat richness metric – See definitions and table in Section 2.3.4.3 for habitat types applicable to each wetland type. Located in the WAA or within 25 feet of the WAA boundary.

Concentric high water marks Secondary channels Seasonally inundated swales Un-vegetated pools Un-vegetated flats Vegetated islands Slope with undercut, slump, or overhang Rock piles with voids Plant hummocks/vegetated mounds Submerged/floating vegetation Dense herbaceous cover Brambles/thickets Mature/late-successional stage of plant community (>24" DBH) Drift deposits/organic debris Brush piles Fallen logs Stumps/ Standing snags Wind-thrown trees Tree root cavities Nesting cavities/dens Other _____

of Physical habitat types present (wetland type sensitive - see narrative table): % 7

Score: 3

BIOTIC STRUCTURE CORE ELEMENT

Plant strata metric – Use applicable wetland delineation regional supplement and wetland determination data form(s) 4 strata approach.

Number of plant strata: ≥ 4 3 2 1 0 Strata present: herbaceous shrub/sapling tree woody vines

Score: 3

Species richness metric – Use data from determination data form(s) to count species with 5% or more relative cover in a stratum. Species should be counted only once for all observations within the WAA.

Number of species across all strata and determination data forms (count species once) plus additional significant species (provide rationale for additional species outside plots). Plot Species 8 + Additional species (outside sample plots) 0 = Total species richness 8 Rationale for additional species: _____

Score: 3

Non-native/Invasive Infestation metric – Use data from determination data form(s) and additional observations. See tables in section 2.3.5.3.2 for examples.

Average total relative cover of non-native/invasive species across all strata and determination data forms: _____ %

4 = <1% 3 = 1-10% 2 = 11-25% 1 = 26-50% 0 = 51-100%

Additional species cover outside plots are included (must be growing in the wetland) Rationale: _____

Score: 4

Interspersion metric – Confirm in office review. Use figure in section 2.3.5.4.2 to determine the degree of interspersion of plant zones (≥ 5% of WAA).

Degree of horizontal/plan view interspersion: High Moderate Low None

Score: 1

Herbaceous cover metric – Estimate only herbaceous plant cover for entire WAA.

Total cover of herbaceous, emergent and submergent plants: > 75% 51-75% 26-50% ≤ 25%

Score: 2

Vegetation alterations metric – Unnatural (human-caused) stressors. Confirm in office review for past.

Type (Check those applicable and circle R for recent or P for past): Cropping Disking-plowing R/P Land clearing/leveling R/P Mowing/shredding R/P Silviculture R/P Logging R/P Cutting R/P Trampling R/P Herbicide treatment R/P Herbivory R/P Disease R/P Chemical spill R/P Pollution R/P Grazing R/P Woody debris removal R/P Fire R/P Other R/P: _____

Percent of WAA with recent vegetation alteration: _____ % Severity of alteration: High Moderate Low

Percent of WAA with past vegetation alteration: 100% Degree of recovery: Complete High Moderate Low

Alteration to improve wetland (degree of natural community recovery): _____

Rationale: _____

Score: 4

Plant life forms metric - Life forms represent ≥ 5% of WAA.

Bryophytes (mosses, liverworts, hornworts) Coniferous Trees Deciduous Broadleaf Trees Evergreen Broadleaf Trees Ferns Grasses Herbs Lichens or Fungi Sedges/Rushes Shrubs Vines Floating/SAV

Total Number of Plant Life Forms: ≥ 6 = 4 4 or 5 = 3 3 = 2 1 or 2 = 1 0 = 0

Score 3

October 7, 2025 – MDWAM WETLAND FINAL SCORING FORM

Project/Site ID: Cedar Point Wildlife Management Area

Assessment /Delineation Date: September 29, 2021

Project Type: Testing Linear Non-Linear Mitigation (Creation Restoration Enhancement) Other _____

Evaluators: Plewa and Gaimaro _____ Wetland ID/Name: PFO1E NWI: PFO1E

WAA #: 4

Size: 5.8 (acres)

Wetland Class (HGM): Mineral Flat

MDWAM Regional Subclass: Mineral Flat

Ecoregion: CP EMP

Aerial Photo Date and Source: NAIP 2018 Google May 2021

Photos: Yes

Notes: Forested block surrounded by cropland. Updated to reflect latest MDWAM data form.

Core Element	Metric	Metric score	Calculate Core Element Score	Core Element Score	
Landscape	Aquatic context	3	Sum of metric scores 4 / 8 x 15	7.5	
	Buffer	1			
Hydrology	Water source	4	Sum of metric scores 12 / 16 x 30	22.5	
	Hydroperiod	4			
	Hydrologic flow	1			
	Surface drainage features	3			
Soils	Organic carbon storage	2	Sum of metric scores 16 / 23 x 15	10.6	
	Biogeochemical cycling	6.3			
	Sedimentation	4			
	Soil modification	4			
Physical Structure	Topographic complexity	3	Sum of metric scores 8 / 12 x 20	13.3	
	Edge complexity	2			
	Physical habitat richness	3			
Biotic Structure	Plant strata	3	Sum of metric scores 20 / 28 x 20	14.3	
	Species richness	3			
	Non-native/invasive infestation	4			
	Interspersion	1			
	Herbaceous cover	2			
	Vegetation alterations	4			
	Plant life forms	3			
Sum of core element scores = Base MDWAM wetland score				68.2	
Additional points for unique resources = overall MDWAM wetland score x 0.10 if:					
<input type="checkbox"/> Non-tidal wetlands of special state concern <input type="checkbox"/> Areas with populations (>20%) of the following species: Bald cypress, Atlantic white cedar, red spruce, balsam fir, or American larch <input type="checkbox"/> Delmarva Bay wetlands <input type="checkbox"/> Peatlands (histic epipedon or histosol present)				0	
Additional points for limited habitats = overall MDWAM wetland score x 0.05 if:					
<input type="checkbox"/> Dominated (>50%) by native trees greater than 24-inch diameter at breast height <input type="checkbox"/> Dominated (>50%) by hard mast (i.e., acorns and nuts) producing native species in the tree strata <input type="checkbox"/> Large unfragmented wetland tracts and continuous riparian wetland corridors > 20 acres				0	
Sum of overall wetland scores plus additional points = total overall MDWAM wetland score				68	
(round to whole number)					

Attach representative site photographs:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: MDWAM Field Testing – Cedar Point WMA _____ City/County: Charles _____ Sampling Date: 29 Sept 2021

Applicant/Owner: MD DNR _____ State: MD _____ Sampling Point: WAA 4 _____

Investigator(s): Plewa, Gaimaro _____ Section, Township, Range:NA _____

Landform (hillslope, terrace, etc.):interfluve/flat _____ Local relief (concave, convex, none):none _____ Slope (%) : 0-2

Subregion LRR: S _____ MLRA: 149A _____ Lat: 38.4373 Long:-77.0699 _____ Datum:NA _____

Soil Map Unit Name: Lenni and Quindocqua _____ NWI classification: none _____

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

Are Vegetation_____, Soil_____, or Hydrology_____ significantly disturbed? no Are "Normal Circumstances" present? Yes

Are Vegetation_____, Soil_____, or Hydrology_____ naturally problematic? no (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	Is the Sampled Area within a Wetland? Yes
Hydric Soil Present?	Yes	
Wetland Hydrology Present?	Yes	
Remarks: precipitation deficit (MARF)		

HYDROLOGY

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

Field Observations:		
Surface Water Present?	No	Depth (inches):
Water Table Present?	No	Depth (inches):
Saturation Present?	No	Depth (inches):
		Wetland Hydrology Present? Yes
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: FULL RANGE OF GOOGLE AND WATERSHED RESOURCES REGISTRY AERIAL PHOTOGRAPHY		

Remarks: precipitation deficit (MARF)		
Precipitation supporting data: <input type="checkbox"/> APT <input checked="" type="checkbox"/> MARF <input type="checkbox"/> Other		

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WAA 4

<u>Tree Stratum</u> (Plot size: 30' radius)		Absolute Dominant Indicator % Cover Species? Status		
1. <i>Quercus palustris</i>		37	yes	FacW
2. <i>Quercus phellos</i>		25	yes	FacW
3. <i>Nyssa sylvatica</i>		15		Fac
4. <i>Acer rubrum</i>		11		Fac
5. <i>Liquidambar styraciflua</i>		6		Fac
6.				
7.				
8.				
84 = Total Cover				
50% of total cover: 42		20% of total cover: 16.8		
<u>Sapling/Shrub Stratum</u> (Plot size: 15' radius)				
1. <i>Ilex opaca</i>		7	yes	Fac
2. <i>Acer rubrum</i>		4	yes	Fac
3. <i>Nyssa sylvatica</i>		2		Fac
4.				
5.				
6.				
7.				
8.				
13 = Total Cover				
50% of total cover: 6.5		20% of total cover: 2.6		
<u>Herb Stratum</u> (Plot size: 5' radius)				
1. <i>Chasmanthium arundinaceum</i>		30	yes	Fac
2. <i>Smilax rotundifolia</i>		15	yes	Fac
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
45 = Total Cover				
50% of total cover: 22.5		20% of total cover: 9		
<u>Woody Vine Stratum</u> (Plot size: 30' radius)				
1.				
2.				
3.				
4.				
5.				
NA = Total Cover				
50% of total cover:		20% of total cover:		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is ≤3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators 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 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

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

MORPHOLOGICAL PLANT ADAPTATIONS: shallow roots fluted trunks flared/buttressed trunks elevated root wads/trunks

SOIL

Sampling Point: WAA 4

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

Depth (inches)	Matrix		Redox Features			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0-2	10YR 3/1						SiL	
2-5	10YR 5/2		10YR 5/6	20	C	M	SiL	
5-15+	10 YR 6/1		10YR 5/6	5	C	M	SiCL	
			7.5 YR 4/6	20	C	M		

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

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

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

Indicators for Problematic Hydric Soils³:

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

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

Restrictive Layer (if observed):

Type: NA

Depth (inches): _____

Hydric Soil Present? Yes

Remarks: LRR – S / MLRA 149A